Ambient Air Monitoring Plan

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Tennessee Dept. of Environment and Conservation, Air Pollution Control Division

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Introduction to the 2014 Ambient Air Monitoring Plan for Tennessee

The draft plan that is presented in the following pages will address each of the requirements specified in the CFR. An overview of the geography, general climate, wind patterns and population trends are included to provide background information that will assist the reader in understanding the current air monitoring network and reasons for placement of the existing monitoring sites. The actual regulatory requirements that specify the number and placement of air monitoring sites is found in 40 CFR 58. The sections that provide this guidance are also included in the report as a reference to help better understand the actual monitoring needs in a given area.

In many instances, the "areas" for which monitoring is required are based on population criteria in which population must be considered to allow for monitoring in the areas where populations may be affected or exposed to the various criteria pollutants of concern. Additional monitoring sites are needed to address areas where source related emission density may be elevated and also impact communities in the same area. Other considerations must also be addressed when selecting and operating air monitoring sites. The local influences of some types of sources (roadway dust or emissions) may be factors that require monitoring sites to be spaced certain distances from those sources or in the case or near-road or roadway monitoring activities, the monitors must be located very close to the potential sources of mobile emissions.

The principal areas in Tennessee with air monitoring sites are depicted with a graphic showing the locations for each of the monitoring sites. The sites are further identified with a site number, an Air Quality Site Identification (AQSID) and the types of pollutants being monitored for at each location. Tables containing the relevant information for each site are also included. The tables are provided in two sections following the location graphic and have been condensed and combined from the previous year's format so that all relevant information can be found within each area's section of the report and relieves the reader from searching tables at the end of the report for information about a given site.

Each of the four local programs operating an air monitoring network in Tennessee has also provided a separate annual review which has been included in this report. Where revisions were noted in the local networks, similar revisions were added to the state's overall plan.

The recent changes in the NAAQS (National Ambient Air Quality Standards) have resulted in a need to evaluate additional air monitoring in order to comply with the new standards. In some cases; (SO_2 and NO_2), the revisions to the standard were augmented with revisions to the monitoring requirements. Some of the necessary changes to the monitoring networks have been completed while others are being planned for implementation.

The State of Tennessee is required to evaluate the ambient air monitoring network each year in accordance with the requirements specified in 40 CFR Subpart B 58.10. The requirements that must be met in the annual evaluation are included as follows:

§ 58.10 Annual monitoring network plan and periodic network assessment.

(a)(1) Beginning July 1, 2007, the State, or where applicable local, agency shall adopt and submit to the Regional Administrator an annual monitoring network plan which shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations including FRM, FEM, and ARM monitors that are part of SLAMS, NCore stations, STN stations, State speciation stations, SPM stations, and/or, in serious, severe and extreme ozone nonattainment areas, PAMS stations, and SPM monitoring stations. The plan shall include a statement of purposes for

each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of this part, where applicable. The annual monitoring network plan must be made available for public inspection for at least 30 days prior to submission to EPA.

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

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

(4) A plan for establishing source-oriented Pb monitoring sites in accordance with the requirements of appendix D to this part for Pb sources emitting 1.0 tpy or greater shall be submitted to the EPA Regional Administrator no later than July 1, 2009, as part of the annual network plan required in paragraph (a)(1) of this section. The plan shall provide for the required source-oriented Pb monitoring sites for Pb sources emitting 1.0 tpy or greater to be operational by January 1, 2010. A plan for establishing source-oriented Pb monitoring sites in accordance with the requirements of appendix D to this part for Pb sources emitting equal to or greater than 0.50 tpy but less than 1.0 tpy shall be submitted to the EPA Regional Administrator no later than July 1, 2011. The plan shall provide for the required source-oriented Pb monitoring sites for Pb sources emitting equal to or greater than 0.50 tpy but less than 1.0 tpy to be operational by December 27, 2011.

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

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

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

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

(v) A plan for establishing a single near-road NO_2 monitor in all CBSAs having 500,000 or more persons, but less than 1,000,000, not already required by paragraph (a)(5)(iv) of this section, in accordance with the requirements of Appendix D, section 4.3.2 to this part, shall be submitted as part of the Annual Monitoring Network Plan to the EPA Regional Administrator by July 1, 2016. The plan shall provide for these monitors to be operational by January 1, 2017.

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

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

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

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

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

(1) The AQS site identification number.

(2) The location, including street address and geographical coordinates.

(3) The sampling and analysis method(s) for each measured parameter.

(4) The operating schedules for each monitor.

(5) Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.

(6) The monitoring objective and spatial scale of representativeness for each monitor as defined in appendix D to this part.

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

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

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

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

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

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

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

other Class III $PM_{2.5}$ FEM or ARM with data of sufficient quality is operating and reporting data to meet the network design criteria described in appendix D to this part.

(c) The annual monitoring network plan must document how state and local agencies provide for the review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor. The affected state or local agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan.

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

(e) All proposed additions and discontinuations of SLAMS monitors in annual monitoring network plans and periodic network assessments are subject to approval according to § 58.14. Code of Federal Regulations / Title 40 - Protection of Environment / Vol. 6 / 2013-07-01252 [71 FR 61298, Oct. 17, 2006, as amended at 72 FR 32210, June 12, 2007; 73 FR 67059, Nov. 12, 2008; 73 FR 77517, Dec. 19, 2008; 75 FR 6534, Feb. 9, 2010; 75 FR 35601, June 22, 2010; 75 FR 81137, Dec. 27, 2010; 76 FR 54341, Aug. 31, 2011; 78 FR 16188, Mar. 14, 2013; 78 FR 3282, Jan. 15, 2013]

Proposed Revisions to Tennessee's Ambient Air Monitoring Network

Sulfur Dioxide Monitoring:

Based on historical ambient SO_2 data generated in the Kingsport area of Sullivan County, a monitoring site is required in the vicinity of Eastman Chemical Company to assess compliance with the hourly National Ambient Air Quality Standard (NAAQS). Tennessee Air Pollution Control (TAPC) proposes to locate a new SO_2 monitoring site in the Kingsport area to meet this requirement.

$PM_{2.5}$ Monitoring:

Knox County Department of Air Quality Management (KCDAQM) proposes to relocate site 47-093-1013 located at 1403 Davanna St. Knoxville, TN to the 900 block of Stewart St. Knoxville, TN. The proposed location is 0.5 miles east of its current location. GPS coordinates: 35° 58'50.90"N 83° 55'32.76"W. The property owners of the current site have requested KCDAQM terminate the use of their property. PM_{10}, $PM_{2.5}$ & $PM_{2.5}$ continuous for AQI are monitored at this site. All parameters will be relocated.

PM_{10} Monitoring:

Memphis-Shelby County Air Pollution Control proposes to discontinue PM_{10} monitoring at its Fite Road site, (AQS 47-157-0046). Historical data for this site reveal PM_{10} concentrations are very low. The area in which this site is located is prone to flooding which sometimes interferes with access to the site. To meet minimum PM_{10} monitoring requirements in the Memphis CBSA, Memphis proposes either it's Alabama Avenue site (AQS 47-157-0024), Frayser Road, (AQS 47-157-021), or Edmund Orgill Park (AQS 47-157-1004) be considered as an alternative to continued monitoring at the Fite Road location.

Ozone Monitoring:

TAPC will shut down the Meigs Co. (471210104) ozone monitoring site effective November 1, 2013. The Loudon Middle School ozone monitoring site (471050109), was required to be relocated on the school property due to building and grounds renovation/construction work. The new site was not prepared in time for the monitoring shelter before the start of the ozone monitoring season and the ozone monitor was temporarily relocated to the Loudon Pope site (471050108) where an existing $PM_{2.5}$ FRM sampler is also located. The ozone and $PM_{2.5}$ monitors are proposed to be relocated back to the Loudon Middle School site before the beginning of 2015 with the ozone monitor and $PM_{2.5}$ monitors to be permanently located there. The Pope $PM_{2.5}$ site will be permanently shut down at that time.

The Chattanooga-Hamilton County Air Pollution Control agency is looking for another site to relocate the ambient ozone monitoring site located at the Eastside Utility District (AQS 47-065-4003). Access to the current site has become a problem due to increased security measures put into place by the utility district. Routine access to the site must be granted by a security guard. This presents problems when the site operator needs immediate access to the site to repair malfunctioning equipment.

A second reason for relocating this site is because the water plant at Eastside is currently undergoing expansion and is no longer a suitable location to monitor for ozone in this area.

Carbon Monoxide Monitoring:

The Nashville Broadway CO monitor was permanently shut down effective Dec. 31, 2013 with approval to do so provided by EPA in their December 20, 2013 letter to the Nashville local program.

Nitrogen Dioxide Monitoring:

Community Wide Monitors

Revisions to the NO_2 NAAQS in 2010 require a minimum of one NO_2 monitoring site in any urban area with a population greater than or equal to one million people to assess community-wide concentrations. Therefore, a community-wide site is required in the Memphis and Nashville CBSA's. An NO_2 monitoring site that meets the requirements is already in operation in Nashville (AQS 47-037-0011). The NO_2 monitor AQS ID 47-037-0011, located on Trinity Lane in Nashville, Tennessee is identified in AQS as a SLAMS monitor and will be updated in the monitoring plan to show this monitor type. This monitor will be identified as an area-wide monitor for NO_2 in the monitoring plan.

In the Memphis CBSA the State of Arkansas currently operates an NO_2 monitor at its Marion site, (AQS 05-035-0005). Memphis-Shelby County Air Pollution Control requests EPA approve this site to meet minimum community-wide NO_2 monitoring requirements in the Memphis CBSA.

Near-Road Monitors

Memphis and Nashville are currently scheduled to receive funding during Fiscal year 2013 to establish a single near-road site in their respective CBSA's.

Lead Monitoring:

Knox County Department of Air Quality Management (KCDAQM) requests approval of an emergency relocation of the Gerdau/Ameristeel lead monitoring site 47-093-0023. Gerdau purchased the property surrounding the monitoring site and petitioned to close the road the monitor was located on. KCDAQM was notified on 8/23/13 that Gerdau had fenced the monitor in and effectively cut off access. KCDAQM temporarily relocated the site next to the hammer head turnaround which is the closest point of public access, and notified EPA. A permanent site has since been constructed. The site is approximately 97 meters NE of the previous site. The address is 1526 New York Ave. Knoxville, TN. GPS coordinates are: 35° 58' 51.88" N 83° 27' 15.44" W.

Tennessee Geographic Regions, Descriptions and Climate

Climate of Tennessee

Topographic Features - The topography of Tennessee is quite varied, stretching from the lowlands of the Mississippi Valley to the mountain peaks in the east. The westernmost part of the State, between the bluffs overlooking the Mississippi River and western valley of the Tennessee River, is a region of gently rolling plains sloping gradually from 200 to 250 feet in the west to about 600 feet above sea level in the hills overlooking the Tennessee River. The hilly Highland Rim, in a wide circle touching the Tennessee River Valley in the west and the Cumberland Plateau in the east, together with the enclosed Central Basin make up the whole of Middle Tennessee. The Highland Rim ranges from about 600 feet in elevation along the Tennessee River to 1,000 feet in the east and rises 300 to 400 feet above the Central Basin which is a rolling plain of about 600 feet average elevation, but with a crescent of hills reaching to over 1,000 feet south of Nashville. The Cumberland Plateau, with an average elevation of 2,000 feet extends roughly northeast-southwest across the State in a belt 30 to 50 miles wide, being bounded on the west by the Highland Rim and overlooking the Great Valley of East Tennessee on the east. The Great Valley, paralleling the Plateau to the west and the Great Smoky Mountains to the east, is a funnel shaped valley varying in width from about 30 miles in the south to about 90 miles in the north. Within the valley, which slopes from 1,500 feet in the north to 700 feet in the south, is a series of northeast-southwest ridges. Along the Tennessee-North Carolina border lie the Great Smoky Mountains, the most rugged and elevated portion of Tennessee, with numerous peaks from 4,000 to 6,000 feet.

Tennessee, except for a small area east of Chattanooga, lies entirely within the drainage of the Mississippi River system. The extreme western section of the State is drained through several relatively small rivers directly into the Mississippi River. Otherwise, drainage is into either the Cumberland or Tennessee Rivers, both of which flow northward near the end of their courses to join the Ohio River along the Kentucky-Illinois border. The Cumberland River, which drains north-central portions of Tennessee rises in the Cumberland Mountains in Kentucky, flows southwestward, then south into Tennessee reaching the Nashville area before tuning northward to re-enter Kentucky. The Tennessee River is formed by the juncture of the Holston and French Broad rivers at Knoxville. It flows southwesterly along the Alabama-Mississippi line, and then flows northward across the State into Kentucky. Besides the headwater streams, other important tributaries include the: Clinch, Little Tennessee, Hiawassee, Elk and Duck Rivers.

Temperature - Most aspects of the State's climate are related to the widely varying topography within its borders. The decrease of temperature with elevation is quite apparent, amounting to, on the average, three degrees Fahrenheit (°F) per 1,000 feet increase in elevation. Thus higher portions of the State, such as the Cumberland Plateau and the mountains of the east, have lower average temperature than the Great Valley of East Tennessee, which they flank, and other lower parts of the State. In the Great Valley temperature increases from north to south, reaching a value at the south end comparable to that of Middle and West Tennessee where elevation variations are a generally minor consideration. Across the State, the average annual temperature varies from over 62° F in the extreme southwest to near 45 degrees atop the highest peaks of the east. It is of interest to note that average January temperature atop a 6,000 foot peak in the Great Smokies is equivalent to that in Central Ohio, while average July temperature is duplicated along the southern edge of the Hudson Bay in Canada. While most of the State can be described as having warm, humid summers and mild winters, this must be qualified to include variations with elevation. Thus with increasing elevation, summers become cooler and more pleasant while winters become colder and more blustery.

This dependence of temperature on elevation is of considerable importance to a variety of interests. Temperature, together with precipitation, plays an important role in determination what plant and animal

life are adaptable to the area. In the Great Smoky Mountains, forexample, the variations in elevation from 1,000 to 6,000 feet with attendant variations in temperature contribute to a remarkable variety of plant life. The relative coolness of the mountains also contributes to the popularity of that area during the warmer part of the year.

Length of growing season is linked to topography in a way similar to temperature, varying from an average of 237 days at low-lying Memphis to a near 130 days on the highest mountains in the east. Most of the State is included in the range of 180 to 220 days. Shorter growing seasons than this are confined to the mountains forming the State's eastern border and to the northern part of the Cumberland Plateau. Longer growing seasons are found in counties bordering the Mississippi River, parts of the Central Basin of the Middle Tennessee, and the southern end of the Great Valley of East Tennessee.

Precipitation - Since the principal source of moist air for this area is the Gulf of Mexico, there exists a gradual decrease of average precipitation from south to north. This effect is largely obscured however, by the overruling influence of topography. Air forced to ascend, cools and condenses out a portion of its moisture. Thus, average precipitation ranges from 46 to 54 inches, increasing from Mississippi bottomlands to the slight hills farther east. In Middle Tennessee the variation is from a minimum of 45 inches in the Central Basin to 50 to 55 inches in the surrounding hilly Highland Rim. Over the elevated Cumberland Plateau average annual precipitation is generally from 50 to 55 inches. In contrast, average annual precipitation in the Great Valley of East Tennessee increases from near 40 inches in northern portions to over 50 inches in the south. The northern minimum, lowest for the entire State, results from the shielding influence of the Great Smoky Mountains to the southeast and the Cumberland Plateau to the northwest. The mountainous eastern border of the State is the wettest, having average annual precipitation ranging up to 80 inches on the higher, and well-exposed peaks of the Smokies.

Over most of the State, the greatest precipitation occurs during the winter and early spring due to the more frequent passage of large-scale storms over and near the State during those months. A secondary maximum of precipitation occurs in midsummer in response to thunderstorm activity. This is especially pronounced in the mountains of the east where July rainfall exceeds the precipitation of any other month. Lightest precipitation, observed in the fall, is brought about by the maximum occurrence of slow moving, rain suppressing high pressure areas. Although all parts of Tennessee are generally well supplied with precipitation, there occurs on the average one or more prolonged dry spells each year during summer and fall. Studies illustrate the beneficial effects of supplemental irrigation of crops, despite usually bountiful annual precipitation.

Average annual snowfall varies from four to six inches in the southern and western parts of the State and in most of the Great Valley of East Tennessee to more than 10 inches over the northern Cumberland Plateau and the mountains of the east. Over most of the State, due to relatively mild winter temperatures, snow cover rarely persists for more than a few days.

The most important flood season is during the winter and early spring when the frequent migratory storms bring general rains of high intensity. During this period both widespread flooding and local flash floods can occur. During the summer, heavy thunderstorm rains frequently result in local flash flooding. In the fall, while flood producing rains are rare, a decadent tropical system on occasion causes serious floods. The numerous dams constructed along the Tennessee and Cumberland rivers are major features in the control of flood waters in the State.

The dams of the Tennessee and Cumberland River systems and the lakes so formed, in addition to vastly reducing flood damage have: facilitated water transportation, provided abundant low cost hydroelectric power and created extensive recreation areas. Fishing, boating, swimming and camping along the many lakes, together with the several state and national parks, have made tourism one of the major industries in the State.

Climate and the Economy - Water resources of Tennessee have been a major factor in the State's industrial growth. The bountiful and good quality water supply has influenced the location of industry, especially chemical processing plants. Three major waterways, the Mississippi, Cumberland and

Tennessee Rivers, are suitable for commercial traffic. Finally, the availability of low cost hydroelectric power from the multipurpose dams of the Cumberland and Tennessee rivers and tributaries has been stimulus to industry of all types. The principal types of manufacturing products are: textile mill products, primary metals, fabricated metals and lumber products.

Although surpassed in monetary value by industrial activity, agriculture remains a vital feature of Tennessee's economic life. The wide range of climates in Tennessee, from river bottom to mountaintop, coupled with a wide range of soils, has resulted in a large number of crops which thrive in the State.

Forests represent an additional important segment of Tennessee's natural resources related to the climate of the State. Timberland, containing principally hardwood types, covers approximately one-half of the total area of Tennessee. This has led to a highly diversified woodworking industry and made the area around Memphis the center of production for wood flooring. The temperate climate of the State is very favorable for logging operations, allowing full-scale activity during nine months of the year and to a lesser extent during the winter months.

Climate descriptions of Tennessee

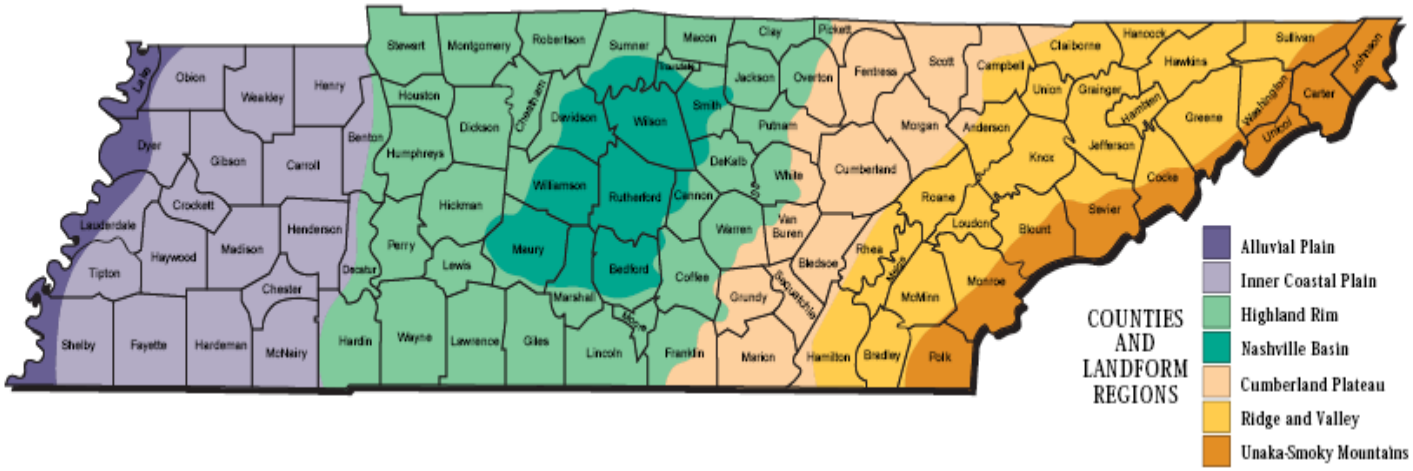
Generally, Tennessee has a temperate climate, with warm summers and mild winters. However, the state's varied topography leads to a wide range of climatic conditions.

The warmest parts of the state, with the longest growing season, are the Gulf Coastal Plain, the Central Basin, and the Sequatchie Valley. In the Memphis area in the southwest, the average date of the last killing frost is 20 March, and the growing season is about 235 days. Memphis has an annual mean temperature of 62°F (17°C), 40°F (4°C) in January, and 83°F (28°C) in July. In the Nashville area, the growing season lasts about 225 days. Nashville has an annual mean of 59°F (15°C), ranging from 36°F (2°C) in January to 79°F (26°C) in July. The Knoxville area has a growing season of 220 days. The city's annual mean temperature is 60°F (16°C), with averages of 41°F (5°C) in January and 78°F (26°C) in July. In some parts of the mountainous east, where the temperatures are considerably lower, the growing season is as short as 130 days. The record high temperature for the state is 113°F (45°C), set at Perryville on 9 August 1930; the record low, –32°F (–36°C), was registered at Mountain City on 30 December 1917.

Severe storms occur infrequently. The greatest rainfall occurs in the winter and early spring, especially March; the early fall months, particularly September and October, are the driest. Average annual precipitation (1971–2000) was 54.7 in (138.9 cm) in Memphis and 48 in (122 cm) in Nashville. Snowfall varies and is more prevalent in East Tennessee than in the western section; Nashville gets about 10 in (25.4 cm) a year, Memphis only 5 in (12.7 cm).

UT Institute of Agriculture > Tennessee Climatological Service > Climate Data for Tennessee

Tennessee Geographic Regions



Climate Synopsis for Tennessee

The highly varied topography of Tennessee has a significant impact on the state's climate. The landscape varies generally from west to east, starting with the gently rolling lowlands (200-600' above sea level) in the west, rising to the Highland Rim (600-1000') enclosing the Central Basin, and on up to the Cumberland Plateau (~2000') which trends northeast-southwest across the state in a belt 30-50 miles wide. East of the Plateau is the Great Valley of East Tennessee (elevations ranging from 1500' in the north down to 700' in the south) containing a series of northeast-southwest ridges. The eastern border of the state is dominated by the Great Smoky Mountains, with numerous peaks rising 4000' to 6000' above sea level.

Average annual temperatures across the state range from around 57°F to 60°F (1981-2010). Winter mean temperatures are near 39°F (1981-2010) over most of the state, while summer temperatures average between 74°F and 78°F (1981-2010). Of course, these general patterns are affected by topography: the higher mountain areas tend to have milder summers as well as colder, more blustery winters. The length of the growing season is also linked to topography: most of the state has a growing season between 180 and 220 days, but this stretches to over 235 days in the lowlands around Memphis and drops to near 130 days in the highest mountains to the east.

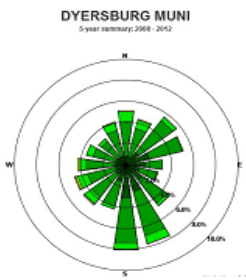
The principal source of moisture for the state is the Gulf of Mexico to the south, which results in a gradual decrease of precipitation from south to north. This gradient is largely obscured, however, by orographic effects. In West Tennessee, annual precipitation amounts range from 46 inches to 54 inches, increasing from the Mississippi bottomlands to the slight hills farther east. In Middle Tennessee, the variation is from around 45 inches in the Central Basin to 50-55 inches in the surrounding Highland Rim. The Cumberland Plateau also averages 50-55 inches per year. In the Great Valley of Eastern Tennessee, annual precipitation rises from a minimum of 40 inches in the north (the driest part of the state due to the rain shadow effect of the Great Smoky Mountains and the Cumberland Plateau) to over 50 inches in the south. The mountainous eastern border of the state is the wettest part, with annual totals of up to 80 inches in the higher, well-exposed peaks.

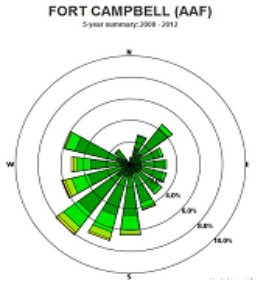
Over most of the state, the greatest precipitation occurs in winter and early spring owing to the more frequent passage of large-scale (frontal) storms over the region. A secondary maximum of precipitation occurs in midsummer in response to shower and thunderstorm activity, especially in July in the mountains of the east. Fall tends to be the dry season for the state, due to the higher frequency of slow-moving high pressure areas during this season. Average annual snowfall ranges from 4-6 inches in the south and west to over 10 inches in the east. Due to the relatively mild winter conditions over most of the state, snow cover rarely persists for more than a few days.

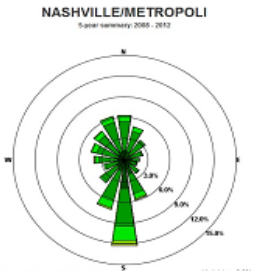
Severe storms are relatively infrequent in the state, being east of the center of tornado activity, south of most blizzard conditions, and too far inland to be often affected by hurricanes. An average of 26 (1991-2011) tornadoes are observed in the state each year, mostly confined to areas west of the Cumberland Plateau. Hailstorms (>1”) at a given location are observed 3 to 6 (2003-2012) times a year, and damaging glaze storms occur in the state every 3 or 4 years (1996-2013). Thunderstorms are frequent in the warm season, and severe thunderstorms with damaging winds are experienced at scattered locations throughout the state each year.

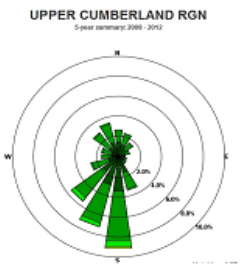
Adapted from: Climatography of the United States, No. 60, National Climatic Data Center
Updated 2/26/2014 by TDAPC using data from NCDC

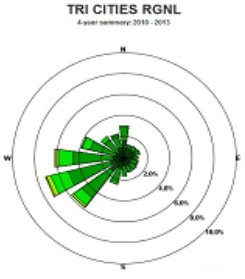
Windrose Data for Tennessee

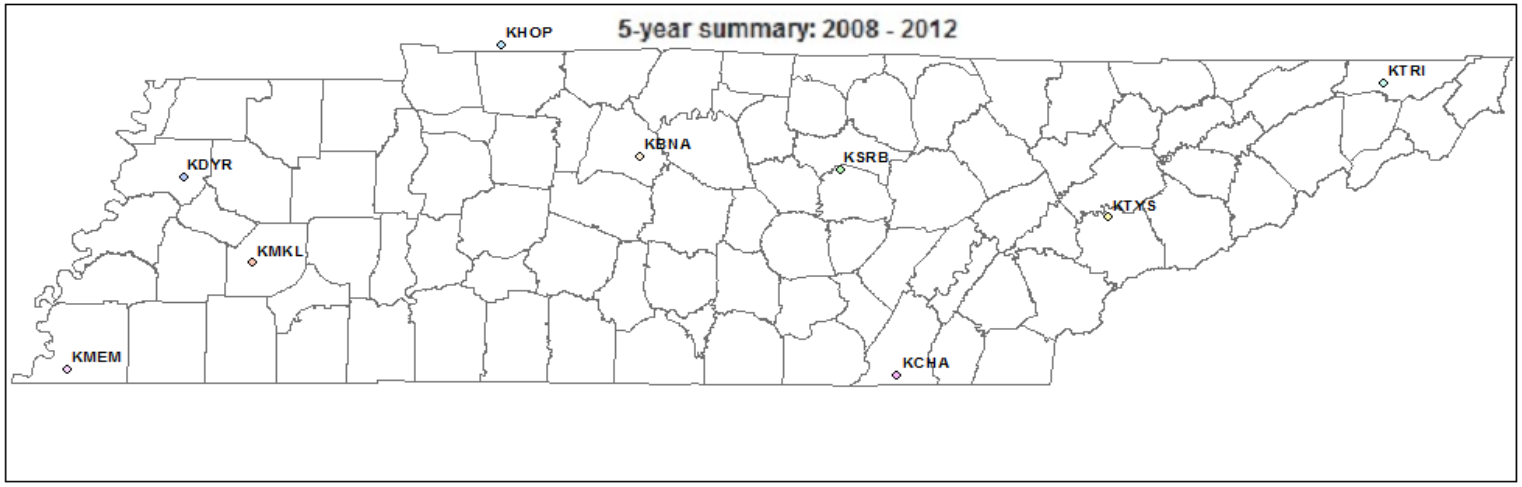


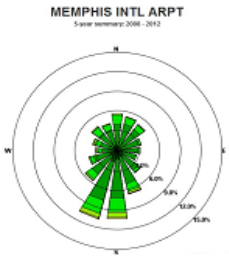


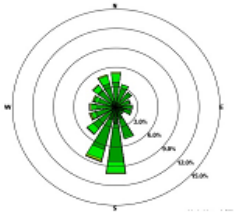


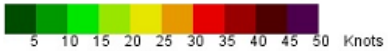




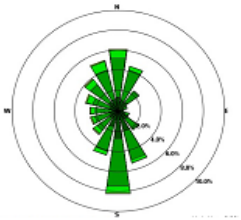


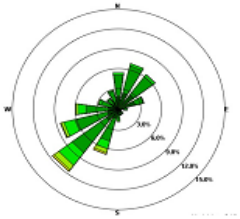






CALL	STATIONNAME
KCHA	CHATTANOOGA/LOVELL
KDYR	DYERSBURG MUNI
KTYS	KNOXVILLE MUNICIPAL
KMKL	MCKELLAR SIPES RGN
KMEM	MEMPHIS INTL ARPT
KBNA	NASHVILLE/METROPOLI
KTRI	TRI CITIES RGNL
KSRB	UPPER CUMBERLAND RGN
KHOP	FORT CAMPBELL (AAF)





Tennessee Metropolitan and Micropolitan Statistical Areas and Population Data

(2010 Census and Estimates to 2013 by US Census Bureau)

Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2013								
			April 1, 2010		Population Estimate (as of July 1)			
CBSA Code	Type	Geographic Area	Census	Estimates Base	2010	2011	2012	2013
16860	Metro Area	Chattanooga, TN-GA Metro Area	528143	528145	529107	533155	537854	541744
17300	Metro Area	Clarksville, TN-KY Metro Area	260625	260610	261827	264456	275081	272579
17420	Metro Area	Cleveland, TN Metro Area	115788	115788	115966	116662	117711	118538
27180	Metro Area	Jackson, TN Metro Area	130011	130009	130047	129769	130315	130645
27740	Metro Area	Johnson City, TN Metro Area	198716	198716	198982	199759	200512	200966
28700	Metro Area	Kingsport-Bristol-Bristol, TN-VA Metro Area	309544	309544	309581	309063	308564	308283
28940	Metro Area	Knoxville, TN Metro Area	837571	837579	838729	842940	848095	852715
32820	Metro Area	Memphis, TN-MS-AR Metro Area	1324829	1324829	1326595	1332853	1340739	1341746
34100	Metro Area	Morristown, TN Metro Area	113951	113958	114072	114607	114908	115197
34980	Metro Area	Nashville-Davidson--Murfreesboro--Franklin, TN Metro Area	1670890	1670900	1675945	1698160	1726759	1757912
11940	Micro Area	Athens, TN Micro Area	52266	52266	52222	52378	52416	52341
18260	Micro Area	Cookeville, TN Micro Area	106042	106050	106287	106461	106714	107117
18900	Micro Area	Crossville, TN Micro Area	56053	56053	56207	56600	57002	57466
19420	Micro Area	Dayton, TN Micro Area	31809	31809	31870	31995	32307	32513
20540	Micro Area	Dyersburg, TN Micro Area	38335	38337	38313	38161	38253	38213
24620	Micro Area	Greeneville, TN Micro Area	68831	68831	68815	68956	68613	68267
29980	Micro Area	Lawrenceburg, TN Micro Area	41869	41869	41992	42049	42117	41990
30280	Micro Area	Lewisburg, TN Micro Area	30617	30617	30674	30917	30967	31130
32280	Micro Area	Martin, TN Micro Area	35021	35021	35027	34962	34726	34450
32660	Micro Area	McMinnville, TN Micro Area	39839	39840	39867	39930	39835	39965
35460	Micro Area	Newport, TN Micro Area	35662	35662	35618	35477	35594	35479
37540	Micro Area	Paris, TN Micro Area	32330	32330	32353	32328	32338	32210
42940	Micro Area	Sevierville, TN Micro Area	89889	89876	90115	91277	92416	93570
43180	Micro Area	Shelbyville, TN Micro Area	45058	45058	45134	45326	45489	45901
46100	Micro Area	Tullahoma-Manchester, TN Micro Area	100210	100209	100130	100224	100288	100787
46460	Micro Area	Union City, TN-KY Micro Area	38620	38620	38643	38438	37901	37516

Note: The estimates are based on the 2010 Census and reflect changes to the April 1, 2010 population due to the Count Question Resolution program and geographic program revisions. See Geographic Terms and Definitions at http://www.census.gov/popest/about/geo/terms.html for a list of the states that are included in each region and division. All geographic boundaries for the 2013 population estimates series except statistical area delineations are as of January 1, 2013. The Office of Management and Budget's statistical area delineations for metropolitan, micropolitan, and combined statistical areas, as well as metropolitan divisions, are those issued by that agency in February 2013 http://www.whitehouse.gov/sites/default/files/omb/bulletins/2013/b13-01.pdf. For population estimates methodology statements, see http://www.census.gov/popest/methodology/index.html.
Suggested Citation: Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2013

Source: U.S. Census Bureau, Population Division

Release Dates: For the United States, regions, divisions, states, and Puerto Rico Commonwealth, December 2013. For counties, municipios, metropolitan statistical areas, micropolitan statistical areas, metropolitan divisions, and combined statistical areas, March 2014.

Tennessee County Population Data Trends

(2010 Census and Estimates to 2013 by US Census Bureau)

Geography	4/1/2010 Census	Estimates Base	Population Estimate (as of July 1)			
			2010	2011	2012	2013
Anderson	75,129	75,126	75,147	75,195	75,401	75,542
Bedford	45,058	45,058	45,134	45,326	45,489	45,901
Benton	16,489	16,489	16,501	16,411	16,362	16,290
Bledsoe	12,876	12,869	12,865	12,843	12,792	12,841
Blount	123,010	123,016	123,151	123,631	124,042	125,099
Bradley	98,963	98,963	99,139	99,910	101,094	101,848
Campbell	40,716	40,716	40,706	40,585	40,444	40,238
Cannon	13,801	13,801	13,793	13,732	13,829	13,775
Carroll	28,522	28,505	28,476	28,584	28,579	28,513
Carter	57,424	57,424	57,381	57,492	57,341	57,338
Cheatham	39,105	39,107	39,117	39,022	39,266	39,492
Chester	17,131	17,131	17,167	17,213	17,190	17,321
Claiborne	32,213	32,213	32,229	32,055	31,673	31,560
Clay	7,861	7,860	7,847	7,815	7,813	7,774
Cocke	35,662	35,662	35,618	35,477	35,594	35,479
Coffee	52,796	52,795	52,790	52,936	53,161	53,357
Crockett	14,586	14,584	14,570	14,530	14,614	14,591
Cumberland	56,053	56,053	56,207	56,600	57,002	57,466
Davidson	626,681	626,684	627,957	635,606	648,801	658,602
Decatur	11,757	11,750	11,722	11,674	11,640	11,661
DeKalb	18,723	18,723	18,729	18,822	18,941	19,164
Dickson	49,666	49,654	49,711	50,009	50,265	50,266
Dyer	38,335	38,337	38,313	38,161	38,253	38,213
Fayette	38,413	38,413	38,398	38,475	38,561	38,690
Fentress	17,959	17,959	17,916	17,999	17,915	17,909
Franklin	41,052	41,052	40,990	40,876	40,788	41,129
Gibson	49,683	49,683	49,725	49,892	49,672	49,457
Giles	29,485	29,485	29,398	29,305	28,925	28,746
Grainger	22,657	22,652	22,703	22,699	22,648	22,702
Greene	68,831	68,831	68,815	68,956	68,613	68,267
Grundy	13,703	13,708	13,722	13,646	13,640	13,498
Hamblen	62,544	62,544	62,612	62,841	62,748	63,074
Hamilton	336,463	336,465	337,207	340,748	345,580	348,673
Hancock	6,819	6,819	6,821	6,703	6,716	6,679
Hardeman	27,253	27,253	27,167	26,849	26,549	26,306
Hardin	26,026	26,026	26,055	25,908	26,015	26,034
Hawkins	56,833	56,833	56,871	56,659	56,607	56,800
Haywood	18,787	18,787	18,764	18,539	18,270	18,224
Henderson	27,769	27,793	27,791	28,034	28,050	28,048
Henry	32,330	32,330	32,353	32,328	32,338	32,210
Hickman	24,690	24,699	24,671	24,390	24,216	24,267
Houston	8,426	8,426	8,451	8,337	8,422	8,292
Humphreys	18,538	18,538	18,562	18,400	18,278	18,243
Jackson	11,638	11,638	11,651	11,453	11,473	11,517
Jefferson	51,407	51,414	51,460	51,766	52,160	52,123
Johnson	18,244	18,244	18,284	18,221	18,107	17,977
Knox	432,226	432,234	433,041	436,646	441,132	444,622
Lake	7,832	7,832	7,819	7,782	7,729	7,731

Geography	4/1/2010 Census	Estimates Base	Population Estimate (as of July 1)			
			2010	2011	2012	2013
Lauderdale	27,815	27,815	27,769	27,765	27,780	27,795
Lawrence	41,869	41,869	41,992	42,049	42,117	41,990
Lewis	12,161	12,161	12,153	12,148	11,905	11,961
Lincoln	33,361	33,361	33,413	33,397	33,472	33,633
Loudon	48,556	48,559	48,741	49,069	49,742	50,448
McMinn	52,266	52,266	52,222	52,378	52,416	52,341
McNairy	26,075	26,075	26,051	26,034	26,167	26,140
Macon	22,248	22,248	22,265	22,472	22,531	22,701
Madison	98,294	98,294	98,310	98,026	98,511	98,733
Marion	28,237	28,232	28,233	28,080	28,241	28,374
Marshall	30,617	30,617	30,674	30,917	30,967	31,130
Maury	80,956	80,959	81,185	81,416	82,059	83,761
Meigs	11,753	11,753	11,778	11,657	11,691	11,649
Monroe	44,519	44,517	44,603	44,924	45,152	45,265
Montgomery	172,331	172,331	173,326	176,687	185,201	184,119
Moore	6,362	6,362	6,350	6,412	6,339	6,301
Morgan	21,987	21,987	21,991	22,042	22,039	21,915
Obion	31,807	31,807	31,818	31,719	31,373	31,131
Overton	22,083	22,084	22,089	22,172	22,219	22,075
Perry	7,915	7,915	7,921	7,828	7,838	7,869
Pickett	5,077	5,077	5,067	5,134	5,081	5,090
Polk	16,825	16,825	16,827	16,752	16,617	16,690
Putnam	72,321	72,328	72,547	72,836	73,022	73,525
Rhea	31,809	31,809	31,870	31,995	32,307	32,513
Roane	54,181	54,180	54,129	53,804	53,479	53,047
Robertson	66,283	66,293	66,435	66,726	66,778	67,383
Rutherford	262,604	262,604	263,796	269,026	274,104	281,029
Scott	22,228	22,228	22,240	22,143	22,178	22,015
Sequatchie	14,112	14,119	14,133	14,292	14,424	14,681
Sevier	89,889	89,876	90,115	91,277	92,416	93,570
Shelby	927,644	927,640	928,808	933,902	939,877	939,465
Smith	19,166	19,166	19,121	19,129	19,126	19,074
Stewart	13,324	13,324	13,352	13,245	13,353	13,362
Sullivan	156,823	156,823	156,856	156,938	156,655	156,595
Sumner	160,645	160,645	161,301	163,685	165,927	168,888
Tipton	61,081	61,081	61,122	61,289	61,629	61,586
Trousdale	7,870	7,870	7,874	7,832	7,802	7,828
Unicoi	18,313	18,313	18,291	18,284	18,247	18,082
Union	19,109	19,109	19,120	19,269	19,168	19,102
Van Buren	5,548	5,548	5,550	5,512	5,626	5,583
Warren	39,839	39,840	39,867	39,930	39,835	39,965
Washington	122,979	122,979	123,310	123,983	124,924	125,546
Wayne	17,021	17,021	16,987	17,009	16,999	16,939
Weakley	35,021	35,021	35,027	34,962	34,726	34,450
White	25,841	25,834	25,818	26,019	26,061	26,244
Williamson	183,182	183,180	184,090	188,357	192,997	198,901
Wilson	113,993	113,990	114,629	116,758	119,058	121,945

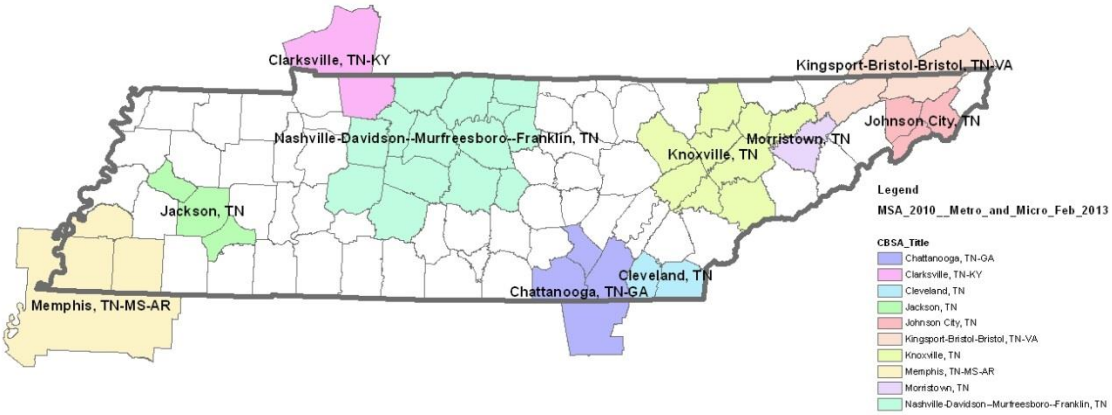
Note: The estimates are based on the 2010 Census and reflect changes to the April 1, 2010 population due to the Count Question Resolution program and geographic program revisions. See Geographic Terms and Definitions at http://www.census.gov/popest/about/geo/terms.html for a list of the states that are included in each region and division. All geographic boundaries for the 2013 population estimates series except statistical area delineations are as of January 1, 2013. The Office of Management and Budget's statistical area delineations for metropolitan, micropolitan, and combined statistical areas, as well as metropolitan divisions, are those issued by that agency in February 2013 http://www.whitehouse.gov/sites/default/files/omb/bulletins/2013/b13-01.pdf. For population estimates methodology statements, see http://www.census.gov/popest/methodology/index.html.

Suggested Citation: Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2013

Source: U.S. Census Bureau, Population Division

Release Dates: For the United States, regions, divisions, states, and Puerto Rico Commonwealth, December 2013. For counties, municipios, metropolitan statistical areas, micropolitan statistical areas, metropolitan divisions, and combined statistical areas, March 2014.

2010 Metropolitan/Micropolitan Areas of Tennessee



TAPC Monitoring Equipment Evaluation 2014 AMP

Equipment installed in the field. Equipment evaluation conducted February 2014 to March 2014 by TAPC staff.

Site	Monitor		Chart Recorder		Data Logger		Calibrator		Shelter	
	Model	Condition	Model	Condition	Model	Condition	Model	Condition	Model	Condition
Blountville	Teledyne 400e	Good	L&N	Good	ESC8832	Good	Dasibi 1008PC	Good	T&R 8X20	Good
Blountville	ML8810 (spare)	Good			ESC8832	Good	Dasibi (spare)			
Kingsport	Teledyne 400e	Good	L&N	Good	ESC8832	Good	Dasibi 1008PC	Good	x	Good
Kingsport	ML8810 (spare)				ESC8832	Good				
Cookeville	R&P 2025	Good					Streamline Pro	Good		
Crab Orchard	TEOM1400a	Good			ESC8832	Good	Streamline Pro	Good	Ekto 432SP	
Crab Orchard					ESC8832	Good (spare)				
Freel's Bend	API 400A	Good	E&A	Good	ESC8832	Good	Dasibi 1008PC	Good	820	Good
Freel's Bend					ESC8832	Good (spare)				
Freel's Bend	Teledyne M100E	New	E&A				Teledyne T700	New		
New Market	API 400E	Good	L&N	Good	ESC8832	Good	Dasibi 1008PC	Good	820	Good
New Market					ESC8832	Good (spare)				
Loudon Pope	R&P 2025	Good					Streamline Pro			
Loudon Pope	ATEC2200	Poor			ESC8832	Good				Good
Loudon Pope	Vasillia	Good								

Site	Monitor		Chart Recorder		Data Logger		Calibrator		Shelter	
	Model	Condition	Model	Condition	Model	Condition	Model	Condition	Model	Condition
Loudon Mid Sch at Pope (O_3)	Teledyne 400e	Good	EA	Good	ESC8832	Good	Dasibi 1008PC	Good	O D I, Model 818	Good
					ESC 8832	Good (spare)				
Kingsport	R&P 2025	Good					Streamline Pro	Good		
Kingsport	TEOM1400a	Good			ESC8832	Good	ESC 8832(spare)			
Bristol	Hivol	Good								
Bristol	Hivol	Good					Kit #9	Good		
Clarksville	TEOM1400a	Good			ESC 8816	Good			432SP	Good
Clarksville	Thermo 2025	Good								
Centerhill	MIC AUC	Good			ESC 8816	Good				
Centerhill	Climatronics 101156-GO	Good								
Centerhill (Old Copperhill)									x	Good
Cedars of Leb	TEI49C	Good	E&A	Good	ESC8832	Good	Dasibi 1008PC	Good	Trailer	Good
Cedars of Leb	OA3502R	Good			ESC8832	Good				
Cedars of Leb	OA3502R	Good								
Dyersburg	R&P 2025	Good								
Dyersburg	TEOM 1400a	Good			ESC 8816				TEOM 432SP	
Hendersonville	TEI49C	Good	Westronics 4000	Good	ESC8832	Good	Dasibi 1008PC	Good	Trailer	Good
Hendersonville					ESC8832	Good (spare)				
Hendersonville	R&P 2025	Good								
Hendersonville	R&P 2025	Good								
Hendersonville	TEOM1400a	Good								

Site	Monitor		Chart Recorder		Data Logger		Calibrator		Shelter	
	Model	Condition	Model	Condition	Model	Condition	Model	Condition	Model	Condition
Jackson	R&P 2025	Good								
Jackson	R&P 2025	Good								
Jackson	TEOM1400a	Good			ESC 8816	Good			432SP	Good
Maryville	R&P 2025	Good								
Maryville	TEOM1400a	Good			ESC 8816	Good	Streamline Pro	Good	TEOM 432SP	Good
Kingston TVA	Tisch Environ	Good								
Fairview	TEI49C	Good	L&N	Good	ESC8832	Good	Dasibi 1008PC	Good	T&R Custom	Good
Fairview					ESC8832	Good (spare)				
Columbia	R&P 2025	Good					Streamline Pro			
Lawrence	R&P 2025	Good								
Lawrence	URG3000N	Good								
Lawrence	MetOne SASS	Good								
Lawrence	TEOM1400a	Good			ESC 8816	Good	Dasibi 1008PC	Good	432SP	Good
Lawrence	x		L11013	Good						
Athens	R&P 2025	Good					Streamline Pro	Good		
Athens	TEOM1400a	Good			ESC8832	Good			Exto 4325P	Good
Luttrell	TEOM1400a	Good			ESC8832	Good	Streamline Pro	Good	x	Good
Harriman	R&P 2025	Good								
Harriman	TEOM1400a	Good			ESC 8816	Good			x	Good
Hatchie Refuge									x	Good
Benton Co									x	Good
NJ State Park									x	Good

Equipment in storage. Equipment evaluation conducted February 2014 to March 2014 by TAPC staff.

Site	Monitor		Chart Recorder		Data Logger		Calibrator		Shelter	
	Model	Condition	Model	Condition	Model	Condition	Model	Condition	Model	Condition
NFO Storage and QA	Climatronics Sonic	Good			CS CR200	Good				
NFO Storage and QA			Westronics 4010	Poor	ESC8816	Poor	Dasisbi 1008PC			
NFO Storage and QA	TEOM 1400a	Good	Speedomax	Poor	ESC8816	Poor	Dasisbi 1008PC			
NFO Storage and QA	TEOM 1400a	Good	Speedomax	Poor	ESC8816	Poor	Dasisbi 1008PC			
NFO Storage and QA	TEOM 1400a	Good	Westronics 4010	Poor	ESC8816	Poor	Dasisbi 1008PC			
NFO Storage and QA	TEOM 1400a	Good	Westronics 4010	Poor	ESC8816	Poor	Dasisbi 1008PC			
NFO Storage and QA	TEOM 1400a	Good	Westronics 4010	Poor	ESC8816	Good	Dasisbi 1008PC			
NFO Storage and QA	TEOM 1400a	Good		Poor	ESC8832	Good				
NFO Storage and QA	MetOne SASS	New	Speedomax	Poor	ESC8832	Good	Teledyne 703E	Good		
NFO Storage and QA	MetOne SASS	Poor			ESC8832	Good	Teledyne 703E	Good		
NFO Storage and QA	MetOne SASS	Good			ESC8832	Good	Teledyne 703E	Good		
NFO Storage and QA	MetOne SASS	Good			ESC8816	Poor				
NFO Storage and QA	MetOne SASS	Good			ESC8816	Good	Teledyne T700	Good		
NFO Storage and QA	URG3000N	Good			ESC8816	Good				
NFO Storage and QA	R&P 2025	Good			ESC8816	Good	Teledyne 703E (referen)	Good		
NFO Storage and QA	R&P 2025	Good			ESC8816	Good				
NFO Storage and QA	R&P 2025				ESC8816	Good	Environics 100	Poor		

Site	Monitor		Chart Recorder		Data Logger		Calibrator		Shelter	
	Model	Condition	Model	Condition	Model	Condition	Model	Condition	Model	Condition
NFO Storage and QA	R&P 2025	Good			ESC8816	Good	TEI 146	Poor		
NFO Storage and QA	R&P 2025				ESC8816	Good				
NFO Storage and QA	R&P 2025	Good					GMW 76-100	Good		
NFO Storage and QA	R&P 2025	Good					GMW 76-100	Good		
NFO Storage and QA	R&P 2025	Good					GMW 76-100	Good		
NFO Storage and QA	R&P 2025	Good					GMW 76-100	Good		
NFO Storage and QA	R&P 2025	Good					GMW 76-100	Good		
NFO Storage and QA	R&P 2025	Poor					GMW 76-100	Good		
NFO Storage and QA	R&P 2025	Poor					GMW 76-100	Good		
NFO Storage and QA	R&P 2025	Poor					GMW 2000	Good		
NFO Storage and QA	R&P 2025	Poor					Streamline Pro	Good		
NFO Storage and QA	R&P 2025	Poor					Streamline Pro	Good		
NFO Storage and QA	TEI49C						Streamline Pro	Good		
NFO Storage and QA	TEI49C	Good					Streamline Pro	Good		
NFO Storage and QA	TEI 49C	Good					Streamline Pro	Good		
NFO Storage and QA	TEI 49C	Good					Streamline Pro	Good		
NFO Storage and QA							Streamline Pro	Good		
NFO Storage and QA	TEI 49i	Good					Tetracal	Good		

Site	Monitor		Chart Recorder		Data Logger		Calibrator		Shelter	
	Model	Condition	Model	Condition	Model	Condition	Model	Condition	Model	Condition
NFO Storage and QA	TEI 49i	Good					Tetracal	Good		
NFO Storage and QA	TEI 49i	Poor								
NFO Storage and QA	API 400A	Good					Streamline FTS	Poor		
NFO Storage and QA	API 400A	Good					Streamline FTS	Poor		
NFO Storage and QA	API 400A	Good					Streamline FTS	Poor		
NFO Storage and QA	API 400A	Poor					Streamline FTS	Poor		
NFO Storage and QA	API 400A	Good					Streamline FTS	Poor		
NFO Storage and QA	API 400A	Poor					Streamline FTS	Poor		
NFO Storage and QA	API 400A	Poor					Streamline FTS	Poor		
NFO Storage and QA	ML 8810	Poor					Streamline FTS	Poor		
NFO Storage and QA	ML 8810	Poor								
NFO Storage and QA	ML8810	Poor					Roots meter 5M125TC	Good		
NFO Storage and QA	ML8810	Poor					BGI Orifice	Good		
NFO Storage and QA							BGI Orifice	Good		
NFO Storage and QA	Teledyne M100E	Good					BGI Orifice	Good		
NFO Storage and QA	ML8850 SO2	Poor					Orifice	Good		
NFO Storage and QA	ML8850 SO2	Poor								
NFO Storage and QA	ML8850 SO2	Poor								

Site	Monitor		Chart Recorder		Data Logger		Calibrator		Shelter	
	Model	Condition	Model	Condition	Model	Condition	Model	Condition	Model	Condition
NFO Storage and QA	ML8850 SO2	Poor					Buck M-5	Good		
NFO Storage and QA							BIOS DryCal DC-1B Rev 2.06F	Poor		
NFO Storage and QA	Tisch Housing	Good								
NFO Storage and QA	Tisch Housing	Good								
NFO Storage and QA	Tisch Housing	Good					Environics Calibrator	Poor		
NFO Storage and QA	Tisch Housing	Good					Environics Calibrator	Poor		
NFO Storage and QA	GMW Housing	Good					Environics Calibrator	Poor		
NFO Storage and QA	GMW Housing	Good					Dasibi Calibrator	Poor		
NFO Storage and QA	GMW Housing	Good					Bios Drycal flow meter	Poor		
NFO Storage and QA	GMW Housing	Good					Dasibi Calibrator	Poor		
NFO Storage and QA	Anderson 2000	Good					Dasibi Calibrator	Poor		
NFO Storage and QA	Graseby	Good					Dasibi Calibrator	Poor		
NFO Storage and QA	Graseby	Good					Roots Meter	Good		
NFO Storage and QA	Aircheck 224-PCXR7	Poor					Sierra Cal Bench	Good		
NFO Storage and QA	Aircheck 224-PCXR7	Poor					Teledyne 703E	Good		Good
NFO Storage and QA	Aircheck 224-PCXR7	Poor					API (ref photometer)	Good		Good
NFO Storage and QA									shelter (from EV)	
NFO Storage and QA									shelter (from CT)	

The Purpose of Tennessee's Ambient Air Monitoring Network

There are several criteria used to determine the need for ambient air quality monitoring. Some of the criteria are as follows:

EPA National Ambient Air Quality Standards (NAAQS) Criteria pollutant monitoring network requirements for the NCore (National Core) formally NAMS (National Air Monitoring Site), SLAMS (State and Local Air Monitoring Site) and SPM (Special Purpose Monitoring) monitoring networks.

The Code of Federal Regulations (CFR) sets forth as regulations the requirements for air quality monitoring to be implemented by the states and EPA. These requirements are primarily organized around population and emission density in a given area with the number of required monitors and the distribution of the monitors within the networks specified by these regulations. Additionally 40CFR, Part 58, Appendix D specifies criteria that must be followed in designing the NCore and SLAMS networks. The EPA must approve design and/or modifications to these networks.

Additional federal regulations also specify requirements for Prevention of Significant Deterioration (PSD) monitoring networks. This monitoring is addressed at new facilities to be constructed in a given area or around certain types of existing industry such as large coal fired power plants or facilities that release toxic heavy metals such as lead to the environment.

Air quality monitoring is required to be conducted to alert citizens in given areas to elevated levels of air pollutants in cities or communities of designated population levels that are required to provide Air Quality Index (AQI) reports to the general public.

Air quality monitoring is conducted to address the need for background air quality data and to provide needed air quality data that is used in industrial recruitment efforts with the monitoring areas periodically rotated to new locations throughout the state on a routine basis.

Special air quality monitoring studies are conducted based on identified needs for monitoring data in a given area.

Citizen complaints and enforcement investigations related to air quality are other reasons for air quality monitoring usually in or around a specific area related to the complaint or investigation.

Requests from citizens for special air monitoring studies are also a reason for air monitoring activities.

The federal regulations also specify the frequency, method, location requirements, equipment, quality assurance procedures and reporting of data collected from the ambient air monitoring networks.

1. Ozone monitoring network requirements

40 CFR 58 Subpart G, Appendix D to Part 58 Revised as of July 1, 2013

TABLE D–2 OF APPENDIX D TO PART 58 SLAMS MINIMUM O_3 MONITORING REQUIREMENTS

MSA population[1, 2]	Most recent 3-year design value concentrations ≥85% of any O_3 NAAQS[3]	Most recent 3-year design value concentrations <85% of any O_3 NAAQS[3,4]
>10 million	4	2
4–10 million	3	1
350,000–<4 million	2	1
50,000–<350,000 [5]	1	0

1. Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).
2. Population based on latest available census figures.
3. The ozone (O_3) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.
4. These minimum monitoring requirements apply in the absence of a design value.
5. Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

2. CO monitoring network requirements

40 CFR 58 Subpart G, Appendix D to Part 58 Revised as of July 1, 2013

4.2 Carbon Monoxide (CO) Design Criteria.

4.2.1 General Requirements.

(a) Except as provided in subsection (b), one CO monitor is required to operate collocated with one required near-road NO_2 monitor, as required in Section 4.3.2 of this part, in CBSAs having a population of 1,000,000 or more persons. If a CBSA has more than one required near-road NO2 monitor, only one CO monitor is required to be collocated with a near-road NO_2 monitor within that CBSA.

(b) If a state provides quantitative evidence demonstrating that peak ambient CO concentrations would occur in a near-road location which meets microscale siting criteria in Appendix E of this part but is not a near-road NO_2 monitoring site, then the EPA Regional Administrator may approve a request by a state to use such an alternate near-road location for a CO monitor in place of collocating a monitor at near-road NO_2 monitoring site.

4.2.2 Regional Administrator Required Monitoring.

(a) The Regional Administrators, in collaboration with states, may require additional CO monitors above the minimum number of monitors required in 4.2.1 of this part, where the minimum monitoring requirements are not sufficient to meet monitoring objectives. The Regional Administrator may require, at his/her discretion, additional monitors in situations where data or other information suggest that CO concentrations may be approaching or exceeding the NAAQS.

3. NO_2 monitoring network requirements

40 CFR 58 Subpart G, Appendix D to Part 58 Revised as of July 1, 2013

4.3.2 Requirement for Near-road NO_2 Monitors

(a) Within the NO_2 network, there must be one microscale near-road NO_2 monitoring station in each CBSA with a population of 500,000 or more persons to monitor a location of expected maximum hourly concentrations sited near a major road with high AADT counts as specified in paragraph 4.3.2(a)(1) of this appendix. An additional near-road NO_2 monitoring station is required for any CBSA with a population of 2,500,000 persons or more, or in any CBSA with a population of 500,000 or more persons that has one or more roadway segments with 250,000 or greater AADT counts to monitor a

second location of expected maximum hourly concentrations. CBSA populations shall be based on the latest available census figures.

(1) The near-road NO_2 monitoring stations shall be selected by ranking all road segments within a CBSA by AADT and then identifying a location or locations adjacent to those highest ranked road segments, considering fleet mix, roadway design, congestion patterns, terrain, and meteorology, where maximum hourly NO_2 concentrations are expected to occur and siting criteria can be met in accordance with appendix E of this part. Where a State or local air monitoring agency identifies multiple acceptable candidate sites where maximum hourly NO_2 concentrations are expected to occur, the monitoring agency shall consider the potential for population exposure in the criteria utilized to select the final site location. Where one CBSA is required to have two near-road NO_2 monitoring stations, the sites shall be differentiated from each other by one or more of the following factors: fleet mix; congestion patterns; terrain; geographic area within the CBSA; or different route, interstate, or freeway designation.

(b) Measurements at required near-road NO_2 monitor sites utilizing chemiluminescence FRMs must include at a minimum: NO, NO_2, and NO_X.

Originally, near –road monitoring sites were to be established and in operation by January 1, 2013. However, the lack of funding has delayed the implementation of near-road monitoring requirements. As a result EPA is following a build and hold plan in establishing the near-road monitoring network. The Memphis and Nashville CBSA's are listed in the second phase of the build and hold plan and have received funding during fiscal year 2013 to establish a single near-road site in each CBSA. The Knoxville and Chattanooga near-road sites may not be funded by EPA until sometime in the future.

4.3.3 Requirement for Area-wide NO_2 Monitoring

(a) Within the NO_2 network, there must be one monitoring station in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected highest NO_2 concentrations representing the neighborhood or larger spatial scales. PAMS sites collecting NO_2 data that are situated in an area of expected high NO_2 concentrations at the neighborhood or larger spatial scale may be used to satisfy this minimum monitoring requirement when the NO_2 monitor is operated year round. Emission inventories and meteorological analysis should be used to identify the appropriate locations within a CBSA for locating required area-wide NO_2 monitoring stations. CBSA populations shall be based on the latest available census figures.

An area-wide NO_2 monitoring site is required in each of the Memphis and Nashville CBSA's. An area-wide NO_2 monitoring site is currently in operation in the Nashville CBSA (Site 47-037-0011). Currently the State of Arkansas operates an NO_2 monitor at its Marion site (AQS 05-035-0005) which is in the Memphis CBSA. Consideration should be given to approving this site to meet the Community-Wide NO_2 monitoring requirement in the Memphis CBSA.

4. SO_2 monitoring network requirements

40 CFR 58 Subpart G, Appendix D to Part 58 Revised as of July 1, 2013

4.4 Sulfur Dioxide (SO_2) Design Criteria.

4.4.1 General Requirements. (a) State and, where appropriate, local agencies must operate a minimum number of required SO_2 monitoring sites as described below.

4.4.2 Requirement for Monitoring by the Population Weighted Emissions Index.

(a) The population weighted emissions index (PWEI) shall be calculated by States for each core based statistical area (CBSA) they contain or share with another State or States for use in the implementation of or adjustment to the SO_2 monitoring network. The PWEI shall be calculated by multiplying the population of each CBSA, using the most current census data or estimates, and the total amount of SO_2 in tons per year emitted within the CBSA area, using an aggregate of the most recent county level emissions data available in the National Emissions Inventory for each county in

each CBSA. The resulting product shall be divided by one million, providing a PWEI value, the units of which are million persons-tons per year. For any CBSA with a calculated PWEI value equal to or greater than 1,000,000, a minimum of three SO_2 monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 100,000, but less than 1,000,000, a minimum of two SO_2 monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 5,000, but less than 100,000, a minimum of one SO_2 monitor is required within that CBSA.

(1) The SO_2 monitoring site(s) required as a result of the calculated PWEI in each CBSA shall satisfy minimum monitoring requirements if the monitor is sited within the boundaries of the parent CBSA and is one of the following site types (as defined in section 1.1.1 of this appendix): population exposure, highest concentration, source impacts, general background, or regional transport. SO_2 monitors at NCore stations may satisfy minimum monitoring requirements if that monitor is located within a CBSA with minimally required monitors under this part. Any monitor that is sited outside of a CBSA with minimum monitoring requirements to assess the highest concentration resulting from the impact of significant sources or source categories existing within that CBSA shall be allowed to count towards minimum monitoring requirements for that CBSA.

PWEI calculations were performed for CBSA's in Tennessee based on emissions and populations listed in the following table. Based on these calculations ambient sulfur dioxide monitors are required as listed in the table.

CBSA ID	CBSA Name		2008 NEI v1.5 so2 (tpy)	Population (2010)	PWEI in Million persons-tpy	Required Monitors	Population (2009) Est.	PWEI in Million persons-tpy	Required Monitors
34980	Nashville-Davidson--Murfreesboro--Franklin	TN	41,476	1,589,934	65,944	1	1,582,264	65,626	1
28940	Knoxville	TN	39,833	698,030	27,805	1	699,247	27,853	1
32820	Memphis	TN-MS-AR	17,651	1,316,100	23,231	1	1,304,926	23,034	1
28700	Kingsport-Bristol-Bristol	TN-VA	56,754	309,544	17,568	1	305,629	17,346	1
17300	Clarksville	TN-KY	16,820	273,949	4,608	0	268,546	4,517	0
25340	Harriman	TN	50,674	54,181	2,746	0	53,508	2,711	0
16860	Chattanooga	TN-GA	2,178	528,143	1,150	0	524,303	1,142	0
27740	Johnson City	TN	2,976	198,716	591	0	197,381	587	0
34100	Morristow n	TN	4,004	136,608	547	0	137,612	551	0
27180	Jackson	TN	2,894	115,425	334	0	113,629	329	0
17420	Cleveland	TN	2,692	115,788	312	0	113,358	305	0

Population Weighted Emissions Index (PWEI) Calcuations - April 2012 - Using 2010 Census Data & 2008 NEI v1.5 (no fires included)

4.4.3 Regional Administrator Required Monitoring.

(a) The Regional Administrator may require additional SO_2 monitoring stations above the minimum number of monitors required in 4.4.2 of this part, where the minimum monitoring requirements are not sufficient to meet monitoring objectives. The Regional Administrator may require, at his/her discretion, additional monitors in situations where an area has the potential to have concentrations that may violate or contribute to the violation of the NAAQS, in areas impacted by sources which are not conducive to modeling, or in locations with susceptible and vulnerable populations, which are not monitored under the minimum monitoring provisions described above. The Regional Administrator and the responsible State or local air monitoring agency shall work together to design and/or maintain the most appropriate SO_2 network to provide sufficient data to meet monitoring objectives

4.4.5 NCore Monitoring.

(a) SO_2 measurement are included within the NCore multi-pollutant site requirements as described in paragraph (3)(b) of this appendix. NCore based SO_2 measurements are primarily used to characterize SO_2 trends and assist in understanding SO_2 transport across representative areas in urban or rural locations and are also used for comparison with the SO_2 NAAQS. SO_2 monitors at NCore sites that exist in CBSAs with minimum monitoring requirements per section 4.4.2 above shall be allowed to count towards those minimum monitoring requirements.

5. Lead monitoring network requirements

40 CFR 58 Subpart G, Appendix D to Part 58 Revised as of July 1, 2013

4.5 Lead (Pb) Design Criteria.

(a) State and, where appropriate, local agencies are required to conduct ambient air Pb monitoring near Pb sources which are expected to or have been shown to contribute to a maximum Pb concentration in ambient air in excess of the NAAQS, taking into account the logistics and potential for population exposure. At a minimum, there must be one source-oriented SLAMS site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year and from each airport which emits 1.0 or more tons per year based on either the most recent National Emission Inventory (*http://www.epa.gov/ttn/chief/eiinformation.html*) or other scientifically justifiable methods and data (such as improved emissions factors or site-specific data) taking into account logistics and the potential for population exposure.

(i) One monitor may be used to meet the requirement in paragraph 4.5(a) for all sources involved when the location of the maximum Pb concentration due to one Pb source is expected to also be impacted by Pb emissions from a nearby source (or multiple sources). This monitor must be sited, taking into account logistics and the potential for population exposure, where the Pb concentration from all sources combined is expected to be at its maximum.

(ii) The Regional Administrator may waive the requirement in paragraph 4.5(a) for monitoring near Pb sources if the State or, where appropriate, local agency can demonstrate the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50% of the NAAQS (based on historical monitoring data, modeling, or other means). The waiver must be renewed once every 5 years as part of the network assessment required under 58.10(d).

(b) State and, where appropriate, local agencies are required to conduct non-source oriented Pb monitoring at each NCore site required under paragraph 3 of this appendix in a CBSA with a population of 500,000 or more.

6. PM_{10} monitoring network requirements

40 CFR 58 Subpart G, Appendix D to Part 58 Revised as of July 1, 2013

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

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

1 Selection of urban areas and actual numbers of stations per area within the ranges shown in this table will be jointly determined by EPA and the State Agency.
2 High concentration areas are those for which ambient PM_{10} data show ambient concentrations exceeding the PM_{10} NAAQS by 20 percent or more.
3 Medium concentration areas are those for which ambient PM_{10} data show ambient concentrations exceeding 80 percent of the PM_{10} NAAQS.
4 Low concentration areas are those for which ambient PM_{10} data show ambient concentrations less than 80 percent of the PM_{10} NAAQS.
5 These minimum monitoring requirements apply in the absence of a design value.

7. $PM_{2.5}$ monitoring network requirements

40 CFR 58 Subpart G, Appendix D to Part 58 Revised as of July 1, 2013

TABLE D–5 OF APPENDIX D TO PART 58 $PM_{2.5}$ MINIMUM MONITORING REQUIREMENTS

MSA population[1, 2]	Most recent 3-year design value concentrations ≥85% of any $PM_{2.5}$ NAAQS[3]	Most recent 3-year design value concentrations <85% of any $PM_{2.5}$ NAAQS[3,4]	Continuous $PM_{2.5}$ Monitoring	$PM_{2.5}$ Background and Transport Sites	$PM_{2.5}$ Chemical Speciation Sites
>1,000,000	3	2	1 - 2	One site each per state for background and transport.	Existing STN Required Site(s)
500,000–1,000,000	2	1	1		
50,000–<500,000 [5]	1	0	0 - 1		

1 Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).
2 Population based on latest available census figures.
3 The $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.
4 These minimum monitoring requirements apply in the absence of a design value.
5 Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

4.7.2 Requirement for Continuous $PM_{2.5}$ Monitoring. The State, or where appropriate, local agencies must operate continuous $PM_{2.5}$ analyzers equal to at least one-half (round up) the minimum required sites listed in Table D-5 of this appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM/ARM monitors, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor in which case no collocation requirement applies. State and local air monitoring agencies must use methodologies and quality assurance/quality control (QA/QC) procedures approved by the EPA Regional Administrator for these required continuous analyzers.

4.7.3 Requirement for $PM_{2.5}$ Background and Transport Sites. Each State shall install and operate at least one $PM_{2.5}$ site to monitor for regional background and at least one $PM_{2.5}$ site to monitor regional transport.

4.7.4 $PM_{2.5}$ Chemical Speciation Site Requirements. Each State shall continue to conduct chemical speciation monitoring and analyses at sites designated to be part of the $PM_{2.5}$ Speciation Trends Network (STN). The selection and modification of these STN sites must be approved by the Administrator.

8. Index reporting requirements

40 CFR 58 Subpart F, 58.50 Revised as of July 1, 2013

58.50 Index reporting.

(a) The State or where applicable, local agency shall report to the general public on a daily basis through prominent notice an air quality index that complies with the requirements of appendix G to this part.

(b) Reporting is required for all individual MSA with a population exceeding 350,000.

(c) The population of a MSA for purposes of index reporting is the most recent decennial U.S. census population.

Geographic area	2010 Census	2013 Census Est.	Required to Have AQI Reporting	Daily AQI/Air Quality Forecasts Provided
Chattanooga, TN-GA	528143	541744	Yes	Yes
Clarksville, TN-KY	260625	272579	No	Yes
Cleveland, TN	115788	118538	No	No
Jackson, TN	130011	130645	No	No

Geographic area	2010 Census	2013 Census Est.	Required to Have AQI Reporting	Daily AQI/Air Quality Forecasts Provided
Johnson City, TN	198716	200966	No	Yes Based on the combined population of both areas.
Kingsport-Bristol-Bristol, TN-VA	309544	308283	No	
Knoxville, TN	837571	852715	Yes	Yes In addition, the GSMNP has a separate AQI/Forecast provided.
Memphis, TN-MS-AR	1324829	1341746	Yes	Yes
Morristown, TN	113951	115197	No	No
Nashville-Davidson--Murfreesboro, TN	1670890	1757912	Yes	Yes

9. NCore monitoring network requirements and $PM_{10-2.5}$

40 CFR 58 Subpart G, Appendix D to Part 58 Revised as of July 1, 2013

3. Design Criteria for NCore Sites

(a) Each State (i.e. the fifty States, District of Columbia, Puerto Rico, and the Virgin Islands) is required to operate at least one NCore site. States may delegate this requirement to a local agency. States with many MSAs often also have multiple air sheds with unique characteristics and, often, elevated air pollution. These States include, at a minimum, California, Florida, Illinois, Michigan, New York, North Carolina, Ohio, Pennsylvania, and Texas. These States are required to identify one to two additional NCore sites in order to account for their unique situations. These additional sites shall be located to avoid proximity to large emission sources. Any State or local agency can propose additional candidate NCore sites or modifications to these requirements for approval by the Administrator. The Ncore locations should be leveraged with other multi-pollutant air monitoring sites including PAMS sites, National Air Toxics Trends Stations (NATTS) sites, CASTNET sites, and STN sites. Site leveraging includes using the same monitoring platform and equipment to meet the objectives of the variety of programs where possible and advantageous.

(b) The NCore sites must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass, speciated $PM_{10-2.5}$, O_3, SO_2, CO, NO/NOy, wind speed, wind direction, relative humidity, and ambient temperature. NCore sites in CBSA with a population of 500,000 people (as determined in the latest Census) or greater shall also measure Pb either as Pb-TSP or Pb- PM_{10}. The EPA Regional Administrator may approve an alternative location for the Pb measurement where the alternative location would be more appropriate for logistical reasons and the measurement would provide data on typical Pb concentrations in the CBSA.

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

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

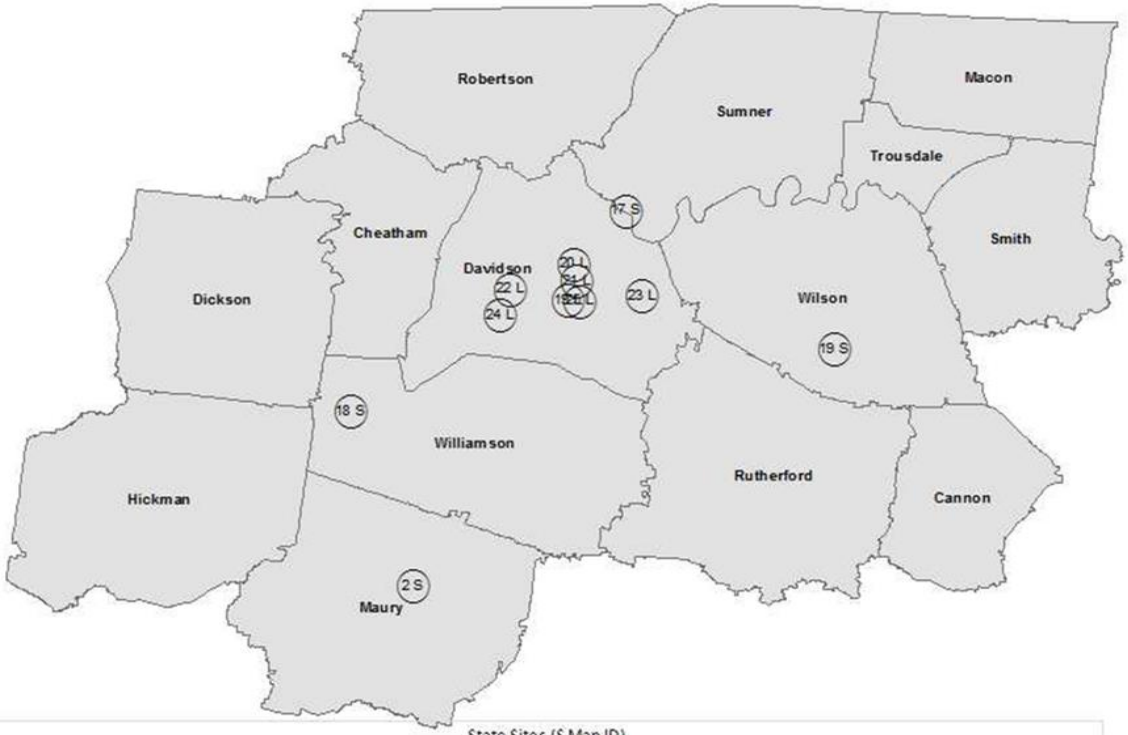
40 CFR 58 Subpart G, Appendix D to Part 58 Revised as of July 1, 2013

4.8 Coarse Particulate Matter ($PM_{10-2.5}$) Design Criteria.

4.8.1 General Monitoring Requirements.

(a) The only required monitors for $PM_{10-2.5}$ are those required at NCore Stations.

Nashville-Davidson--Murfreesboro, TN MSA Area



State Sites (S Map ID)

AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
471192007	2 S	PM2.5	2014	34980	1600 NASHVILLE HWY	35.65192	-87.0263
471650007	17 S	O3, PM2.5, PM2.5 Cont	2014	34980	ROCKLAND RECREATION AREA-OLD HICKORY DAM	36.29778	-86.6528
471870106	18 S	O3	2014	34980	FAIRVIEW MIDDLE SCHOOL CROW CUT ROAD	35.95194	-87.1372
471890103	19 S	O3	2014	34980	CEDARS OF LEBANON STATE PARK	36.06037	-86.2861

Local Sites (L Map ID)

AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
470370002	19 L	PM10	2014	34980	LESTER & HART STS	36.14324	-86.7546
470370011	20 L	SO2, NO2, O3,	2014	34980	1015 TRINITY LANE	36.205	-86.7447
470370023	21 L	PM2.5, PM2.5 Cont, PM Spec	2014	34980	105 SOUTH 17TH ST @ LOCKELAND SCHOOL	36.17633	-86.7389
470370024	22 L	PM10	2014	34980	56TH AVE AND LOUISIANA ST	36.16276	-86.8549
470370026	23 L	O3	2014	34980	3711 BELL ROAD	36.15074	-86.6233
470370036	24 L	PM2.5	2014	34980	400 DAVIDSON RD	36.11825	-86.8735
470370040	25 L	Near Road NO2, CO	2014	34980	1113 Elm Hill Pike Near Road	36.1424	-86.7341

Tennessee's Interpretation of Ambient Air Monitors Needed to meet the 40CFR, Part 58 Requirements

Census Area Identification and Population Data			14129 Lead		42101 CO		42401 SO_2		42602 NO_2		44201 Ozone			81102 PM_{10}		88101 $PM_{2.5}$				88502 $PM_{2.5}$ Speciation		88101 or 88501$PM_{2.5}$ Cont	
CBSA Code	Census 2010 /. 2013	CBSA Title (MS Areas)	Operating	Required	Operating	Required	Operating	Required	Operating	Required	Operating	2011 2013 8 Hr DV	Required	Operating	Required	Operating	2011 2013 Annual DV ug/m	2011 2013 24 Hr DV ug/m	Required	Operating	Required	Operating	Required
34980	1670890/ 1757912	Nashville-Davidson-Murfreesboro, TN	0	0	1	1	1	1	2	2	5	0.076	2	2	2	4	10.1	23	2	1	1	2	1

[1] Includes collocated monitor.

The TEOM POC 3 $PM_{2.5}$ particulate monitors and the speciation POC 5 STN monitors are generally not suited to be used for comparisons to the annual $PM_{2.5}$ standards.

The agency discontinued operation of the CO monitor at Site 470370021 on December 31, 2013, since measured levels have been historically low and a C monitor has been installed at the new near-road monitoring site.

The near-road monitoring site 470370040 has been in operation since January 1, 2014. A NO_2 monitor, a CO monitor and a MET station are in operation at this site. It is anticipated that the eventual need for a $PM_{2.5}$ monitor at the near-road monitoring site will be satisfied by relocating one of the existing sites.

No additional SO_2 monitors are anticipated to be required to be established.

Revisions to the Davidson County portions of the Ambient Monitoring Plan (AMP) provided courtesy of the Metropolitan Health Department/Nashville & Davidson County Air Pollution Control Program.

AQSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
470370002	Davidson	SLAMS	81102	PM_{10}	1	7	2014	6	LESTER & HART STS	34980	36.14324	-86.7546	63	682	Metropolitan Health Department / Nashville & Davidson County
470370011	Davidson	SLAMS	42401	SO_2	1	1	2014	Hourly	1015 TRINITY LANE	34980	36.205	-86.7447	60	682	Metropolitan Health Department / Nashville & Davidson County
470370011	Davidson	SLAMS	42602	NO_2	1	1	2014	Hourly	1015 TRINITY LANE	34980	36.205	-86.7447	74	682	Metropolitan Health Department / Nashville & Davidson County
470370011	Davidson	SLAMS	44201	O_3	1	1	2014	Hourly	1015 TRINITY LANE	34980	36.205	-86.7447	47	682	Metropolitan Health Department / Nashville & Davidson County
470370023	Davidson	SLAMS	88101	$PM_{2.5}$	1	7	2014	1	105 SOUTH 17TH ST @ LOCKELAND SCHOOL	34980	36.17633	-86.7389	120	682	Metropolitan Health Department / Nashville & Davidson County
470370023	Davidson	SLAMS	88101	$PM_{2.5}$	2	7	2014	6	105 SOUTH 17TH ST @ LOCKELAND SCHOOL	34980	36.17633	-86.7389	120	682	Metropolitan Health Department / Nashville & Davidson County
470370023	Davidson	INDEX SITE	88502	$PM_{2.5}$ Cont	3	1	2014	Hourly	105 SOUTH 17TH ST @ LOCKELAND SCHOOL	34980	36.17633	-86.7389	717	682	Metropolitan Health Department / Nashville & Davidson County
470370023	Davidson	SUPLMN TL SPECIAT ION	88502	PM Spec Carbon	5	7	2014	6	105 SOUTH 17TH ST @ LOCKELAND SCHOOL	34980	36.17633	-86.7389	810	682	Metropolitan Health Department / Nashville & Davidson County
470370024	Davidson	SLAMS	81102	PM_{10}	1	7	2014	6	56TH AVE AND LOUISIANA ST	34980	36.16276	-86.8549	63	682	Metropolitan Health Department / Nashville & Davidson County
470370024	Davidson	QA Colocated	81102	PM_{10}	2	7	2014	6	56TH AVE AND LOUISIANA ST	34980	36.16276	-86.8549	63	682	Metropolitan Health Department / Nashville & Davidson County

AQSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
470370026	Davidson	SLAMS	44201	O_3	1	1	2014	Hourly	3711 BELL ROAD	34980	36.15074	-86.6233	47	682	Metropolitan Health Department / Nashville & Davidson County
470370036	Davidson	SLAMS	88101	$PM_{2.5}$	1	7	2014	1	400 DAVIDSON RD	34980	36.11825	-86.8735	120	682	Metropolitan Health Department / Nashville & Davidson County
470370040	Davidson	SLAMS	42602	NO_2	1	1	2014	Hourly	1113 ELM HILL PIKE	34980	36.08325	-86.4403	74	682	Metropolitan Health Department / Nashville & Davidson County
470370040	Davidson	SLAMS	42602	CO	1	1	2014	Hourly	1113 ELM HILL PIKE	34980	36.08325	-86.4403	54	682	Metropolitan Health Department / Nashville & Davidson County
471650007	Sumner	SLAMS	44201	O_3	1	1	2012	Hourly	ROCKLAND RECREATION AREA-OLD HICKORY DAM	34980	36.29778	-86.6528	47	1025	Tennessee Division Of Air Pollution Control
471650007	Sumner	SLAMS	88101	$PM_{2.5}$	1	7	2012	3	ROCKLAND RECREATION AREA-OLD HICKORY DAM	34980	36.29778	-86.6528	118	1025	Tennessee Division Of Air Pollution Control
471650007	Sumner	SLAMS	88101	$PM_{2.5}$	2	7	2012	6	ROCKLAND RECREATION AREA-OLD HICKORY DAM	34980	36.29778	-86.6528	118	1025	Tennessee Division Of Air Pollution Control
471650007	Sumner	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	ROCKLAND RECREATION AREA-OLD HICKORY DAM	34980	36.29778	-86.6528	716	1025	Tennessee Division Of Air Pollution Control
471870106	Williamson	SLAMS	44201	O_3	1	1	2012	Hourly	FAIRVIEW MIDDLE SCHOOL CROW CUT ROAD	34980	35.95194	-87.1372	47	1025	Tennessee Division Of Air Pollution Control
471890103	Wilson	SLAMS	44201	O_3	1	1	2012	Hourly	CEDARS OF LEBANON STATE PARK	34980	36.06037	-86.2861	47	1025	Tennessee Division Of Air Pollution Control
471192007	Maury	SPECIAL PURPOSE	88101	$PM_{2.5}$	1	7	2012	3	1600 NASHVILLE HWY	17940	35.65192	-87.0263	118	1025	Tennessee Division Of Air Pollution Control

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
470370002	Davidson	SLAMS	81102	PM_{10}	GMW Model1200	GRAVIMETRIC	RFPS-1287-063	POPULATION EXPOSURE	AREA	NEIGHBOR HOOD	COMMERCIAL	URBAN AND CENTER CITY	8/22/1969
470370011	Davidson	SLAMS	42401	SO_2	DASIBI4108	ULTRAVIOLET FLUORESCENCE	EQSA-1086-061	POPULATION EXPOSURE	AREA	NEIGHBOR HOOD	RESIDENTIAL	URBAN AND CENTER CITY	5/1/1970
470370011	Davidson	UNKNOWN	42602	NO_2	THERMOENV IRON. INST. MODEL 42	CHEMILUMIN ESCENCE	RFNA-1289-074	HIGHEST CONCENTRATION	AREA	NEIGHBOR HOOD	RESIDENTIAL	URBAN AND CENTER CITY	5/1/1970
470370011	Davidson	UNKNOWN	44201	O_3	THERMO ELECTRO N 49	ULTRA VIOLET	EQO A-0880-047	POPULATION EXPOSURE	AREA	NEIGHBOR HOOD	RESIDENTIAL	URBAN AND CENTER CITY	5/1/1970
470370021	Davidson	UNKNOWN	42101	CO	THERMOELE CTRO N 48, 48C,48i	NONDISPERSIVE INFRARED	RFCA-0981 054	HIGHEST CONCENTRA TION	MOBILE	MICROSCALE	COMMERCIAL	URBAN AND CENTER CITY	4/14/1972
470370023	Davidson	SLAMS	88101	$PM_{2.5}$	Thermo 2025i	GRAVIMETRIC	RFPS-0598-120	POPULATION EXPOSURE	AREA	NEIGHBOR HOOD	INDUSTRIAL	URBAN AND CENTER CITY	1/1/1976
470370023	Davidson	SLAMS	88101	$PM_{2.5}$	Thermo 2025i	GRAVIMETRIC	RFPS-0598-120	POPULATION EXPOSURE	AREA	NEIGHBOR HOOD	INDUSTRIAL	URBAN AND CENTER CITY	1/1/1976
470370023	Davidson	INDEX SITE	88502	PM2.5 Cont		TEOMGravimetr ic 50 deg C		POPULATION EXPOSURE	AREA	NEIGHBOR HOOD	INDUSTRIAL	URBAN ANDCENTE R CITY	1/1/1976
470370023	Davidson	SUPLMNTL SPECIATION	88502	PM Spec Carbon	MetOneSupe rSASSURG 3000	GRAVIMETRIC		POPULATION EXPOSURE	NULL	NULL	INDUSTRIAL	URBAN AND CENTER CITY	1/1/1976
470370024	Davidson	SLAMS	81102	PM_{10}	GMW Model1200	GRAVIMETRIC	RFPS-1287-063	HIGHEST CONCENTRA TION	AREA	NEIGHBOR HOOD	RESIDENTIAL	SUBURBAN	1/1/1976

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
470370024	Davidson	QA COLLOCATED	81102	PM_{10}	GMW Model1200	GRAVIMETRIC	RFPS-1287-063	QUALITY ASSURANCE	NULL	NULL	RESIDENTIAL	SUBURBAN	1/1/1976
470370026	Davidson	SLAMS	44201	O_3	THERMO ELECTRON 49	ULTRA VIOLET	EQOA-0880-047	HIGHEST CONCENTRA TION	AREA	URBAN SCALE	FOREST	RURAL	1/1/1978
470370036	Davidson	SLAMS	88101	$PM_{2.5}$	Thermo 2025i	GRAVIMETRIC	RFPS-0598-120	POPULATION EXPOSURE	AREA	NEIGHBOR HOOD	RESIDENTIAL	SUBURBAN	12/1/1998
471650007	Sumner	SLAMS	44201	O_3	THERMO ELECTRON 49	ULTRA VIOLET	EQOA-0880-047	HIGHEST CONCENTRATION	AREA	URBAN SCALE	INDUSTRIAL	RURAL	1/1/1973
471650007	Sumner	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	AREA	URBAN SCALE	INDUSTRIAL	RURAL	1/1/1973
471650007	Sumner	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	UNKNOWN	NULL	NULL	INDUSTRIAL	RURAL	1/1/1973
471650007	Sumner	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont		TEOM Gravimetric 50 deg C		POPULATION EXPOSURE	AREA	URBAN SCALE	INDUSTRIAL	RURAL	1/1/1973
471870106	Williamson	SLAMS	44201	O_3	THERMO ELECTRON 49	ULTRA VIOLET	EQOA-0880-047	POPULATION EXPOSURE	NULL	NULL	AGRICULTURAL	RURAL	4/11/1997
471890103	Wilson	SLAMS	44201	O_3	THERMO ELECTRON 49	ULTRA VIOLET	EQOA-0880-047	HIGHEST CONCENTRATION	AREA	URBAN SCALE	FOREST	RURAL	5/1/1988
471192007	Maury	SPECIAL PURPOSE	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	AREA	MIDDLE SCALE	COMMERCIAL	URBAN AND CENTER CITY	12/25/1998

Monitoring Equipment Evaluation MHD/Nashville & Davidson County AMP
2014 – Annual Evaluation of Ambient Monitors Date Reviewed April 17, 2014

Site No.	Number of Monitors	Pollutant	Equipment Supplier	Model No. Serial No.	Condition	Years In Service	NAMS or SLAMS
470370002	1	PM_{10}	Thermo Andersen	GUV-16H s/n 4199	Good	9	SLAMS
470370011	1	SO_2	Thermo	43i s/n JC1324500911	Good	2 months	SLAMS
470370011	1	O_3	Thermo	49i s/n CM09130037	Good	3 years	SLAMS
470370011	1	NO_2	Thermo Instruments	42i s/n 1105247201	Good	3 months	SLAMS
470370011	1	Multi-gas Calibrator	Thermo Instruments	146i s/n 0827732246	Good	3	
470370011	1	Zero Air System	Thermo Instruments	Model 111 s/n 0518112050	Good	3	
470370011	1	UV Photometer	Teledyne	T703 s/n 220	Good	4 months	
470370011	1	Data Logger	Agilaire	8832 s/n; A4721K	Good	4 months	
470370040	1	CO	Thermo Instruments	48i-TLE s/n 01324658815	Good	7 months	SLAMS
470370040	1	NO_2	Thermo Instruments	42i-TLE s/n 1324658812	Good	7 months	SLAMS
470370040	1	Data Logger	Agilaire	8832 s/n; A4689K	Good	7 months	
470370040	1	Multi-gas Calibrator	Thermo Instruments	146i s/n; 1324658813	Good	7 months	
470370040	1	Zero Air System	Thermo Instruments	Model 111 s/n 1313057860	Good	7 months	
470370023				2025i (POC1) s/n 2025i202161204	Good	1.5	
	2	$PM_{2.5}$	Thermo Instruments	(POC2) s/n 2025i202241204	Good	1.5	SLAMS

Site No.	Number of Monitors	Pollutant	Equipment Supplier	Model No. Serial No.	Condition	Years In Service	NAMS or SLAMS
470370023	1	$PM_{2.5}$	R&P	TEOM 2.5 1400A s/n 140AB228519912	Fair	16	SLAMS
470370023	1	$PM_{2.5}$ Carbon	URG	3000N Carbon Speciation s/n 00254	Good	4.5	SLAMS
470370023	1	$PM_{2.5}$	Met One	SASS PM2.5 Speciation s/n G9191	Good	5.5	SLAMS
470370023	1	Data Logger	ESC/Agilaire	8816	Fair	13	
470370024	2	PM_{10}	Thermo Andersen	GUV-16H (POC1) s/n 5526	Good	8.5	SLAMS
				(POC2) s/n 5527	Good	8.5	
470370026	1	O_3	Thermo Instruments	49i s/n 1322458652	Good	3 months	SLAMS
470370026	1	UV Photometer	Teledyne	703E s/n 296	Good	11	
470370026	1	Zero Air System	Thermo Instruments	Model 111 s/n 0827732247	Good	5	
470370026	1	Data Logger	ESC/Agilaire	8816	Fair	13	
470370026	1	Data Logger	Agilaire	8832 s/n; A2327K	Good	3 months	
470370036	1	$PM_{2.5}$	Thermo Instruments	2025i s/n 2025i202281205	Good	1.5	SLAMS
AP Lab	1	$PM_{2.5}$	Thermo Instruments	2025 s/n 2025B2 22960806	Good	0	Back up monitor
AP Lab	1	O_3	Thermo Instruments	49i s/n 1322458653	New	0	Back up monitor
AP Lab	1	O_3	Thermo Instruments	49c s/n 0426408745	Good	3.5	Back up monitor

Site No.	Number of Monitors	Pollutant	Equipment Supplier	Model No. Serial No.	Condition	Years In Service	NAMS or SLAMS
AP Lab	1	O_3	Thermo Instruments	49c s/n 0426408746	Good	3.5	Bench standard
AP Lab	1	Multi-Gas Calibrator	Thermo Instruments	146i s/n 1213752907	Good	6 months	Referee station
AP Lab	1	Zero Air System	Thermo Instruments	Model 111 s/n 1333159730	Good	6 months	Referee station
AP Lab	1	CO	Thermo Instruments	48C s/n 0518112051	Fair	8	In storage; Can be used as backup monitor
AP Lab	1	CO	Thermo Instruments	48C s/n 0518112052	Fair	6	In storage; Can be used as backup monitor
AP Lab	4	Toxics/ Carbonyls	ATEC	Model 2200 s/n 21131 and 21130	Fair	9.5	In Storage
AP Lab	1	TSP/ Category V Metals	Andersen	Model G10557TSP	Fair	8.5	In Storage
AP Lab	1	PM_{10}	Thermo Andersen	GUV-16H s/n 4204	Good	6	In storage; Back up monitor
AP Lab	1	PM_{10}	Graseby	GMW GUV-16H s/n 3810	Fair	17	In storage; Back up monitor
AP Lab	1	$PM_{2.5}$	Thermo Instruments	TEOM 2.5 1405 s/n 1405A226501311	Good	0	In storage; Back up monitor
AP Lab	1	NO_2	Thermo Instruments	Model 42c s/n; 0425908744	Fair	8	In storage; back up monitor
AP Lab	1	SO_2	Thermo Instruments	Model 43i s/n; 1303156453	Good	1	In storage; back up monitor
AP Lab	1	Primary Standard	Thermo Instruments	49ips s/n 1333159739	Good	6 months	Referee station

Near-Road Monitoring Site Application
Nashville/Davidson County December 2012

Introduction

On February 9, 2010, EPA promulgated new minimum monitoring requirements for the nitrogen dioxide (NO_2) monitoring network in support of a newly revised 1-hour NO_2 National Ambient Air Quality Standard (NAAQS) and the retained annual NAAQS. In the new monitoring requirements, state and local air monitoring agencies are required to install near-road NO_2 monitoring stations at locations where peak hourly NO_2 concentrations are expected to occur within the near-road environment in larger urban areas. State and local air agencies are required to consider traffic volumes, fleet mix, roadway design, traffic congestion patterns, local terrain or topography, and meteorology in determining where a required near-road NO_2 monitor should be placed. In addition to those required considerations listed above, there are other factors that impact the selection and implementation of a near-road monitoring station including satisfying siting criteria, site logistics (e.g., gaining access to property and safety), and population exposure. On August 31, 2011, EPA revised the carbon monoxide NAAQS to also require a near-road monitor. The purpose of this document is to present the proposed near-road monitoring site for EPA's approval.

Minimum Monitoring Requirements

40 CFR Part 58, Appendix D, requires state and local air agencies to operate one near-road NO_2 monitor in each Core Based Statistical Area (CBSA) with a population of 500,000 or more persons. CBSAs with 2,500,000 or more persons, or with one or more roadway segments carrying traffic volumes of 250,000 or more vehicles (as measured by annual average daily traffic [AADT] counts), shall have two near-road NO_2 monitors. According to the U.S. Census Bureau, the Nashville-Davidson-Murfreesboro-Franklin (Nashville), Tennessee statistical area population for 2011 is 1,617,142. The highest AADT for a Nashville road segment is 163,417, based on 2011 data obtained from the Metropolitan Planning Organization (MPO). Since the population is between 500,000 and 2,500,000, and the maximum AADT is less than 250,000, only one near-road monitor will be required in the CBSA.

AADT Matrix and Site Selection

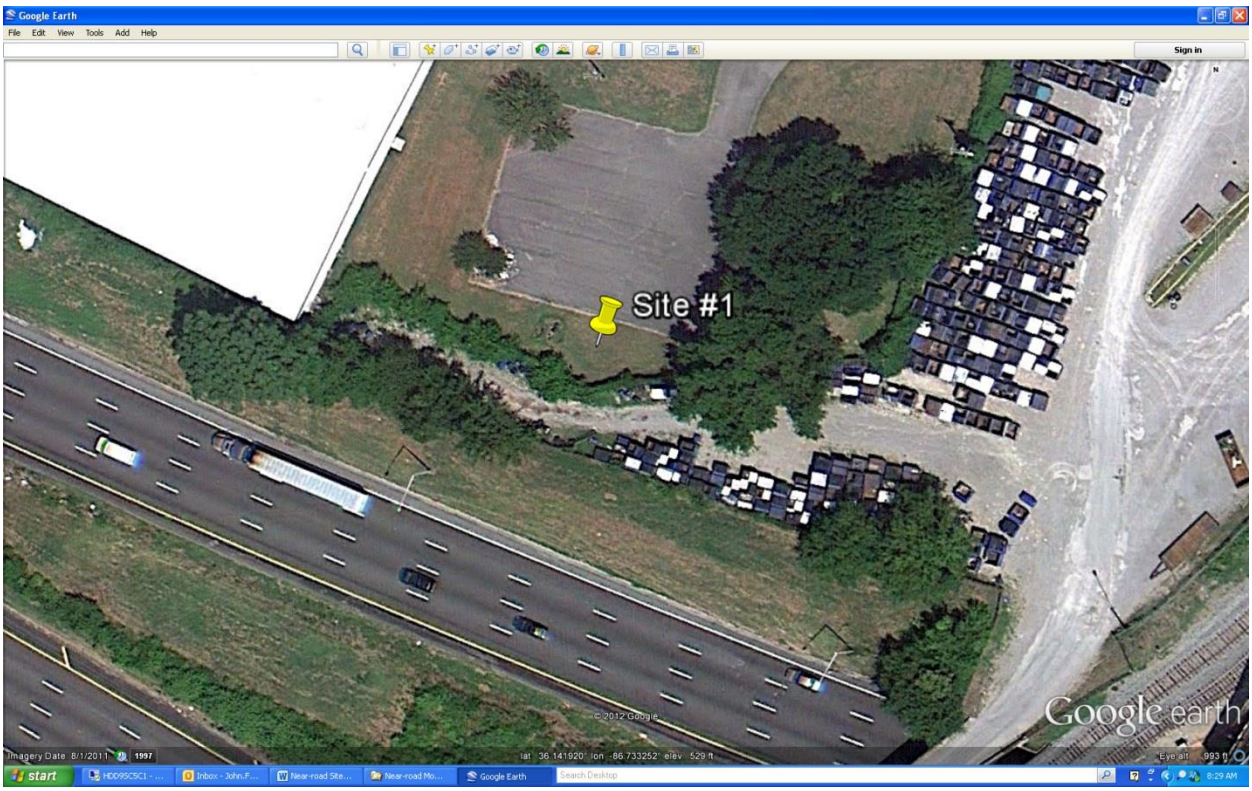
Annual Average Daily Traffic counts were obtained for 542 road segments in Nashville. Heavy Duty Vehicle counts were available for the 17 highest AADT road segments. The Fleet-Equivalent (FE) AADT was calculated by weighting each Heavy Duty vehicle as 10 regular vehicles. Road segments were then sorted based on FE-AADT and ranked from highest to lowest. The resulting matrix is found in **Table 1**. Metro Planning Property Maps were used to determine the owner of each piece of property on the meteorologically desirable side of each of these road segments. Google Earth was used to find Tennessee Department of Transportation (TDOT) right-of-way (R.O.W.) that may be accessible by surface roads. Potential sites were identified and visited by staff to determine whether they were candidates for the near-road monitoring station. The road segment with the optimum monitoring site is highlighted in the AADT Matrix, along with the percentage of the associated FE-AADT as it compares to the maximum FE-AADT in the CBSA.

				AADT	HD Vehicle	HD Vehicle	HD Vehicle		FE-AADT	
Road	**Endpoint**	**Endpoint**	**Avg. AADT**	**Rank**	**AADT %**	**AADT**	**AADT Rank**	**FE-AADT**	**Rank**	
24	N of Thompson	N of Antioch Pike	162,696	2	0.14	22777	5	367,693	1	
24	N or Antioch Pike	S of Harding	162,009	3	0.14	22681	6	366,140	2	
24	24/440	N of Thompson	161,300	4	0.14	22582	8	364,538	3	
24/40	40/24	Fairfield	159,804	5	0.14	22373	9	361,157	4	
24	S of Harding	N of Blue Hole	155,852	6	0.145	22599	7	359,239	5	
24	N of Blue Hole	S of Bell	146,226	11	0.16	23396	3	356,791	6	
24	S of Bell	S of HHP	140,492	15	0.17	23884	1	355,445	7	
24/40	Fairfield	W of Fesslers	163,417	1	0.13	21244	11	354,615	8	
24/440	24/40/440	24/440	139,056	16	0.17	23640	2	351,812	9	
24/40	40/24	Sillman Evans	136,969	17	0.17	23285	4	346,532	10	
24/40	W of Fesslers	E of Elm Hill Pike	155,617	7	0.135	21008	12	344,692	11	
24/40	E of Elm Hill Pike	24/40/440	144,204	14	0.15	21631	10	338,879	12	92.20%
65	North of Powell	65/440	153,570	9	0.07	10750	13	250,319	13	
65	N of Powell	S of Powell	151,665	10	0.07	10617	14	247,214	14	
24/65	24/65	S of Trinity	155,561	8	0.06	9334	16	239,564	15	
65	S of Powell	N of OHB	145,598	12	0.07	10192	15	237,325	16	
24/65	S of Trinity	N or Trinity	145,365	13	0.06	8722	17	223,862	17	

TABLE 1

Proposed Site

The candidate site is located along the north side of I-24/40, between Elm Hill Pike and the I 24/40/440 Interchange. This road segment is the 12th ranked FE-AADT, accounting for 92.2% of the maximum FE-AADT. The property already belongs to the Metropolitan Government of Nashville/Davidson County, Public Library/Metro Archive.

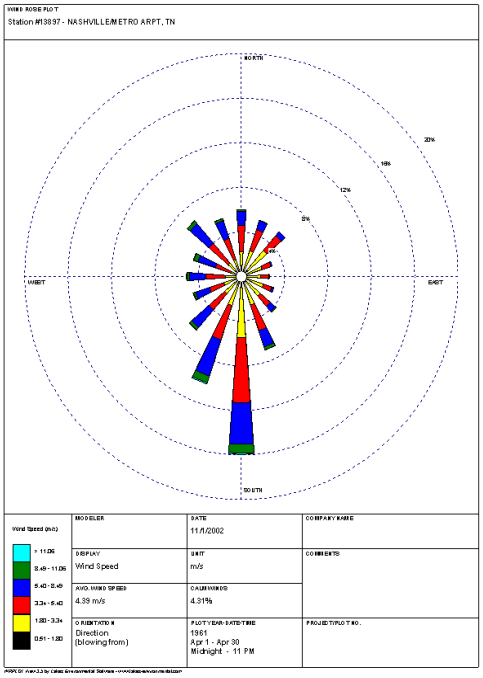


Roadway design or configuration – A below-grade road with sloped walls. The monitoring site is no more than 10 feet above the road.

Roadside structures – There are no sound walls or obstructive buildings. There is some vegetation on an old 6 ft. fence (below) that will be cleared when the fence is replaced for security purposes.

Terrain – Gentle terrain. Not along any extreme elevation changes or windswept areas. The picture below is from the street side. The proposed site is on the other side of the trees in this photo. The trees pictured below are on TDOT ROW. The Pollution Control Division has obtained written permission from TDOT to remove these trees during site preparation.

Meteorology – Relative downwind location – winds tend to move from the road to the monitor.



Horizontal Spacing – The monitor probe would be located approximately 30 meters (100 feet) from the nearest edge of the traffic lanes of the target road segment.

Vertical Spacing – The monitor probe will be located on top of a monitoring shelter at approximately 4 - 5 meters above ground level.

Existing Safety Features – At this location, the monitoring shelter would not be readily seen by the road. This should reduce the potential for vandalism and theft. The Metro property that this site is on has restricted access with a locked gate, which should lend to the security of the site.

There would be no impact to the safety of the traveling public. Due to the slope of the hill along the road segment, there would be no threat of a car running off the road into the shelter.

Existing Infrastructure – Power is available 100 feet from this location. A parking lot with limited access is adjacent to the site with an entrance on a public surface street. Internet service is currently run to a building about 200 feet away.

Property Availability – A Property Use Agreement has already been drawn up between the Public Library and Health Department. Library has already signed the document, Health is awaiting approval from EPA.

Site Pictures

North-East – Pictured is the Metro Archive. Power will be available from the pole in the parking lot.

East

South-East – A large hackberry tree will be pruned to move the drip-line further from the proposed monitoring site.

South – The property is defined by a vegetation-covered, 5-ft chain link fence. The vegetation will be cleared and the fence replaced.

South-West - The property is defined by a vegetation-covered, 5-ft chain link fence. The vegetation will be cleared and the fence replaced.

West - The property is defined by a vegetation-covered, 5-ft chain link fence. The vegetation will be cleared and the fence replaced.

North – This picture shows some of the vegetation that will be cleared, along with some of the land, adjacent to the parking lot, that will be used for the monitoring shelter.

North-West – The restricted-access parking lot that will allow staff to transport equipment directly to the proposed site.

Additional Location Information

Proposed AQS ID – 47-037-0040

Site Location – 1113 Elm Hill Pike, Nashville, Tennessee, 37210

Coordinates – lat 36.1424^{o}, long -86.7341^{o}

Surrounding Land Use – The vicinity surrounding the proposed site is primarily commercial/light industrial. There are no significant fuel burning sources in the immediate vicinity. There is roughly uniform land use within approximately 2 kilometers which would define it as a **Neighborhood Scale** of representativeness.

Pollutants and Sampling Methods

Nitrogen Dioxide – Maximum hourly NO_2 will be sampled using a continuous chemiluminescent monitor meeting the Federal Reference Methods. The monitor would most likely be the Thermo TRACE Level NOx Analyzer, Model 42i-TL.

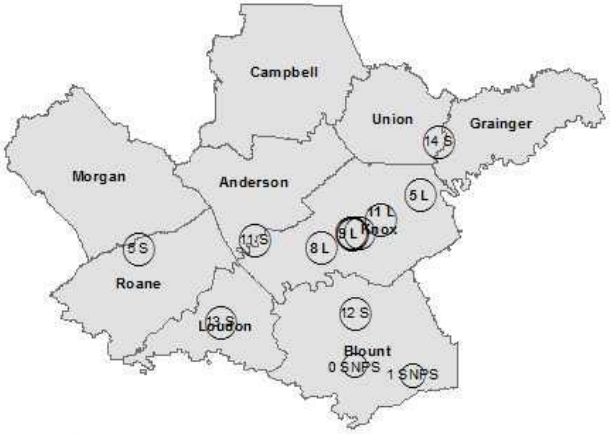
Carbon Monoxide – Maximum hourly CO will be sampled using a continuous gas filter correlation analyzer that meets the Federal Reference Method. The monitor would most likely be the Thermo CO Analyzer, Model 48i.

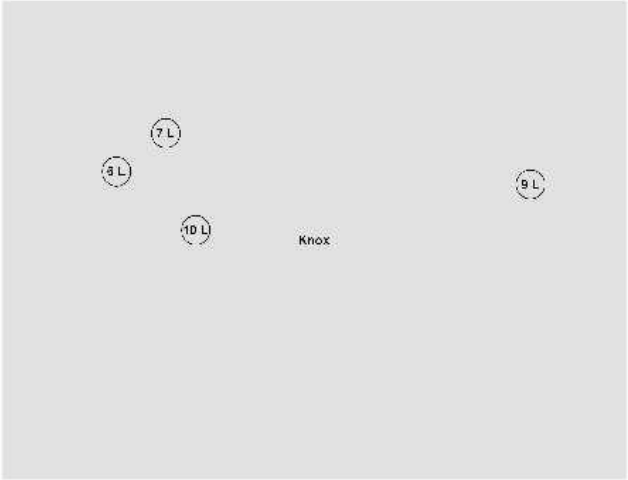
Fine Particulate – $PM_{2.5}$ may be monitored at this location in the future, if required.

Meteorological Measurements – The current plan is to have the shelter built with the proper tower for a met station, since retrofitting will not be cost effective. However, with a National Weather Service station operating at the Nashville International Airport, which is located approximately 3 kilometers from the proposed site, a final decision has not been made on whether the met station will be part of the final plan.

Black Carbon - Although the agency has not explored the technology associated with black carbon sampling, if it can be done within budget and does not add a sizeable burden to current staff, we are willing to explore this additional equipment.

Knoxville, TN Area





State Sites (S Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
471450004	5 S	PM2.5, PM2.5 Cont	2014	28940	HARRIMAN HIGH 1002 N. ROAN ST MOVED FRO	35.9387	-84.5437
470010101	11 S	O3, SO2	2014	28940	FREELS BEND_STUDY AREA MELTON LAKE Oak R	35.96327	-84.2232
470090011	12 S	PM2.5, PM2.5 Cont	2014	28940	2007 SEQUOYAH AVENUE	35.76843	-83.9421
471050108	13 S	PM2.5, O3	2014	28940	130 WEBB DRIVE	35.7448	-84.3173
471730107	14 S	PM10	2014	28940	DONAHUE PROPERTY ON DONAHUE ROAD	36.22417	-83.7144
Local Sites (L Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
470930021	5 L	O3	2014	28940	9315 RUTLEDGE PIKE MASCOT TN 37806	36.08551	-83.7648
470930023	6 L	Pb	2014	28940	1526 New York Ave., Knoxville, TN	35.98108	-83.9549
470930027	7 L	Pb	2014	28940	2522 BURNSIDE ST KNOXVILLE TN 37921	35.98306	-83.9523
470930028	8 L	PM2.5	2014	28940	1000 FRANCIS ROAD	35.9446	-84.036
470931013	9 L	PM10, PM2.5, PM2.5 Cont	2014	28940	1403 DAVANNA STREET Knoxville, Tn 37917	35.98042	-83.9328
470931017	10 L	Pb, PM2.5	2014	28940	1613 VERMONT AVENUE	35.97807	-83.9507
470931020	11 L	O3, PM2.5, PM Spec	2014	28940	4625 MILDRED DRIVE	36.01919	-83.8738
National Park Service Sites (SNPS Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
470090101	0 SNPS	CO, SO2, O3, PM2.5 Cont	2014	28940	GREAT SMOKY MOUNTAINS NP LOOK ROCK	35.63149	-83.9435
470090102	1 SNPS	O3	2014	28940	GREAT SMOKY MOUNTAINS NP - CADES COVE	35.60306	-83.7836

Tennessee's Interpretation of Ambient Air Monitors Needed to meet the 40CFR, Part 58 Requirements

Tennessee's Interpretation of Ambient Air Monitors Needed to meet the 40CFR, Part 58 Requirements

Census Area Identification and Population Data			14129 Lead		42101 CO		42401 SO_2		42602 NO_2		44201 Ozone			81102 PM_{10}		88101 $PM_{2.5}$				88502 $PM_{2.5}$ Speciation		88101 or 88501 $PM_{2.5}$ Cont	
CBSA Code	Census 2010 /. 2013	CBSA Title (MS Areas)	Operating	Required	Operating	Required	Operating	Required	Operating	Required	Operating	2011 2013 8 Hr DV	Required	Operating	Required	Operating	2011 2013 Annual DV ug/m	2011 2013 24 Hr DV ug/m	Required	Operating	Required	Operating	Required
28940	837571/ 852715	Knoxville, TN	3	1	1	0	2	1	0	1	6	0.074	2	2	1	7	11.3	23	2	1	1	4	1

[1] Includes collocated monitor.

The Knoxville near-road site may not be funded by EPA until sometime in the future. An NO_2 monitor would be required for this type site. The TEOM POC 3 $PM_{2.5}$ particulate monitors and the speciation POC 5 STN monitors are generally not suited to be used for comparisons to the annual $PM_{2.5}$ standards.

Knox County Department of Air Quality Management has requested the relocation of site 47-093-1013 to approximately 550 ft from current location. relocation is pending approval and is described in the proposal included at the end of this section.

The need for additional monitoring sites may be met by re-location of existing network sites. Additional monitoring sites will require additional resources for both equipment and operational expenses.

Revisions to the Knox County portions of the AMP provided courtesy of the Knox County Department of Air Quality Management.

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The need for additional monitoring sites may be met by re-location of existing network sites. Additional monitoring sites will require additional resources for both equipment and operational expenses.

Revisions to the Knox County portions of the AMP provided courtesy of the Knox County Department of Air Quality Management.

AQSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
470930021	Knox	SLAMS	44201	O3	1	1	2012	Hourly	9315 RUTLEDGE PIKE MASCOT TN 37806	28940	36.08551	-83.7648	47	581	Knox County Department Of Air Quality Management
470930027	Knox	SLAMS	14129	Pb	1	7	2012	6	2522 BURNSIDE ST KNOXVILLE TN 37921	28940	35.98306	-83.9523	107	581	Knox County Department Of Air Quality Management
470930027	Knox	SLAMS	14129	Pb	2	7	2012	6	2522 BURNSIDE ST KNOXVILLE TN 37921	28940	35.98306	-83.9523	107	581	Knox County Department Of Air Quality Management
470930028	Knox	SLAMS	88101	$PM_{2.5}$	1	7	2012	1	1000 FRANCIS ROAD	28940	35.9446	-84.036	145	581	Knox County Department Of Air Quality Management
470930028	Knox	SLAMS	88101	$PM_{2.5}$	2	7	2012	1	1000 FRANCIS ROAD	28940	35.9446	-84.036	145	581	Knox County Department Of Air Quality Management
470931013	Knox	SLAMS	81102	PM_{10}	1	7	2012	6	1403 DAVANNA STREET Knoxville, Tn	28940	35.98042	-83.9328	64	581	Knox County Department Of Air Quality Management
470931013	Knox	QA Collocated	81102	PM_{10}	2	7	2012	6	1403 DAVANNA STREET Knoxville, Tn	28940	35.98042	-83.9328	64	581	Knox County Department Of Air Quality Management
470931013	Knox	SPECIAL PURPOSE	88101	$PM_{2.5}$	1	7	2012	6	1403 DAVANNA STREET Knoxville, Tn	28940	35.98042	-83.9328	145	581	Knox County Department Of Air Quality Management
470931013	Knox	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	1403 DAVANNA STREET Knoxville, Tn	28940	35.98042	-83.9328	716	581	Knox County Department Of Air Quality Management
470931017	Knox	SLAMS	14129	Pb	1	7	2012	6	1613 VERMONT AVENUE	28940	35.97807	-83.9507	107	581	Knox County Department Of Air Quality Management

AQSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
470931017	Knox	SLAMS	88101	$PM_{2.5}$	1	7	2012	1	1613 VERMONT AVENUE	28940	35.97807	-83.9507	145	581	Knox County Department Of Air Quality Management
470931020	Knox	SLAMS	44201	O_3	1	1	2012	Hourly	4625 MILDRED DRIVE	28940	36.01919	-83.8738	47	581	Knox County Department Of Air Quality Management
470931020	Knox	SLAMS	88101	$PM_{2.5}$	1	7	2012	1	4625 MILDRED DRIVE	28940	36.01919	-83.8738	145	581	Knox County Department Of Air Quality Management
470931020	Knox	SUPLMNTL SPECIATION	88502	PM Spec Carbon	5	7	2012	6	4625 MILDRED DRIVE	28940	36.01919	-83.8738	810	581	Knox County Department Of Air Quality Management
470930023	Knox	SLAMS	14129	Pb	1	7	2012	6	1584 ELY AVENUE	28940	35.98049	-83.9542	107	581	Knox County Department Of Air Quality Management
470090101	Blount	NON-EPA FEDERAL	44201	O_3	1	1	2012	Hourly	GREAT SMOKY MOUNTAINS NP LOOK	28940	35.63149	-83.9435	47	745	National Park Service
470010101	Anderson	SLAMS	44201	O_3	1	1	2012	Hourly	FREELS BEND_STUDY AREA MELTON LAKE	28940	35.96327	-84.2232	87	1025	Tennessee Division Of Air Pollution Control
470010101	Anderson	SLAMS	42401	SO_2	1	1	2013	Hourly	FREELS BEND_STUDY AREA MELTON LAKE	28940	35.96327	-84.2232	100	1025	Tennessee Division Of Air Pollution Control
470090011	Blount	SPECIAL PURPOSE	88101	$PM_{2.5}$	1	7	2012	3	2007 SEQUOYAH AVENUE	28940	35.76843	-83.9421	118	1025	Tennessee Division Of Air Pollution Control
470090011	Blount	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	2007 SEQUOYAH AVENUE	28940	35.76843	-83.9421	716	1025	Tennessee Division Of Air Pollution Control

AQSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
470090101	Blount	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	GREAT SMOKY MOUNTAINS NP LOOK	28940	35.63149	-83.9435	703	1025	Tennessee Division Of Air Pollution Control
470090102	Blount	NON-EPA FEDERAL	44201	O_3	1	1	2012	Hourly	GREAT SMOKY MOUNTAINS NP - CADES	28940	35.60306	-83.7836	53	1025	Tennessee Division Of Air Pollution Control
471050108	Loudon	SPECIAL PURPOSE	88101	$PM_{2.5}$	1	7	2012	3	130 WEBB DRIVE	28940	35.7448	-84.3173	118	1025	Tennessee Division Of Air Pollution Control
471050108	Loudon	SPECIAL PURPOSE	44201	O_3	1	1	2014	Hourly	130 WEBB DRIVE	28940	35.7448	-84.3173	118	1025	Tennessee Division Of Air Pollution Control
471730107	Union	SPECIAL PURPOSE	81102	PM_{10} Cont	1	1	2012	Hourly	DONAHUE PROPERTY ON DONAHUE ROAD	28940	36.22417	-83.7144	79	1025	Tennessee Division Of Air Pollution Control
470090101	Blount	SPECIAL PURPOSE	42101	CO	2	1	2012	Hourly	GREAT SMOKY MOUNTAINS NP LOOK	28940	35.63149	-83.9435	55	1029	Tennessee Valley Authority
470090101	Blount	SPECIAL PURPOSE	42401	SO_2	2	1	2012	Hourly	GREAT SMOKY MOUNTAINS NP LOOK	28940	35.63149	-83.9435	560	1029	Tennessee Valley Authority
470090101	Blount	SPECIAL PURPOSE	42602	NO_2	3	1	2012	Hourly	GREAT SMOKY MOUNTAINS NP LOOK	28940	35.63149	-83.9435	599	1029	Tennessee Valley Authority
471450004	Roane	SPECIAL PURPOSE	88101	$PM_{2.5}$	1	7	2012	3	HARRIMAN HIGH 1002 N. ROAN ST MOVED FRO	25340	35.9387	-84.5437	118	1025	Tennessee Division Of Air Pollution Control
471450004	Roane	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	HARRIMAN HIGH 1002 N. ROAN ST MOVED FRO	25340	35.9387	-84.5437	716	1025	Tennessee Division Of Air Pollution Control

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
470930021	Knox	SLAMS	44201	O_3	Teledyne 400E	ULTRA VIOLET	EQOA-0992-087047	HIGHEST CONCENTRATION	NULL	URBAN SCALE	AGRICULTURAL	RURAL	6/1/1981
470930027	Knox	SLAMS	14129	Pb	PB-TSP/FLAMELESS AA	Flameless Atomic absorption (GFAA); 3M HNO3 Boil 30 min	EQL-0895-107	SOURCE ORIENTED	POINT	NEIGHBORHOOD	INDUSTRIAL	URBAN AND CENTER CITY	12/4/1994
470930027	Knox	SLAMS	14129	Pb	PB-TSP/FLAMELESS AA	Flameless Atomic absorption (GFAA); 3M HNO3 Boil 30 min	EQL-0895-107	SOURCE ORIENTED	POINT	NEIGHBORHOOD	INDUSTRIAL	URBAN AND CENTER CITY	12/4/1994
470930028	Knox	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	MOBILE	NEIGHBORHOOD	MOBILE	SUBURBAN	1/1/1999
470930028	Knox	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	MOBILE	NEIGHBORHOOD	MOBILE	SUBURBAN	1/1/1999
470931013	Knox	SLAMS	81102	PM_{10}	SIERRA-ANDERSEN/GMW 321-B	GRAVIMETRIC	RFPS-1287-064	POPULATION EXPOSURE	MOBILE	NEIGHBORHOOD	MOBILE	URBAN AND CENTER CITY	1/1/1975
470931013	Knox	QA Colocated	81102	PM_{10}	SIERRA-ANDERSEN/GMW 321-B	GRAVIMETRIC	RFPS-1287-064	POPULATION EXPOSURE	MOBILE	NEIGHBORHOOD	MOBILE	URBAN AND CENTER CITY	1/1/1975
470931013	Knox	SPECIAL PURPOSE	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	MOBILE	MIDDLE SCALE	MOBILE	URBAN AND CENTER CITY	1/1/1975
470931013	Knox	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	Thermo Scientific Series 1405 TEOM	TEOM Gravimetric 50 deg C		POPULATION EXPOSURE	MOBILE	MIDDLE SCALE	MOBILE	URBAN AND CENTER CITY	1/1/1975
470931017	Knox	SLAMS	14129	Pb	PB-TSP/FLAMELESS AA	Flameless Atomic absorption (GFAA); 3M HNO3 Boil 30	EQL-0895-107	POPULATION EXPOSURE	NULL	NULL	RESIDENTIAL	URBAN AND CENTER CITY	4/1/1978

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
470931017	Knox	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	MOBILE	NEIGHBORHOOD	RESIDENTIAL	URBAN AND CENTER CITY	4/1/1978
470931020	Knox	SLAMS	44201	O_3	Teledyne 400E	ULTRA VIOLET	EQOA-0992-087047	POPULATION EXPOSURE	AREA	NEIGHBORHOOD	MOBILE	SUBURBAN	1/1/1981
470931020	Knox	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	MOBILE	NEIGHBORHOOD	MOBILE	SUBURBAN	1/1/1981
470931020	Knox	SUPLMNTL SPECIATION	88502	PM Spec Carbon	MetOne Super SASS / URG 3000	Gravimetric		POPULATION EXPOSURE	NULL	NULL	MOBILE	SUBURBAN	1/1/1981
470930023	Knox	SLAMS	14129	Pb	PB-TSP/FLAMELESS AA	Flameless Atomic absorption (GFAA); 3M HNO3 Boil 30 min	EQL-0895-107	POPULATION EXPOSURE	POINT	NULL	RESIDENTIAL	URBAN AND CENTER CITY	4/1/1978
470090101	Blount	NON EPA FEDERAL	44201	O_3	THERMO ELECTRON 49	ULTRA VIOLET	EQOA-0880-047	UNKNOWN	AREA	NEIGHBORHOOD	FOREST	RURAL	1/1/1980
470010101	Anderson	SLAMS	44201	O_3	API MODEL 400 OZONE ANALYZER	ULTRA VIOLET ABSORPTION	EQOA-0992-087	POPULATION EXPOSURE	AREA	URBAN SCALE	FOREST	RURAL	4/1/1992
470010101	Anderson	SLAMS	42401	SO_2	Teledyne API M100 E	UV Fluorescence	EQSA-0495-100	POPULATION EXPOSURE	POINT	URBAN SCALE	FOREST	RURAL	2/9/2013
470090011	Blount	SPECIAL PURPOSE	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	AREA	NEIGHBORHOOD	RESIDENTIAL	SUBURBAN	5/1/2000
470090011	Blount	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont		TEOM Gravimetric 50 deg C		POPULATION EXPOSURE	AREA	NEIGHBORHOOD	RESIDENTIAL	SUBURBAN	5/1/2000

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
470090101	Blount	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont		TEOM Gravimetric 30 deg C		REGIONAL TRANSPORT	AREA	REGIONAL SCALE	FOREST	RURAL	1/1/1980
470090102	Blount	NON-EPA FEDERAL	44201	O_3	MONITOR LABS 8810	ULTRA VIOLET	EQOA-0881-053	HIGHEST CONCENTRATION	NULL	REGIONAL SCALE	FOREST	RURAL	5/1/1994
471050108	Loudon	SPECIAL PURPOSE	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	AREA	NEIGHBORHOOD	RESIDENTIAL	SUBURBAN	8/1/2003
471050108	Loudon	SPECIAL PURPOSE	44201	O_3	API MODEL 400 OZONE ANALYZER	ULTRA VIOLET ABSORPTION	EQOA-0992-087	POPULATION EXPOSURE	AREA	NEIGHBORHOOD	RESIDENTIAL	SUBURBAN	2/1/2006
471730107	Union	SPECIAL PURPOSE	81102	PM_{10} Cont	RUPRCHT&PATSHNCK TEOM SER 1400	TEOM-GRAVIMETRIC	EQPM-1090-079	UNKNOWN	NULL	NULL	AGRICULTURAL	RURAL	10/25/1996
470090101	Blount	SPECIAL PURPOSE	42101	CO		Gas Filter Correlation Thermo Electron 48C-TL		UNKNOWN	NULL	NULL	FOREST	RURAL	1/1/1980
470090101	Blount	SPECIAL PURPOSE	42401	SO_2	Thermo Electron 43c-TLE/43i-TLE	Pulsed Fluorescent 43C-TLE/43i-TLE	EQSA-0486-060	UNKNOWN	NULL	NULL	FOREST	RURAL	1/1/1980
470090101	Blount	SPECIAL PURPOSE	42602	NO_2		Chemiluminescence Teledyne API 200 EU/501w/photolytic converter		GENERAL/BACKGROUND	NULL	NULL	FOREST	RURAL	1/1/1980
471450004	Roane	SPECIAL PURPOSE	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	NULL	URBAN SCALE	INDUSTRIAL	SUBURBAN	1/1/1980
471450004	Roane	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont		TEOM Gravimetric 50 deg C		POPULATION EXPOSURE	AREA	URBAN SCALE	INDUSTRIAL	SUBURBAN	1/1/1980

Proposed Relocation of 47-093-1013

Background:

According to AQS the current site was established in 1975 and is currently home to one $PM_{2.5}$ FRM (est.2007), one $PM_{2.5}$ continuous non-FRM (est.2002), and two PM_{10} hi-volume monitors. The site is listed as neighborhood scale for PM_{10} and middle scale for $PM_{2.5}$

Proposal:

Knox County Department of Air Quality Management (KCDAQM) request to relocate site 47-093-1013 located at 1403 Davanna St. Knoxville, TN to the 900 block of Stewart St. Knoxville, TN. The proposed location is 0.5 miles east of its current location. GPS coordinates: 35° 58'50.90"N 83° 55'32.76"W. Property is owned by Knox County, electricity is accessible and high speed internet is available in the area.

Rational:

The property owner of the current site has requested KCDAQM terminate the use of their property. The use of the area around this site has also changed considerably in past decade. The site is currently on property owned by Knox County's Highway Department. Large diesel trucks and tractors park within inches of the site. The shelter has had a large tile dropped against it which dented the shelter and caused the TEOM inlet to separate inside the shelter resulting in a loss of data. The fleet of diesel trucks being in such close proximity could also lead to abnormally high particulate readings that would not be representative of the overall area. A road salt and brine storage facility was constructed approximately 120 feet from the site between 2002 and 2003. A vehicle repair and paint shop was constructed approximately 55 feet from the site between 2003 and early 2006. This facility could contribute to higher particulate readings uncharacteristic of the overall area. It is also an obstruction upwind of the site. A new Holston Gas facility was constructed in 2012 approximately 750 feet from the site. This new facility has a large diesel fleet.

Supplemental Information:

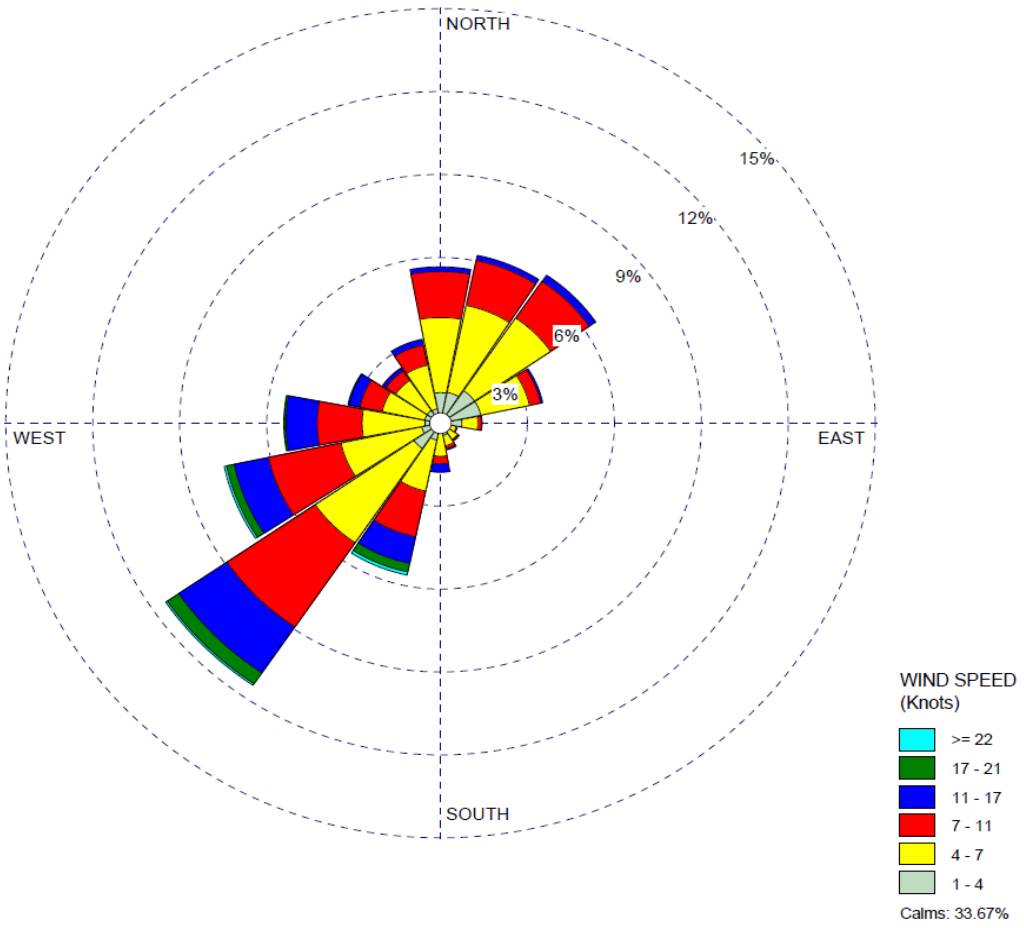
Wind rose:

WIND ROSE PLOT:

Station #13891 - KNOXVILLE/MC GHEE TYSON ARPT, TN

DISPLAY:

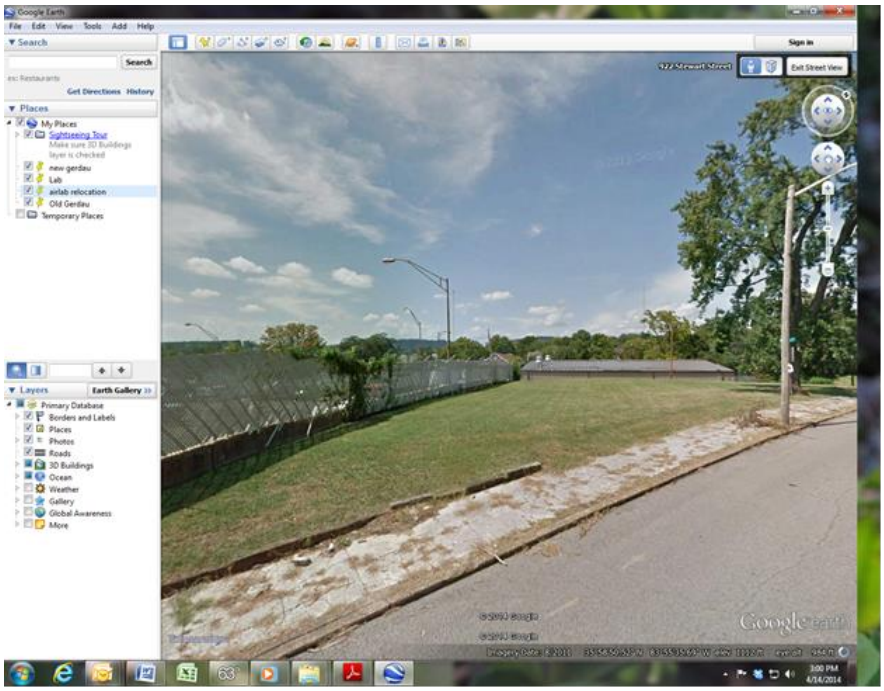
Wind Speed
Direction (blowing from)



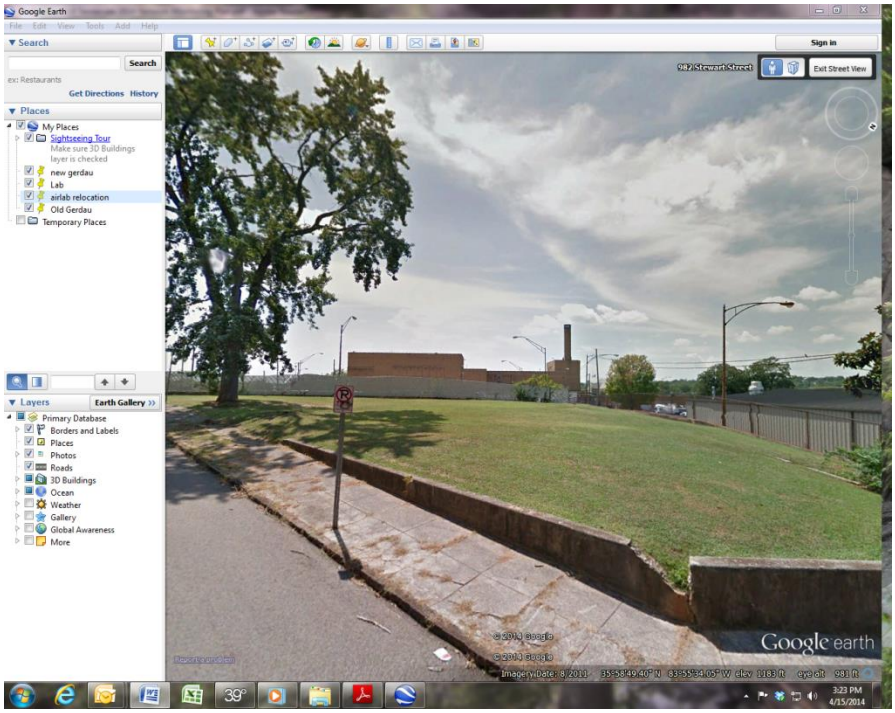
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	Start Date: 1/1/2012 - 00:00 **End Date: 12/31/2012 - 23:00**	**Knox County Air Quality Management**	
		MODELER: **A, S, McDaniel, P.E.**	
	CALM WINDS: **33.67%**	TOTAL COUNT: **8784 hrs.**	
	AVG. WIND SPEED: **4.38 Knots**	DATE: **2/13/2013**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

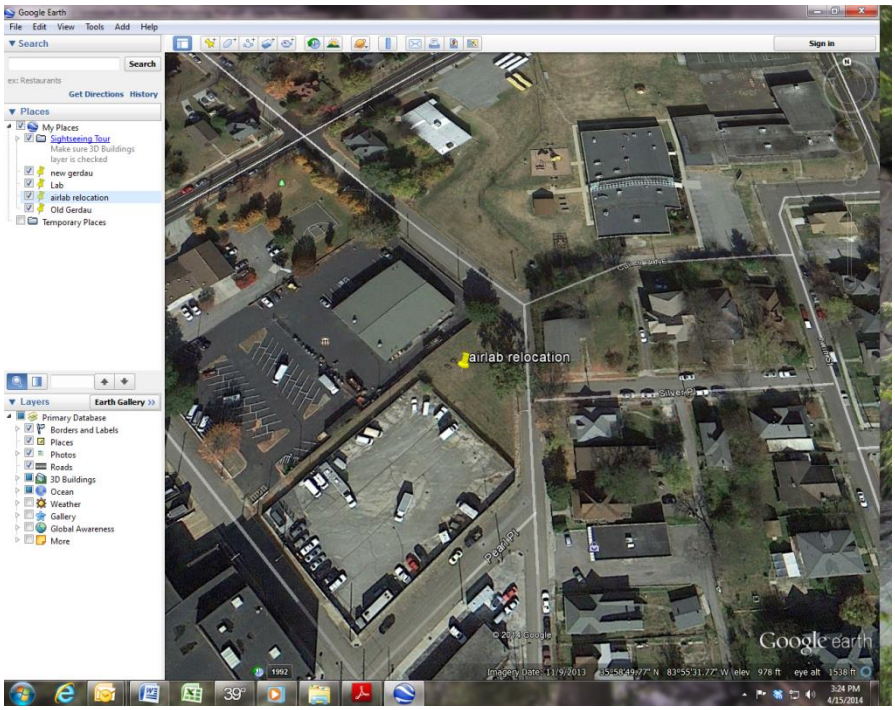
Facing NW:



Facing SW:



Ariel:


Google Earth
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Places
My Places
Sightseeing Tour
Make sure 3D Buildings layer is checked
new gerdau
Lab
airlab relocation
Old Gerdau
Temporary Places
Layers
Earth Gallery
Primary Database
Borders and Labels
Places
Photos
Roads
3D Buildings
Ocean
Weather
Gallery
Global Awareness
More
airlab relocation
Google earth

Proposed Relocation of 47-093-0023

Background:

Site was established in 2011 as a fence-line monitor for Lead near the Gerdau plant (formerly Ameristeel). Gerdau purchased property surrounding the monitor in early 2012, and petitioned to have the road closed. Gerdau had to implement some road construction before the Metropolitan Planning Commission would allow the road closure. Once construction was complete, Gerdau closed the road and fenced in the area where the monitor was located. KCDAQM was notified by Gerdau on August 23rd, 2013 that the fence was being put up and our access would be cut off. KCDAQM was able to move the site to the hammer head turnaround approximately 97 meters north east of the original site. Data collection resumed on 9/4/2013 KCDAQM worked closely with EPA regarding this matter.

Proposal:

Approve the relocated site at 1526 New York Ave., Knoxville, TN.

Rational:

The new site is accessible to KCDAQM. It is located at the closest point of public access downwind of the plant. Meets citing criteria as found in 40CFR part 58 appendix E with the following exceptions which KCDAQM request a waiver:
Monitor is approximately 3 meters from roadway. The monitor sits at the end of a turn around for a dead end road. The road is approximately 100 meters long and has only two homes. It is located in a remote area and is not routinely traveled by anyone other than the homeowners or KCDAQM staff. The roadway should pose no adverse effect on the monitoring data
A large tree is between the source and the monitoring site. The tree drip line is approximately 18 meters from the lead monitor. Though the tree is > 10 meters from site, it is directly between source and monitor.

Supplemental Information:

Arial view showing old and new site:

Temporary site facing SW:

Temporary site facing SE

Completed site facing NW:

Completed site facing SE:

Completed site facing SW:

Monitoring Equipment Evaluation Knox County Department of Air Quality Management AMP

Knox County Air Quality Management Equipment Inventory 2014

Completed: 04/16/2014 by Amber Talgo

Site	Description	Serial Number	Condition	Put in service	Comments:
Air Lab Site: 47-093-1013					
PM 2.5 Continuous	TEOM 1405	SN 1405A209531006	Good Condition	2011	
PM 2.5 Sequential	Thermo Partisol Plus 2025	SN B**22576**0909	Good Condition	2010	
Data Logger	ESC 8832	SN A3760K	Good Condition	2010	
PM 10 Hi-Vol	Andersen/GMW	SN P3084	Good Condition	Unknown	
PM 10 Hi-Vol	Andersen/GMW	SN P999	Good Condition	Unknown	
Rule Site: 47-093-1017					
PM 2.5 Sequential	Thermo Partisol Plus 2026	SN B**2645**1005	Good Condition	2012	
TSP Hi-Vol	General Metal Works	SN P1938	Good Condition	Unknown	
Burnside Site: 47-093-0027					
TSP Hi-Vol	General Metal Works	SN P2875	Good Condition	Unknown	
TSP Hi-Vol	Anderson/GMW	SN P4302	Good Condition	Unknown	
Ameristeel Site: 47-093-0023					
TSP Hi-Vol	General Metal Works	SN P04304	Good Condition	Unknown	
Bearden Site: 47-093-0028					
PM 2.5 Sequential	Thermo Partisol Plus 2025	SN B**21893**0606	Good Condition	2007	
PM 2.5 Sequential	Thermo Partisol Plus 2025	SN B**21894**0606	Good Condition	2007	
Spring Hill Site: 47-093-1020					
PM 2.5 Sequential	Thermo Partisol Plus 2025	SN B**21898**0606	Good Condition	2007	
Carbon Sampler	URG 3000N	SN 3N-B0285	Good Condition	2007	
PM 2.5 Speciation	Met One Super SASS	SN G9188	Good Condition	2008	
Ozone Analyzer	Teledyne / API 400E	2259	Good Condition	2009	
Ozone Calibrator	Teledyne / API 703E	188	Good Condition	2009	
Data Logger	ESC 8832	A 3758 K	Good Condition	2010	
Gist (pump for 0 air)	DOA-P704-AA	0611014883	Good Condition	2011	
East Knox Site: 47-093-0021					
Ozone Analyzer	Teledyne / API 400E	2014	Good Condition	2009	
Ozone Calibrator	Teledyne / API 703E	190	Good Condition	2009	
Data Logger	ESC 8832	A 3757 K	Good Condition	2010	
Gist (pump for 0 air)	DOA-P704-AA	0611014884	Good Condition	2011	
Back-up equipment located at the Air Lab					
Ozone Analyzer	Teledyne / API 400E	2013	Good Condition	2009	
Ozone Analyzer	Teledyne / API 400E	2697	Good Condition	2011	Bench standard
Ozone Calibrator	Teledyne / API 703E	189	Out for repair	2009	
Ozone Calibrator	Teledyne / API 703E	187	Out for repair	2009	For audit use
Data Logger	ESC 8832	A 3759 K	Good Condition	2010	
Gist (pump for 0 air)	DOA-P704-AA	0611013627	Good Condition	2011	For Audit use
Thermo Environmental Inst.	111	111-46018-275	Fair		
Gist (compressor)	1HAB-11T-M100X	0993	Condition	Unknown	
PM 2.5 Sequential	Thermo Partisol Plus 2025	SN B**21892**0606	Poor Condition	2007	being scavanged
PM 2.5 Sequential	Thermo Partisol Plus 2025	SN B**21895**0606	Moderate Condition	2007	stored at Rule site
TSP Hi-Vol	General Metal Works	SN P3085	Good Condition	Unknown	
Hi-Vol Orifice	Anderson/GMW	P3619	Good Condition	Unknown	
Hi-Vol Orifice	Anderson/GMW	P2861	Good Condition	Unknown	
Hi-Vol Orifice	Anderson/GMW	P4306	Good Condition	Unknown	
Hi-Vol Orifice	Anderson/GMW	P3927	Good Condition	Unknown	
PM 10 inlet head for Hi-Vol	Anderson/GMW	3555	Good Condition	Unknown	
PM 10 inlet head for Hi-Vol	Anderson/GMW	3874	Good Condition	Unknown	in mosquito garage
PM 10 inlet head for Hi-Vol	Anderson/GMW	3079	Good Condition	Unknown	in mosquito garage
PM 10 inlet head for Hi-Vol	Anderson/GMW	1536	Poor Condition	Unknown	in mosquito garage
Discontinued / Out of Service (located at Air Lab)					
SO_2 Analyzer	Thermo 43A	43A-39269-262	Unknown	N/A	
Gas calibrator	Thermo 146	146-45988-275	Unknown	N/A	
BIOS (Air Pro Sentry II)	SR-24-6-115A	SR 50018	Unknown	N/A	
BIOS (Air Pro Sentry II)	SR-24-6-115A	SR 50019	Unknown	N/A	
PM 2.5 Sequential	Anderson- RAAS	RAAS2.5-300-00124	Non-working Condition	N/A	Mostly disassembled
PM 2.5 Sequential	Anderson- RAAS	RAAS2.5-300-00166	Non-working Condition	N/A	Mostly disassembled
PM 2.5 Sequential	Anderson- RAAS	RAAS2.5-300-00497	Poor Condition	N/A	
PM 2.5 Sequential	Anderson- RAAS	RAAS2.5-300-00137	Non-working Condition	N/A	Mostly disassembled
PM 2.5 Sequential Speciation	Anderson- RAAS	RAAS2.5-401-00264	Non-working Condition	N/A	Mostly disassembled
PM 2.5 Sequential Speciation	Anderson- RAAS	RAAS2.5-401-00025	Non-working Condition	N/A	Mostly disassembled
Ozone analyzer	Thermo 49	49-50547-285	???	N/A	
Ozone analyzer	Thermo 49	49-29875-237	???	N/A	
Ozone Calibrator	Thermo 49CPS	49CPS-55290-303	???	N/A	Bench Standard
Zero Air Supply	ESC 116-7700P	0139	Non-working Condition	N/A	Mostly disassembled
Zero Air Supply	ESC 116-7700P	0142	Non-working Condition	N/A	Mostly disassembled

NCore Look Rock Monitoring Site

Air quality monitoring at the Look Rock monitoring site has a long history dating at least back to about 1980. Monitoring at this site has been a joint effort of the National Park Service (NPS) Tennessee Valley Authority (TVA) and the State of Tennessee.

Siting

The coordinates are:
Latitude + 35.6334N
Longitude -83.9416W
Elevation 801 Meters.

Site is approved by the EPA as a rural NCore site.

Monitoring Objective

Determine compliance with NAAQS; observe pollution trends for national data analysis, provide pollution levels for daily index reporting; and provide date for scientific studies.

Quality Assurance

All Quality Assurance procedures shall be implemented in accordance with 40 CFR 58, Appendix A.

Area of Representativeness

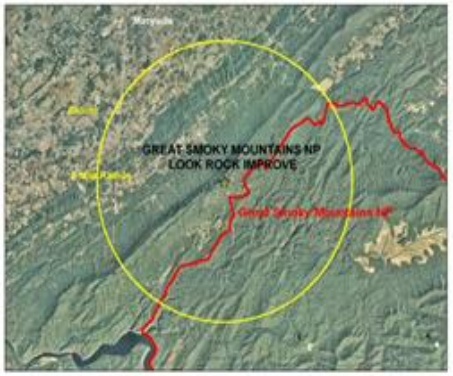
40 CFR Part 58 Appendix D provides design criteria for ambient air monitoring. In the case of urban NCore the spatial scales to be used are neighborhood and urban. Because the Look Rock site is located in a pristine high elevation area, it is understood that the site is ideally suited for both background and transport related measurements..

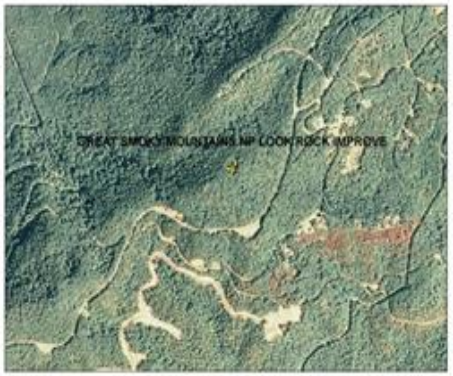
Spatial Scales for Each Pollutant

Generally regional scale.

Need For Additional Resources

All parties agree that the collaboration between the National Park Service, TVA and the State of Tennessee at the Look Rock sampling site has produced an extraordinarily diverse and in-depth air quality record and that the bulk of this data set has been validated and reported to the U.S. EPA AQS repository. However, under the present piecemeal funding by the various agencies, there is no assurance that this will continue at the site for the longer term needed for monitoring compliance with the PM NAAQS and with the regional haze rule (RHR). What is needed is a long-term commitment by EPA to coordinate the operation of this and other sites to maintain quality and relevance in the NCore network over the long term. This commitment should commence by the 2011 time frame when NCore sites are expected to become fully operational.





Looking West

Looking North

2011 View of Look Rock Site

Looking East

Looking South

Current TVA Air Monitoring Equipment at Look Rock
(2014 equipment unchanged from 2012 list provided)

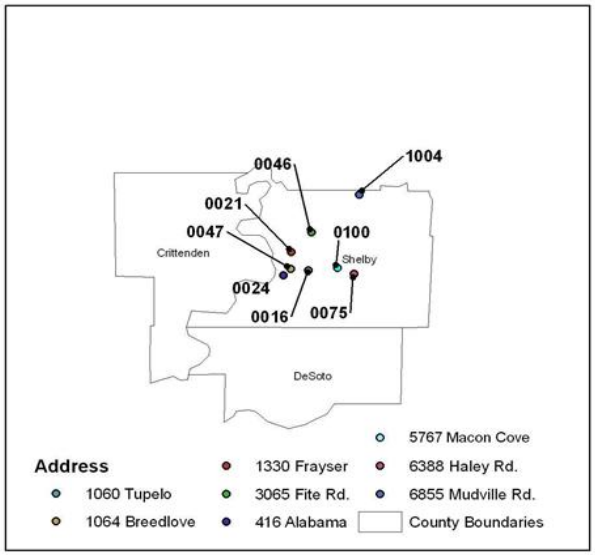
Current TVA Air Monitoring at Look Rock
Updated by Solomon T. Bairai, March 14, 2012

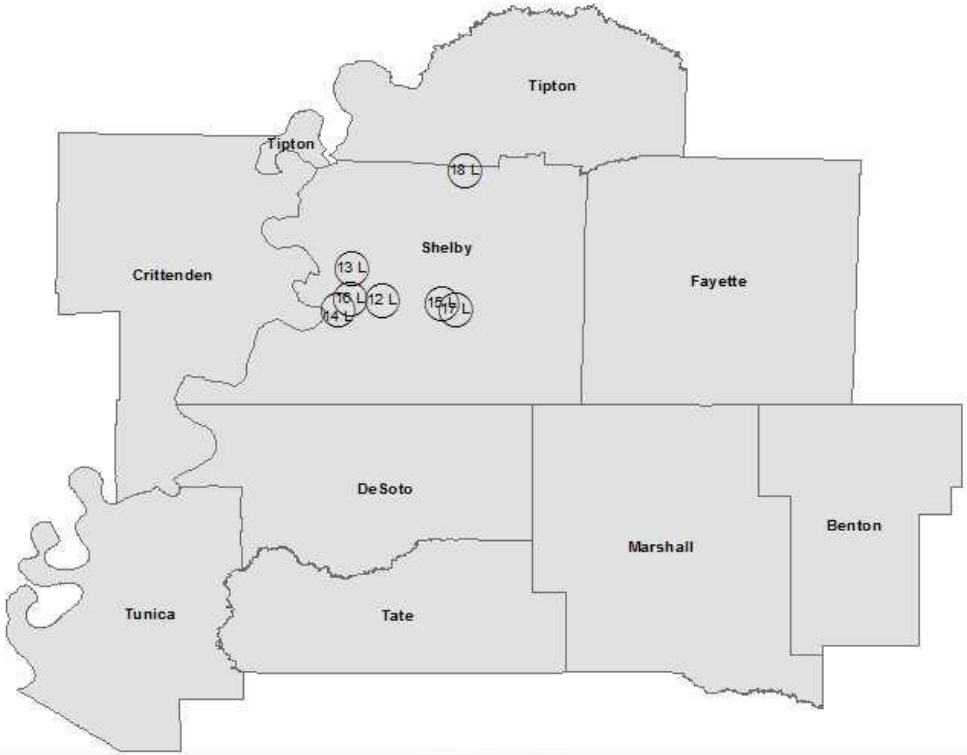
POLLUTANT / INSTRUMENT	ANALYSIS METHOD	SAMPLING / REPORTING FREQ	AQS CODE	PARA METER CODE	POC	REP ORG CODE	DATE SAMPLING BEGAN	MONITOR		SAMPLING INSTRUMENT NAME AND DESIGNATION	FED AGENCY
								Type	Comment		
Sulfur dioxide (SO2) trace-level	Pulsed fluorescence	Continuous/ 1 hour	47-009-0101	42401	2	1029	20070401	Special Purpose	NCore	Thermo SO2 43i-TLE EQSA-0486-060	TVA
Carbon monoxide (CO)	trace-level NDIR-GFC	Continuous/ 1 hour	47-009-0101	42101	2	1029	20070401	Special Purpose	NCore	Thermo CO-48i TLE RFCA-0981-054	TVA
[1]Nitrogen oxide (NO) trace-level	Chemilumine-scence with molybdenum converter	Continuous/ 1 hour	47-009-0101	42601	2	1029	20070401	Special Purpose	NCore	Thermo NO/NOy 42C TLE RFNA-1289-074	TVA
[1]Total reactive nitrogen (NOy) trace-level	Chemilumine-scence with molybdenum converter	Continuous/ 1 hour	47-009-0101	42603	2	1029	20070401	Special Purpose	NCore	Thermo NO/NOy 42C TLE RFNA-1289-074	TVA
[1]Nitrogen oxide (NO) trace-level	Chemilumine-scence with photolytic converter	Continuous/ 1 hour	47-009-0101	42601	3	1029	20081001	Special Purpose	NCore	Teledyne NO/NO2/NOx 200EU with photolytic converter	TVA
[1]Nitrogen dioxide (NO2) trace-level	Chemilumine-scence with photolytic converter	Continuous/ 1 hour	47-009-0101	42602	3	1029	20081001	Special Purpose	NCore	Teledyne NO/NO2/NOx 200EU with photolytic converter	TVA
[1]Oxides of Nitrogen (NOx) trace-level	Chemilumine-scence with photolytic converter	Continuous/ 1 hour	47-009-0101	42603	3	1029	20081001	Special Purpose	NCore	Teledyne NO/NO2/NOx 200EU with photolytic converter	TVA
[1]Black carbon PM2.5 LC	Optical absorption	Continuous/ 1 hour	47-009-0101	88313	2	1029	20061001	Special Purpose	NCore	Magee Scientific AE21 Dual beam (BC/UV)	TVA
[1]Sulfate PM2.5 LC	Thermal reduction/ Pulsed fluorescence	Continuous/ 1 hour	47-009-0101	88403	2	1029	20061108	Special Purpose	NCore	Thermo Model 5020	TVA
PM2.5 Mass	Beta Attenuation	1 hour	47-009-0101	88101	NA	1029	20110128	Special purpose	NCore	BAM-1020	TVA
PM10 Mass	Beta Attenuation	1 hour	47-009-0101	81102	NA	1029	20110128	Special purpose	NCore	BAM-1020	TVA
[1]Calibrator	NA	Daily	NA	NA	NA	NA	20070401	NA	NA	Thermo Model 146C	TVA
[1]Zero Air Supply	NA	NA	NA	NA	NA	NA	20070401	NA	NA	Thermo 111	TVA
[1]Telemetry-Data Logger	NA	1 minute/1 hour	NA	NA	NA	NA	20070401	NA	NA	ESC 8832	TVA

Memphis, TN-MS-AR MSA Area

AQS ID	Pollutant	Parameter	ROC*	Latitude	Longitude	Address	CBSA 2003 Title
47-157-0016	PM_{10} (Collocated)	81102	673	35.16564	-89.97081	1060 Tupelo (Gas Service Center)	Memphis, TN-MS-AR
47-157-0021	Ozone	44201	673	35.2175	-90.01971	1330 Frayser	Memphis, TN-MS-AR
47-157-0024	CO, PM 2.5 Continuous, PM 2.5 Speciation, PM 10	42101, 88502, 81102	673	35.15119	-90.04156	416 Alabama	Memphis, TN-MS-AR
47-157-0047	PM 2.5 (Collocated)	88101	673	35.16889	-90.02154	1064 Breedlove (Guthrie Clinic)	Memphis, TN-MS-AR
47-157-0075	NCORE: CO (trace), NOY, O_3, Pb, PM 2.5, PM 2.5 Continuous, PM 2.5 Speciation, PM 10 lo vol, PM 10-2.5, SO2 (trace), Wind Speed, Wind Direction, Temp, % Relative Humidity, Barometric Pressure	42101, 42600, 44201, 14129, 88101, 88502, 88502, 85101, 86101, 42401, 61101, 61102, 62101, 62201, 64101	673	35.1517	-89.85025	6388 Haley Rd. (Shelby Farms)	Memphis, TN-MS-AR
47-157-1004	Ozone	44201	673	35.37805	-89.83439	6855 Mudville Rd. (Edmund Orgill Park)	Memphis, TN-MS-AR
47-157-0100	Near Road NO2: NO2, CO (trace)	42602, 42101	673	35.16126	-89.87065	5767 Macon Cove	Memphis, TN-MS-AR

*Reporting Organization Code
0673 Memphis/Shelby County Health Department





Local Sites (L Map ID)

AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
471570016	12 L	PM10	2014	32820	GAS SERVICE CENTER MEAGHER STREET	35.16575	-89.9709
471570021	13 L	O3	2014	32820	1330 FRAYSER BLVD	35.2175	-90.0197
471570024	14 L	CO, PMSpec	2014	32820	416 ALABAMA AVENUE	35.15119	-90.0416
471570100	15 L	Near Road NO2, CO	2014	32820	5767 Macon Cove Near Road	35.16126	-89.8706
471570047	16 L	PM2.5	2014	32820	1064 BREEDLOVE STREET (Roof of Guthrie C	35.16889	-90.0215
471570075	17 L	Pb, CO, SO2, O3, PM2.5, PM Cont AQI, PM Spec	2014	32820	6388 Haley Rd. (Shelby Farms NCORE site)	35.1517	-89.8502
471571004	18 L	O3	2014	32820	6855 MUDVILLE RD.	35.37815	-89.8345

Tennessee's Interpretation of Ambient Air Monitors Needed to meet the 40CFR, Part 58 Requirements

Census Area Identification and Population Data			14129 Lead		42101 CO		42401 SO_2		42602 NO_2		44201 Ozone			81102 PM_{10}		88101 $PM_{2.5}$				88502 $PM_{2.5}$ Speciation		88101 or 88501 $PM_{2.5}$ Cont	
CBSA 2003 Code	Census 2010 /Est. 2013	CBSA 2003 Title (MS Areas)	Operating	Required	Operating	Required	Operating	Required	Operating	Required	Operating	2011 2013 8 Hr DV	Required	Operating	Required	Operating	2011 2013 Annual DV ug/m^3	2011 2013 24 Hr DV ug/m^3	Required	Operating	Required	Operating	Required
32820	1324829/ 1341746	Memphis, TN-MS-AR	1	1	23	1	13	1	1[1,4]	1	3	0.078	2	2	22	21	9.7	20	3	1	1	1	1

[1]The Memphis and Shelby County Health Department and the states of Arkansas and Mississippi have implemented a joint MOA that provides for meeting the MSA monitoring requirements for the combined MSA area. See page 31 in the Appendix.

[2] Includes collocated monitor at Gas Service Center

[3]Includes trace level analyzer at Shelby Farms NCORE.

[4] Monitor located in Marion, Arkansas just to the northwest of downtown Memphis.

[5] EPA has requested the discontinuance of the $PM_{2.5}$ STN at the Alabama Station effective January 28, 2013. Official letter from EPA has not bee received. See Shelby County submittal letter on page 40 in the Appendix.

Discussions of any proposals to re-locate monitors in the next 18 months and suitability of $PM_{2.5}$ sites for use in comparisons to the annual $PM_{2.5}$ standard:

Local Program Monitors Criteria Data Tables

AQS Code	Parameter	POC	ROC	Date Sampling Began	Operating Schedule	CBSA	Population of CBSA 2013 Est	Population of CBSA 2010 Census	Land Use	Location Setting	Dominant Source	Measurement Scale	Monitor Objective	Monitor Type	Sampling Instrument Name and Designation
471570016	81102	1	673	1/1/1986	1 in 6	32820	1,341,746	1,324,829	Industrial	Urban and Center City	Area	Neighborhood	Highest Concentration	SLAMS	Sierra-Andersen/GMW 321-BRFPS-1287-064 064
471570016	81102	2	673	1/1/1986	1 in 6	32820	1,341,746	1,324,829	Industrial	Urban and Center City	Area	Neighborhood	Highest Concentration	QA Collocated	Sierra-Andersen/GMW 321-BRFPS-1287-064 064
471570021	44201	1	673	9/1/1972	Continuous	32820	1,341,746	1,324,829	Residential	Suburban	Area	Neighborhood	Population Exposure	SLAMS	Advanced Pollution Instrumentation 400/400A/400E EQAO-0992-087 087
471570024	42101	1	673	4/1/2006	Continuous	32820	1,341,746	1,324,829	Residential	Suburban	Mobile	Micro scale	Highest Concentration	SLAMS	Teledyne Advanced Pollution Instrumentation 300 or 300E RFCA-1093-093-093
471570024 (temporarily discontinued on July 24, 2011)	88502	3	673	01/01/2006 to 07/24/2011	Continuous	32820	1,341,746	1,324,829	Residential	Suburban	Area	Neighborhood	Population Exposure	SLAMS	R&P TEOM Gravimetric 50 degrees Celsius PM 2.5 SSI w/No Correction Factor 711
471570046	81102	1	673	1/4/2013	1 in 6	32820	1,341,746	1,324,829	Residential	Suburban	Area	Neighborhood	Population Exposure	SLAMS	Sierra-Andersen/GMW 321-B RFPS-1287-064 064

AQS Code	Parameter	POC	ROC	Date Sampling Began	Operating Schedule	CBSA	Population of CBSA 2013 Est	Population of CBSA 2010 Census	Land Use	Location Setting	Dominant Source	Measurement Scale	Monitor Objective	Monitor Type	Sampling Instrument Name and Designation
471570047	88101	1	673	12/1/1998	1 in 1	32820	1,341,746	1,324,829	Residential	Suburban	Area	Neighborhood	Population Exposure	SLAMS	R&P Partisol Plus FRM 2025 PM 2.5 RFPS-0498-118 118
471570047	88101	2	673	12/1/1998	1 in 6	32820	1,341,746	1,324,829	Residential	Suburban	Area	Neighborhood	Population Exposure	SLAMS	R&P Partisol Plus FRM 2025 PM 2.5 RFPS-0498-118 118
471570075	14129	1	673	1/1/2012	1 in 6	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	Sierra Andersen/GMW 350 RFPS-1087-062 062
471570075	42101	1	673	4/1/2011	Continuous	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	Teledyne Advanced Pollution Instrumentation 300EU RFCA-1093-093
471570075	42401	1	673	6/21/2011	Continuous	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	Teledyne Advanced Pollution Instrumentation 100EU EQSA-0495-100
471570075	42600	1	673	6/17/2011	Continuous	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood	Population Exposure	NCORE	Teledyne Advanced Pollution Instrumentation 200EU RFNA-1194-099

AQS Code	Parameter	POC	ROC	Date Sampling Began	Operating Schedule	CBSA	Population of CBSA 2013 Est	Population of CBSA 2010 Census	Land Use	Location Setting	Dominant Source	Measurement Scale	Monitor Objective	Monitor Type	Sampling Instrument Name and Designation
471570075	44201	1	673	3/11/2011	Continuous	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	Teledyne Advanced Pollution Instrumentation 400E/400/400A EQOA-
471570075	85101	1	673	1/16/2012	Continuous	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	R&P Partisol Plus FRM 2025 PM 10 RFPS-1298-127
471570075	86101	1	673	1/16/2012	1 in 3	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	R&P Partisol Plus FRM 2025 PM 10-2.5 RFPS-0509-176
471570075	88101	1	673	2/23/2011	1 in 3	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	R&P Partisol Plus FRM 2025 PM 2.5 RFPS-0498-118
471570075	88502	3	673	4/8/2011	Continuous	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	R&P TEOM Gravimetric 50 degrees Celsius PM 2.5 SSI w/No Correction Factor 711
471570075	88502	6	673	2/8/2011	1 in 3	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	Met One SASS 810 URG 3000N

AQS Code	Parameter	POC	ROC	Date Sampling Began	Operating Schedule	CBSA	Population of CBSA 2013 Est	Population of CBSA 2010 Census	Land Use	Location Setting	Dominant Source	Measurement Scale	Monitor Objective	Monitor Type	Sampling Instrument Name and Designation
471570075	61101	1	673	7/1/2012	Continuous	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	Met One Sonic Anemometer Model 50.5
471570075	61102	1	673	7/1/2012	Continuous	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	Met One Sonic Anemometer Model 50.5
471570075	62101	1	673	7/1/2012	Continuous	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	Met One 083D
471570075	62201	1	673	7/1/2012	Continuous	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	Met One 083D
471570075	64101	1	673	7/1/2012	Continuous	32820	1,341,746	1,324,829	Industrial	Urban	Area	Neighborhood and Urban Scale	Population Exposure	NCORE	Climatronics Met Sensor
471571004	44201	1	673	2/1/1980	Continuous	32820	1,341,746	1,324,829	Agricultural	Rural	Mobile	Urban	Highest Concentration	SLAMS	Advanced Pollution Instrumentation 400/400A/400E EQOA-

*Reporting Organization Code (ROC) – 0673 Memphis/Shelby County Health Department

Ambient Air Monitoring Work Plan
for
Near Road NO_2 Air Monitoring Station
Memphis, TN-MS-AR MSA

Shelby County Health Dept.
Air Pollution Control
814 Jefferson Avenue Room 438R
Memphis, TN 38105

Public Health
Prevent. Promote. Protect.

Near Road NO_2 Air Monitoring Station

In February 2010, the U.S. Environmental Protection Agency (EPA) amended its National Ambient Air Quality Standard (NAAQS) for Nitrogen Dioxide (NO_2). In this rule, EPA required changes to the monitoring network that will focus monitoring resources to capture short-term NO_2 concentrations near heavily trafficked roads, to assess area-wide (or community-wide) NO_2 concentrations, and to assess NO_2 concentrations for vulnerable and susceptible populations. In the new monitoring requirements, state and local air monitoring agencies are required to install near-road NO_2 monitoring stations at locations where peak hourly NO_2 concentrations are expected to occur within the near-road environment in larger urban areas. State and local agencies are required to utilize six factors in the site selection process: traffic volumes, fleet mix, roadway design, traffic congestion patterns, local terrain or topography and meteorology. In addition, there are other factors that affect the selection and implementation of a near-road monitoring station, including satisfying siting criteria, favorable site logistics (e.g., gaining access to property and safety), and consideration of population exposure. In August 2011, EPA revised the NAAQS for carbon monoxide to also require a near-road monitor.

Site Selection and Ranking Information

In 40 CFR Part 58 Appendix D, the EPA requires state and local air agencies to operate one near-road NO_2 monitor in any Core Based Statistical Area (CBSA) with a population of 500,000 or more persons. Those CBSAs with 2,500,000 or more persons or those CBSAs with one or more roadway segments carrying traffic volumes of 250,000 or more vehicles (as measured by annual average daily traffic (AADT) counts, should have two near-roads NO_2 monitors. According to the 2010 U.S. Census Bureau, the Memphis-Crittenden-Desoto counties statistical area population is 1,316,100. The highest AADT for a Memphis road segment is 140,850 according to data obtained from the 2007 U. S. Federal Highway Administration's Freight Analysis Framework. Since the population is between 500,000 and 2,500,000 and the maximum AADT is less than 250,000, only one near-road NO_2 monitor will be required in the CBSA.

Road segments were sorted based on AADT and FE-AADT and ranked from highest to lowest. The resulting ranking process is found in Table 1. The Shelby County Assessor of Property maps were used to determine the owner of each property of these road segments. Google Earth was used to determine the Tennessee Department of Transportation (TDOT) right-of-way (R.O.W.) that may be accessible by surface roads. Potential sites were identified and visited to determine whether the road segments would be possible candidates for a near-road monitoring station. The road segment that should meet all of the criteria established by the EPA is highlighted in Table 1.

Table 1: Rankings of Road Segments in Shelby County based on 2007 FE-AADT from the U.S. Federal Highway Administration's Freight Analysis Framework.

Roadway	From	To	AADT	AADT Rank	Heavy Duty AADT	2007 FE-AADT	% Top FE-AADT	FE-AADT Rank
I- 40	Summer	I-240	130,278	2	24,752	353,046	100	1
I-40	I-240	Sycamore View	140,850	1	16,902	292,968	83	2
I-40	Jackson Ave at Dr. Martin Luther King Expressway	U.S.51 at I-240 Interchange at Exit 2A Millington St.	112,138	6	16,820	263,518	75	3
I-40	Sycamore View	Germantown Pkwy	105,227	7	16,836	256,751	73	4
I-40	Covington Pike	Summer Ave.	95,130	9	18,074	257,796	73	5
I-40	I-69	Jackson Ave.	116,938	5	15,201	253,747	72	6
I-240	I-55 @ I-240	Elvis Presley	104,774	8	15,716	246,218	70	7
I-40	Austin Peay Hwy	Covington Pike	87,860	11	16,639	238,097	67	8
I-40	Exit Ramp 3	Jackson Ave.	89,175	10	15,159	225,606	64	9
I-240 *	Ridgeway Rd @ Bill Morris Pkwy	I-240 ramp	129,980	3	9,098	211,862	60	
I-240	S. Third St.	I-55 @ I-240	82,463	12	14,018	208,625	59	10
I-240 **	Airways Blvd.	I-55	123,840	4	7,430	190,710	54	
I-40 ***	St. Jude Exit	Danny Thomas Blvd.	58,553	13	11,710	163,943	46	

* Highway 385 @ I-240

** Old Hernando DOT Air Monitoring Station

*** Current Alabama Air Monitoring Station

Note: The road segments marked with asterisks were reviewed because they were either past or current monitoring sites or locations where officials in local government requested additional information.

A site along the campus of Southwest Tennessee Community College located at 5983 Macon Cove has been selected for a potential location.
The coordinates are:
Latitude35.161264 N
Longitude -89.870646 W
Elevation 251 feet

Monitoring Objective

To determine compliance with the NAAQS, observe pollution trends for national data analysis, provide pollution levels for daily index reporting and provide data for scientific studies

Monitors

Nitrogen Dioxide - Maximum hourly NO_2 will be sampled using a continuous chemiluminescent monitor meeting the Federal Reference Methods. A Teledyne API T200U ultra sensitive NO_X analyzer will be used.

Carbon Monoxide – Maximum hourly CO will be sampled using a continuous gas filter correlation analyzer that meets the Federal Reference Methods. A Teledyne T300U ultra sensitive CO analyzer will be used.

Particulate Matter – $PM_{2.5}$ will be monitored at this location, if required.

Meteorological Measurements – There are no plans to install a met station at this location because there is met data already being collected at the NCORE site which is approximately 1.8 miles southeast of this potential location.
Other types of non-regulatory monitors will be considered based on the availability of purchase money and staff resources to meet EPA's objective of multi pollutant monitoring in the near-road environment. Monitors to be considered include monitoring for traffic counts, ultra fine particles, and black carbon.

Area of Representativeness

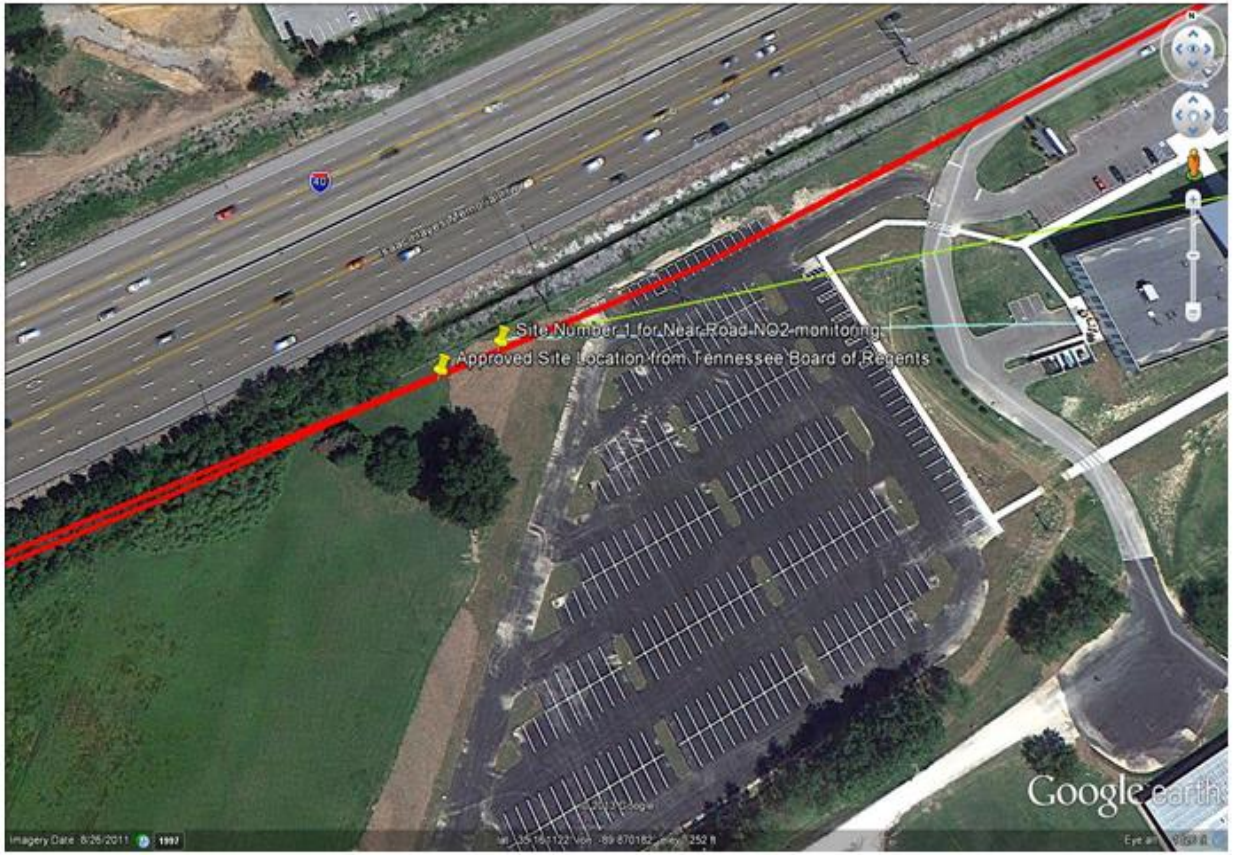
40 CFR Part 58 Appendix D provides design criteria for ambient air monitoring. The monitoring objective is to produce data on near-road locations where peak, ambient NO_2 concentrations are expected to occur as a result of on-road mobile source emissions. Monitoring at such a location within a particular urban area will provide data that can be compared to the NAAQS and used to assess exposures for those who live, work, play, go to school or commute within the near-roadway environment.

The spatial scale defines the physical dimensions of the air parcel nearest to a monitoring site throughout which actual pollutant concentrations are reasonably similar. It is determined by the characteristics of the area surrounding the air monitoring site and the site's distance from nearby air pollution sources such as roadways, factories, etc. In the case of the near road monitoring, the spatial scales to be used are neighborhood and urban. The nitrogen dioxide monitor would be representative of neighborhood and urban scale. The carbon monoxide monitor would be representative of neighborhood scale. The future PM fine monitor would be representative of urban scale.

Site Location for Near Road NO_2 Monitoring

The Near Road NO_2 site is located along the south side of Interstate 40 between the I-40/I-240 Interchange and Sycamore View Road. Access to the site is by going southeast on Sycamore View Road and southwest on Macon Cove. See Figure 1. The road segment is ranked 2nd in the FE-AADT accounting for 83% of the maximum FE-AADT. The property belongs to the State of Tennessee. The proposed site is situated along the northwest corner of Southwest Tennessee Community College's campus. The site location is approximately 20 feet to the west of the original site location selected by the EPA.

Figure 1: Site Location for Near Road NO_2 Monitoring



Roadway design or configuration
The potential site will be just below grade with the interstate. The monitoring site will be approximately 27 meters from the nearest outer lane of the interstate.

Roadside Structures
There are no sound walls or obstructive buildings by the potential site. A guard rail, gravel drainage ditch and fence separate the interstate from the potential site. Any vegetation obstructing the existing fencing will be removed prior to the monitoring station being established.

Terrain
The terrain begins to slope.

Meteorology
See Figure 2 for a wind rose for the Memphis, TN, MS, and AR MSA
Relative south, southwesterly wind directions

Additional Location Information
AQS ID: 47-157-0100
Site Location: 5767 Macon Cove

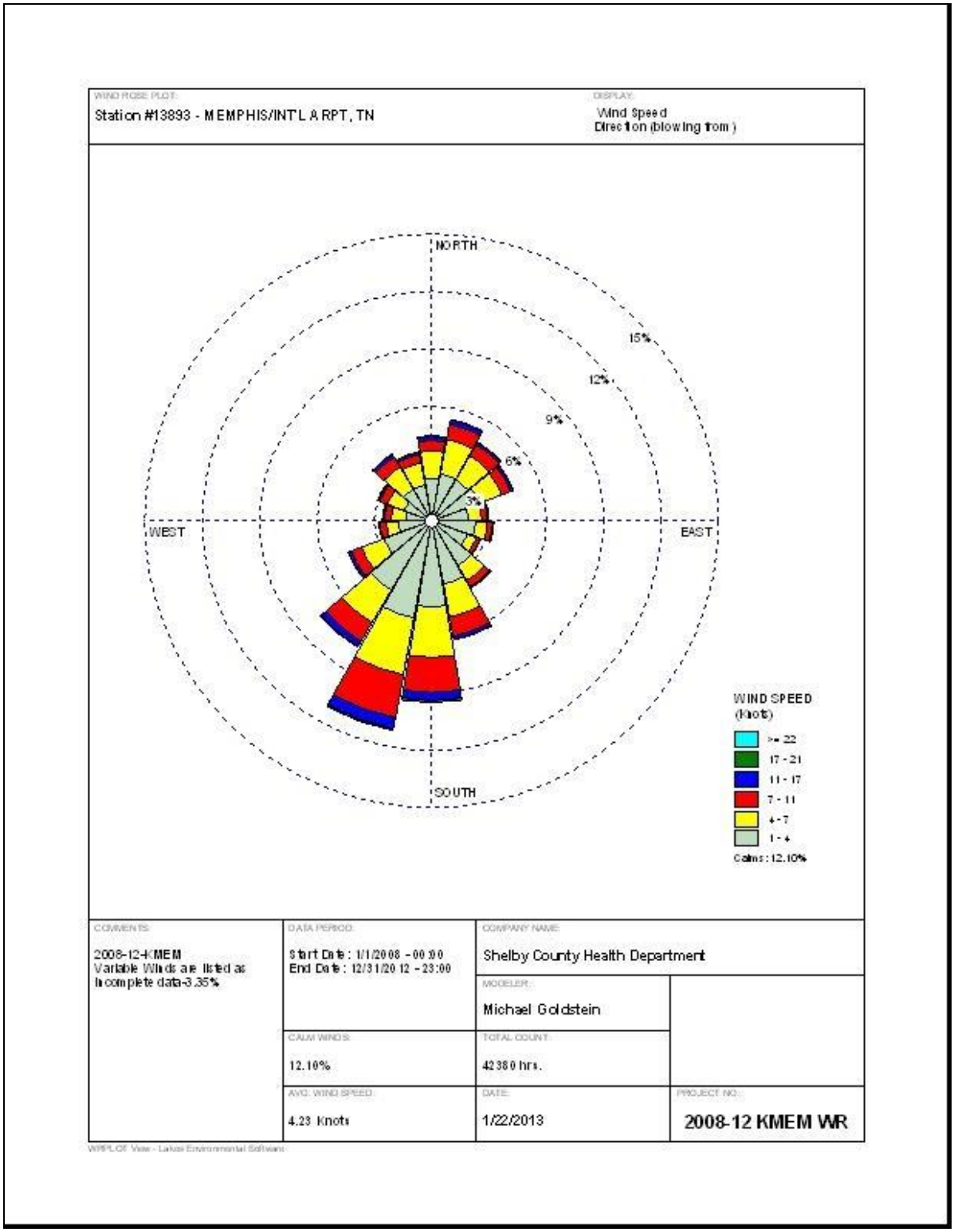


Figure 2: Wind Rose for Memphis, TN-MS-AR MSA

Horizontal Spacing

The inlet probe will be located approximately 27 meters from the nearest edge of the outer traffic lane of the target road segment.

Vertical Spacing

The inlet probe will be located on top of the monitoring shelter approximately 4 to 5 meters above the ground level.

Existing Safety Features

There is a guard rail that separates the interstate from a gravel drainage ditch and a fence that will separate this area from the monitoring station. Since the monitoring station will be located on the northwest corner of the parking lot at Southwest Tennessee Community, campus security patrols the area frequently.

Existing Infrastructure

Power is available within 30 meters of the potential site. The potential site will be situated along the northwest corner of an existing parking lot for Southwest Tennessee Community College's campus. The site location would be fairly safe because the campus security frequently patrols the parking lot and campus.

Property Availability

The property is owned by the State of Tennessee. The Tennessee Board of Regents and Southwest Tennessee Community College have agreed to allow us to use an area just west of the approved area by EPA. A lease agreement will be worked out with the college and the State of Tennessee to use the site location. Officials from the EPA Region 4 office have reviewed the site area and approved an area just east of the selected site by the Tennessee Board of Regents. Because of a future parking lot expansion, the State of Tennessee requested that our agency not place a structure along the approved area by EPA.

Road Construction

There may be future construction along the Interstate 40 / Interstate 240 interchange which is approximately 1 mile west of the proposed location. An excerpt from the November 10th, 2012 Memphis' edition of The Commercial Appeal states "*The renovation entails the construction of a 70-foot-high flyover ramp connecting the north I-40 loop with the eastbound interstate heading toward Nashville and completing the ramp from westbound I-40 to the north loop*." The plans for the construction should be completed by next year with approximately 3 three years to completion for the entire project.

Site Pictures

Facing North – Picture facing Interstate 40. The vegetation and trees along the fence line will be cleaned and removed on the State of Tennessee property and on Department of Transportation Property.

Facing Northeast – The approved area by the Tennessee Board of Regents is slightly sloped from the interstate. The area will be leveled.

Facing East – continued view of Southwest Tennessee's Community College parking lot in the distant

Facing Southeast – continued view of Southwest Tennessee's Community College parking lot in the distant

Facing South – A large oak tree will be pruned and the lower limbs will be lifted up to move the drip line further from the monitoring station. The distance of the tree will be 20 meters away from the monitoring shelter.

Facing Southwest – The area pictured here begins to slope and becomes swampy during heavy rain events. It is also on the edge of the 500 year FEMA flood plain.

Facing West – Trees and vegetation were cleared. Just on the other side of the cleared area begins the 500 year FEMA flood plain

Facing Northwest – The terrain begins to slope and becomes below grade of the interstate.

List of Attachments in Appendix

Local Programs Submittals of Ambient Monitoring Plans

Memphis AMP

These documents are provided as submitted by the respective monitoring agency for use by the state in updating the overall ambient monitoring plan document.

List of Appendicies

Memphis Air Monitoring Plan…….A
Ambient Monitor and Auxillary Support Equipment Evaluation……..... B
Memorandum of Agreement for Memphis, TN-MS-AR……C
Shelby County Air Pollution Monitoring Sites 2014……..D
Letter to EPA requesting discontinuation of Fite Rd Station.……E
EPA approval letter to discontinue Fite Rd.Station…… …. F

Appendix A Memphis Air Monitoring Plan

Shelby County Health Department Air Pollution Control Program

Network Review

2014

An assessment of the Shelby County Health Department's (SCHD) ambient air monitoring network has been conducted. The SCHD Air Monitoring Branch has evaluated each air monitoring site according to the requirements and provisions as required by the *Code of Federal Regulations 40, Parts 50, 53, and 58* and have concluded that the number and locations of the monitors in our network comply with the CFR provisions. Therefore, the SCHD is forwarding the enclosed documents with the pertinent air monitoring site information so that the contents may be incorporated into the State of Tennessee's Monitoring Network plan to EPA.

Changes to our air monitoring network include the following:

- The SCHD is in the Second Phase of the Core Based Statistical Area Near Road NO_2 Monitoring. The station will include equipment for multi-pollutant monitoring for NO_2 and CO. Other types of non-regulatory monitors will be considered based on the availability of purchases money and staff resources to meet EPA's objective of multi pollutant monitoring in the near-road environment. Monitors to be considered include monitoring for traffic counts, ultra fine particles, and black carbon. A grant application and work plan were submitted to the EPA on March 28, 2012. A grant extension through December 31, 2014 was submitted to the EPA on October 31, 2013 and approved. A site location on the campus of Southwest Tennessee Community College has been selected and approved on November 14, 2013 by the EPA. A fully executed easement by the State of Tennessee was approved on February 10, 2014.
- The $PM_{2.5}$ continuous monitor (TEOM) is temporarily discontinued at the Alabama (47-157-0024) site. The EPA was notified on September 19, 2011 of the status on the monitor and has given the SCHD approval to temporarily discontinue this sampling until funds are located to replace the monitor. This monitor began to malfunction on July 25, 2011. This information has been notated in AQS. The letters requesting the discontinuation and approval from the EPA are on pages 38 and 39 in the Appendix.

Active Sites

Shelby County Health Department Active Sites	Pollutant	Monitor	AQS ID
416 Alabama	CO Continuous PM_{10} (6 day)	Teledyne API Sierra Andersen	47-157-0024
6855 Mudville (Edmund Orgill Park)	O_3 Continuous	Teledyne API	47-157-1004
1330 Frayser	O_3 Continuous	Teledyne API	47-157-0021
1060 Tupelo	PM_{10} Collocated (6 day)	Sierra Andersen 321-B	47-157-0016
1064 Breedlove	$PM_{2.5}$ Collocated (Daily and 6 day)	R&P 2025 Sequential	47-157-0047
6388 Haley Rd.	Pb (6 day) CO (Trace) Continuous SO_2 (Trace) Continuous NOY Continuous O_3 Continuous PM_{10} (lo vol) (3 day), $PM_{10\text{-}2.5}$ (3 day) $PM_{2.5}$ (3 day) $PM_{2.5}$ Continuous $PM_{2.5}$ Speciation (3 day) Carbon (3 day) Wind Speed Wind Direction Ambient Temperature Relative Humidity Barometric Pressure	Sierra Andersen 350 Teledyne API Teledyne API Teledyne API Teledyne API R&P 2025 PM 10 R&P 2025 PM 2.5 R&P 2025 PM 2.5 R&P TEOM Met One Super SASS URG 3000 Met One Sonic Anemometer Met One Sonic Anemometer Met One Met One Climatronics Met Sensor	47-157-0075

Appendix B 2014 Ambient Monitor and Auxillary Support Equipment Evaluation

Site	Location	AIRS ID	Make	Model Number	Serial Number	Condition
Alabama	416 Alabama	47-157-0024	URG	3000N	3000N; Controller 3N-B0690	Poor
			URG	3000N	3000N; Module C 3N-B0847	Poor
			URG	3000N	3000N; Stand (Pump) 3N-B0630	Good
			Met One	SASS	SASS; Control Box B1480	Good
			Met One	SASS	SASS; Sampling Head A7084	Good
			Met One	SASS	SASS; Pump Box B2919	Good
			Teledyne API	300E	700	Good
			ESC	8816	1264	Good
			Teledyne API	700	404	Poor
			Teledyne API	300	999	Poor
			ESC	8832	A1571	Good
			Thermo Environmental	1405	1405A223701302	Good
Edmund Orgill	6855 Mudville Rd	47-157-1004	Kipp & Zonen	BD300	51518	Good
			Teledyne API	T400	1138	Good
			Teledyne API	T703	235	Good
			ESC	8832	A1570	Good
			Yokogawa	4182	220	Poor

Site	Location	AIRS ID	Make	Model Number	Serial Number	Condition
Edmund Orgill continued			Measurement Technologies	1001	Asset # 921261	Poor
			Cisco Firewall	ASA 5505	JMX1804Z0FB	Good
			LG Modem	LWHD8008R	712TAVY11927	Good
Frayser	1330 Frayser Blvd.	47-157-0021	Teledyne API	400A	459	Good
			Teledyne API	400A	650	Good
			Teledyne API	T703	169	Good
			ESC	8832	A1568	Good
			Yokogawa	4182	T4182LA645	Good
			Cisco Firewall	ASA5505	JMX16514057	Good
			AT & T Modem	4111N	34111E016403	Good
			Measurement Technologies	1001	941783	Good
Gas Service Center	1060 Tupelo	47-157-0016	Sierra Andersen	321-A	1513	Good
			Sierra Andersen	321-A	1653	Good
Guthrie Clinic	1064 Breedlove	47-157-0047	Rupprecht & Pataschnick	2025	2025A209219811	Good
			Thermo Environmental	2025i	2025I203531302	Good
Shelby Farms (NCORE)	6388 Haley Rd.	47-157-0075	Teledyne API	400E	2664	Good
			ESC	8832	A1578	Good
			Rupprecht & Pataschnick	2025	2025B218020506	Good

Site	Location	AIRS ID	Make	Model Number	Serial Number	Condition
Shelby Farms (NCORE) continued			Rupprecht & Pataschnick	2025	2025A209179811	Good
			Met One	Super SASS	Super SASS; Control Box K16485	Good
			Met One	Super SASS	Super SASS; Pump Box K17956	Good
			Met One	Super SASS	Super SASS; Sampling Head K17985	Good
			URG	3000N	3000N; Controller 3N-B0742	Good
			URG	3000N	3000N; Module C 3N-B0794	Good
			URG	3000N	3000N; Stand (Pump) 3N-B0592	Good
			API	100EU	135	Good
			API	300EU	246	Good
			API	200EU	184	Good
			API	700EU	88	Good
			API	701H	113	Good
			Rupprecht & Pataschnick	1400a	140AB231030006	Good
			Climatronics	Met Gear	T-135	Good
			Kipp & Zonen	BD300	51519	Good
			Sierra Andersen		0240962025U	
			Teledyne API	703E	297	Good

Site	Location	AIRS ID	Make	Model Number	Serial Number	Condition
Shelby Farms (NCORE) continued			Teledyne API	701H	80	Good
			Teledyne API	501Y	145	Good
			Teledyne API	701	1084	Good
Health Department Warehouse	994 Bellevue		Teledyne API	100A	1450	Poor
			Teledyne API	300	609	Poor
			Teledyne API	200A	415	Poor
			Rupprecht & Pataschnick	2000FRM	20122	Good
			Teledyne API	701	644	Good
			Teledyne API	300	123	Poor
			Teledyne API	201E	57	Good
			Teledyne API	701	994	Good
			Teledyne API	702	317	Good
			Dasibi	1008PC	5549	Poor
			Teledyne API	501NH	438	Good
Health Department Lab	814 Jefferson Ave. (Room		Teledyne API	400	299	Poor
			Rupprecht & Pataschnick	2025	2025A209149811	Poor
			Rupprecht & Pataschnick	2025	2025A209189811	Poor

Site	Location	AIRS ID	Make	Model Number	Serial Number	Condition
Health Department Lab continued			Teledyne API	401	214	Poor
			ESC	8832	A1567	Good
			Teledyne API	100A	1765	Poor
			Teledyne API	100E	236	Good
			Measurement Technologies	1001	7930553	Good
			ESC	8816	1264	Poor
			ESC	8816	1265	Poor
			ESC	8832	A1569	Good
			ESC	8816	1268	Poor
			ESC	8816	1266	Poor
			ESC	8816	1263	Poor
			ESC	8832	A1567	Good
			ESC	8816	3458	Poor
			Teledyne API	400	733	Good
			Teledyne API	401	227	Good
			Teledyne API	401	188	Good
			Teledyne API	700	487	Poor
			Environics	6103	3445	Poor
			Teledyne API	401	253-S	Poor
			Teledyne API	T400	631	Good

SHELBY COUNTY HEALTH DEPARTMENT

Mark H. Luttrell, Jr.
Mayor
Shelby County

YVONNE S. MADLOCK
DIRECTOR

HELEN MORROW, M.D.
HEALTH OFFICER

Public Health
Prevent. Promote. Protect.

April 8, 2014

Mr. Robert Brawner, Acting Chief Environmental Manager
Tennessee Division of Air Pollution Control
9th Floor, L & C Annex
Nashville, TN 37243-1531

Ms. Maya Rao, Chief of the Air Division
Mississippi Department of Environmental Quality
Office of Pollution Control, Air Division
P.O. Box 2261
Jackson, MS 39225

Mr. Mike Bates, Chief of the Air Division
Arkansas Department of Environmental Quality
5301 Northshore Dr.
North Little Rock, AR 72118

Dear All,

In accordance with the provisions of the Memorandum of Agreement (MOA) between our respective agencies, this document serves as a notification of changes described in the MOA between the Shelby County Health Department (SCHD), Mississippi Department of Environmental Quality (MDEQ), and the Arkansas Department of Environmental Quality (ADEQ) signed May and June of 2008.

NCORE

Shelby County was chosen by EPA as one of 75 NCORE site locations, nationally. This multi-pollutant air monitoring station is located at 6388 Haley Road (47-157-0075) in the Shelby Farms area.

NO2

Shelby County anticipates in participating in the Second Phase of the Core Based Statistical Area Near Road NO_2 monitoring in conjunction with the recently promulgated NO_2 regulations. A site location has been selected on the campus of Southwest Tennessee Community College and approved by the Environmental Protection Agency. Preparations are in progress for the installation of the station. The Near Road NO_2 monitoring station should be operational by the end of 2014.

SO_2

The SCHD is currently operating a trace SO_2 analyzer at the Shelby Farms NCORE site.

PM 2.5

The PM 2.5 continuous monitor (TEOM) is temporarily discontinued at the Alabama (47-157-0024) site. The EPA was notified on September 19, 2011 of the status on the monitor and has given the SCHD approval to temporarily

discontinue this sampling until funds are located to replace the monitor. This monitor began to malfunction on July 25, 2011. This information has been notated in AQS. The letters requesting the discontinuation and approval are on pages 8 and 9 of the Appendix.

PM 10

THE SCHD currently monitors for PM 10 at the Gas Service Center (47-157-0016) (collocated monitors) and the Alabama Station (47-157-0024).

OZONE

The ozone monitoring requirement for NCORE increases the number of ozone analyzers in Shelby County to three at the following sites: 47-157-0021, 47-157-0075 and 47-157-1004.

LEAD

The current lead (Pb) NAAQS requires identifying sources of lead emissions of one half ton per year or greater. The emissions inventory indicates that there are no sources with emissions of one half ton or greater. Therefore, the SCHD does not anticipate having to do any lead source sampling. However, lead monitoring is a component of the NCORE site. Lead sampling began on January 4, 2012.

If you have any questions, please call me at (901) 222-9578.

Sincerely,

Bob Rogers

Bob Rogers, Technical Manager
Pollution Control

MEMORANDUM OF AGREEMENT ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR THE MEMPHIS, TN- MS- AR METROPOLITAN STATISTICAL AREA (MSA)

Participating Agencies:

Shelby County Health Department (SCHD)
Air Pollution Control Program

Mississippi Department of Environmental Quality (MDEQ)
Office of Pollution Control, Air Division

Arkansas Department of Environmental Quality (ADEQ)

PURPOSE / OBJECTIVE / GOALS

The purpose of this Memorandum of Agreement (MOA) is to inform the entities of the Memphis, Tennessee-Mississippi-Arkansas Metropolitan Statistical Area of monitoring network changes. The MOA between SCHD, MDEQ, and ADEQ is to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for particles of an aerodynamic diameter of 10 micrometers and less (PM 10), particles of an aerodynamic diameter of 2.5 micrometers and less (PM 2.5), and ozone; as well as other criteria pollutants air quality monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will formalize and reaffirm the collective agreement in order to provide adequate criteria pollutant monitoring for the Memphis, TN-MS-AR MSA as required by 40 CFR 58 Appendix D, Section 2, (e).

PM 2.5 MSA monitoring network include:

County	Federal Referenced Method PM 2.5	Continuous PM 2.5	Speciation PM 2.5	Co located PM 2.5
Shelby County, TN **SCHD**	2	1	1	1
Crittenden County , AR **ADEQ**	1	1		
DeSoto County, MS **MDEQ**	1	1		1

Criteria Air Pollutant MSA monitoring network include:

County	PM 10	O_3	$NO_x/NO/NO_2$	CO	SO_2
Shelby County, TN **SCHD**	2	3	0	2 (includes 1 trace at NCORE)	1 (trace at NCORE)
Crittenden County , AR **ADEQ**		1	1		
DeSoto County, MS **MDEQ**		1			

RESPONSIBILITIES / ACTIONS

Each of the parties to this Agreement is responsible for ensuring that its obligations under the MOA are met. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other communications to discuss monitoring activities for the MSA. Each affected agency shall inform the other affected agencies via telephone or email of any monitoring changes occurring within its jurisdiction of the MSA at its earliest convenience, after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to natural disasters, or any occurrences that result in an extended (greater than one quarter) or permanent change in the monitoring network.

LIMITATIONS

- All commitments made in this MOA are subject to the availability of appropriated funds and each agency's budget priorities. Nothing in this MOA obligates SCHD, MDEQ, or ADEQ to expend appropriations or to enter into any contract, assistance agreement, interagency agreement or other financial obligation.

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

- This MOA does not create any right or benefit enforceable by law or equity against SCHD, MDEQ, or ADEQ, their officers or employees, or any other person. This MOA does not apply to any entity outside SCHD, MDEQ, or ADEQ.

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

TERMINATION

This Memorandum of Agreement may be revised upon the mutual consent of SCHD, MDEQ and ADEQ. Each party reserves the right to terminate this MOA. A thirty (30) day written notice must be given prior to the date of termination.

Appendix D Shelby County Air Pollution Monitoring Sites 2014

Shelby County Air Pollution Monitoring Sites 2014

Site	Address	State	County	Site	Pollutant	Parameter	POC
Alabama	416 Alabama	47	157	0024	CO	42101	1
					PM 10	81102	1
Edmund Orgill	6855 Mudville Rd.	47	157	1004	O_3	44201	1
Frayser	1330 Frayser Blvd.	47	157	0021	O_3	44201	1
Gas Service Center	1060 Tupelo	47	157	0016	PM 10	81102	1
					PM 10	81102	2
Guthrie Clinic	1064 Breedlove	47	157	0047	PM 2.5	88101	1
					PM 2.5	88101	2
Shelby Farms (NCORE)	6388 Haley Rd.	47	157	0075	Pb	14129	1
					CO (Trace)	42101	1
					SO_2 (Trace)	42401	1
					NOY	42600	1
					O_3	44201	1
					PM 10 (Lo Vol)	85101	1
					PM 10-2.5	86101	1
					PM 2.5	88101	1
					PM 2.5	88502	3
					PM 2.5	88502	6
					Wind Speed	61101	1
					Wind Direction	61102	1
					Ambient Temperature	62101	1
					Relative Humidity	62201	1
					Barometric Pressure	64101	1

Appendix E Letter to EPA requesting discontinuation of $PM_{2.5}$ TEOM at Alabama Station

SHELBY COUNTY HEALTH DEPARTMENT

Mark H. Luttrell, Jr.
Mayor
Shelby County

YVONNE S. MADLOCK
DIRECTOR

HELEN MORROW, M.D.
HEALTH OFFICER

Public Health
Prevent. Promote. Protect.

Stacy Harder
Environmental Engineer
Air, Pesticides & Toxics Management Division
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street, S.W.
Atlanta, GA 30303-8960

Dear Ms. Harder:

September 19, 2011

The Shelby County Health Department (SCHD) operates a continuous PM2.5 TEOM analyzer at 416 Alabama (47-157-0024). It began to malfunction on July 25, 2011. The analyzer would power up for a few seconds and then the CPU side of the instrument would shut down. The SCHD technician talked to a technician with Thermo Fisher Scientific, who stated that it could be any number of things wrong. The technician suggested that it should be shipped back to them in order to determine what the repair cost would be. The instrument was subsequently shut down.

This instrument was the first TEOM in Shelby County's air monitoring network, and was placed into operation on February 1, 1994. Over the years, this instrument has had numerous repairs. Staff technicians and the manufacturer performed these repairs. The SCHD currently does not have the resources to repair or replace the TEOM. And considering the age of this instrument, replacing it might be the most feasible avenue to take. Therefore, the SCHD is officially notifying EPA of the temporary status of the TEOM at 416 Alabama. As soon as funds are identified, action will be taken to rectify the situation.

Participating agencies of the Memphis, TN-MS-AR Metropolitan Statistical Area (MSA) have a signed Memorandum Of Agreement (MOA). This MOA formalizes and reaffirms the collective agreement in order to provide adequate criteria pollutant monitoring for the Memphis, TN-MS-AR MSA as required by 40 CFR 58 Appendix D, Section 2, (e). Currently, Crittenden County, Arkansas and DeSoto County, Mississippi have TEOMs in operation. In addition the SCHD has a TEOM at the NCore (47-157-0075) site.

If there are any questions or concerns, feel free to call me at (901) 222-9546.

Sincerely,

Edward C. Cain, Supervisor
Air Pollution Control
Air Monitoring Branch

Mission
To promote, protect and improve the health and environment of all Shelby County residents.

814 Jefferson Avenue◆Memphis, Tennessee 38105
(901) 222-9000

Appendix F EPA approval letter to discontinue $PM_{2.5}$ TEOM at Alabama Station

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

NOV 2 1 2011

NOV 29 2011

Mr. Edward C. Cain
Air Pollution Control
Air Monitoring Branch
Shelby County Health Department
814 Jefferson Avenue
Memphis, Tennessee 38105

Dear Mr. Cain:

This is in response to your letter dated September 19, 2011, requesting that the U.S. Environmental Protection Agency review a request to temporarily discontinue ambient air monitoring submitted by the Memphis and Shelby County Health Department (MSCHD). Specifically, MSCHD is proposing to temporarily discontinue fine particulate monitoring ($PM_{2.5}$) at the 416 Alabama (AQS ID 47-157-0024) state or local air monitoring station. Regulations for ambient air quality surveillance are found at 40 CFR Part 58.

EPA has reviewed this request and determined that the monitor is eligible for discontinuation under the minimum monitoring requirements for continuous $PM_{2.5}$, found in section 4.7.2 and Table D-5 of 40 CFR Part 58 Appendix D. The Memphis core based statistical area will continue to meet the continuous $PM_{2.5}$ collocation monitoring requirements after this monitor is temporarily discontinued. It is our understanding that MSCHD plans to repair or replace the monitor as soon as funds allow. Therefore, EPA approves the temporary discontinuation of the monitor listed above.

Should you have any questions, please contact Doug Neeley at (404) 562-9097, or have your staff contact Stacy Harder at (404) 562-9042 or harder.stacy@epa.gov.

Sincerely,

Gwendolyn Keyes Fleming
Regional Administrator

cc: Mr. Jackie Waynick
TDEC, Chief of Environmental Technical Services

Archie Lee, EPA Region 4 SESD

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Chattanooga, TN-GA Area

Local Sites (L Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
470650006	0 L	PM10	2014	16860	3300 SOUTH BROAD STREET. 33RD AND BROAD,	35.01714	-85.3221
470650031	1 L	PM2.5	2014	16860	1517 TOMBRAS AVENUE, EAST RIDGE	34.99456	-85.2429
470651011	2 L	O3, PM2.5	2014	16860	SODDY DAISY H.S. 00618 SEQUOYAH RD	35.23348	-85.1816
470654002	3 L	PM2.5, PM2.5 Cont, PM Spec	2014	16860	RIVERSIDE SUBSTATION 911 SISKIN DR	35.05093	-85.293
470654003	4 L	O3	2014	16860	6200 BONNY OAKS DRIVE EASTSIDE UTILITY F	35.10264	-85.1622

Tennessee's Interpretation of Ambient Air Monitors Needed to meet the 40CFR, Part 58 Requirements

Census Area Identification and Population Data			14129 Lead		42101 CO		42401 SO_2		42602 NO_2		44201 Ozone			81102 PM_{10}		88101 $PM_{2.5}$				88502 $PM_{2.5}$ Speciation		88101 or 88501 $PM_{2.5}$ Cont	
CBSA 2003 Code	Census 2010 / 2013	CBSA 2003 Title (MS Areas)	Operating	Required	Operating	Required	Operating	Required	Operating	Required	Operating	2011 2013 8 Hr DV	Required	Operating	Required	Operating	2011 2013 Annual DV ug/m^3	2011 2013 24 Hr DV ug/m^3	Required	Operating	Required	Operating	Required
16860	528143/ 541744	Chattanooga, TN-GA	0	0	0	0	0	0	0	1	2	0.071	2	1	0	3	10.1	21	1	1	1	1	1

[1] Includes collocated monitor.

The Chattanooga near-road site may not be funded by EPA until sometime in the future. An NO_2 monitor would be required for this type site.

The TEOM POC 3 $PM_{2.5}$ particulate monitors and the speciation POC 5 STN monitors are generally not suited to be used for comparisons to the annual $PM_{2.5}$ standards.

No lead or SO_2 monitors are anticipated to be required to be established. The need for additional monitoring sites may be met by re-location of existing network sites. Additional monitoring sites will require additional resources for both equipment and operational expenses.

AQSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
470650006	Hamilton	SLAMS	81102	PM_{10}	1	7	2012	6	3300 SOUTH BROAD STREET. 33RD AND BROAD,	16860	35.01714	-85.3221	64	170	Chattanooga-Hamilton County Air Pollution Control
470650006	Hamilton	SLAMS	81102	PM_{10}	2	7	2012	6	3300 SOUTH BROAD STREET. 33RD AND BROAD,	16860	35.01714	-85.3221	64	170	Chattanooga-Hamilton County Air Pollution Control
470650031	Hamilton	SPECIAL PURPOSE	88101	$PM_{2.5}$	1	7	2012	3	1517 TOMBRAS AVENUE, EAST RIDGE	16860	34.99456	-85.2429	118	170	Chattanooga-Hamilton County Air Pollution Control
470651011	Hamilton	UNKNOWN	44201	O_3	1	1	2012	Hourly	SODDY DAISY H.S. 00618 SEQUOYAH RD	16860	35.23353	-85.1818	0	170	Chattanooga-Hamilton County Air Pollution Control
470651011	Hamilton	SPECIAL PURPOSE	88101	$PM_{2.5}$	1	7	2012	6	SODDY DAISY H.S. 00618 SEQUOYAH RD	16860	35.23353	-85.1818	118	170	Chattanooga-Hamilton County Air Pollution Control
470654002	Hamilton	SLAMS	88101	$PM_{2.5}$	1	7	2012	3	RIVERSIDE SUBSTATION 911 SISKIN DR	16860	35.05093	-85.293	118	170	Chattanooga-Hamilton County Air Pollution Control
470654002	Hamilton	SLAMS	88101	$PM_{2.5}$	2	7	2012	3	RIVERSIDE SUBSTATION 911 SISKIN DR	16860	35.05093	-85.293	118	170	Chattanooga-Hamilton County Air Pollution Control
470654002	Hamilton	IMPROVE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	RIVERSIDE SUBSTATION 911 SISKIN DR	16860	35.05093	-85.293	715	170	Chattanooga-Hamilton County Air Pollution Control
470654002	Hamilton	SUPLMNTL SPECIATION	88502	PM Spec Carbon	5	7	2012	6	RIVERSIDE SUBSTATION 911 SISKIN DR	16860	35.05093	-85.293	810	170	Chattanooga-Hamilton County Air Pollution Control
470654003	Hamilton	SLAMS	44201	O_3	1	1	2012	Hourly	6200 BONNY OAKS DRIVE EASTSIDE UTILITY F	16860	35.10264	-85.1622	47	170	Chattanooga-Hamilton County Air Pollution Control

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
470650006	Hamilton	SLAMS	81102	PM_{10}	SIERRA-ANDERSEN/GMW 321-B	GRAVIMETRIC	RFPS-1287-064	UNKNOWN	AREA	URBAN SCALE	INDUSTRIAL	URBAN AND CENTER CITY	1/1/1965
470650006	Hamilton	SLAMS	81102	PM_{10}	SIERRA-ANDERSEN/GMW 321-B	GRAVIMETRIC	RFPS-1287-064	UNKNOWN	AREA	URBAN SCALE	INDUSTRIAL	URBAN AND CENTER CITY	1/1/1965
470650031	Hamilton	SPECIAL PURPOSE	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	REGIONAL TRANSPORT	AREA	NEIGHBORHOOD	COMMERCIAL	URBAN AND CENTER CITY	5/6/1999
470651011	Hamilton	UNKNOWN	44201	O_3	#N/A	#N/A	#N/A	HIGHEST CONCENTRATION	AREA	REGIONAL SCALE	AGRICULTURAL	RURAL	8/1/1978
470651011	Hamilton	SPECIAL PURPOSE	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	REGIONAL TRANSPORT	NULL	REGIONAL SCALE	AGRICULTURAL	RURAL	8/1/1978
470654002	Hamilton	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	NULL	URBAN SCALE	COMMERCIAL	URBAN AND CENTER CITY	1/1/1999
470654002	Hamilton	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	NULL	URBAN SCALE	COMMERCIAL	URBAN AND CENTER CITY	1/1/1999
470654002	Hamilton	IMPROVE	88501	$PM_{2.5}$ Cont		TEOM Gravimetric 30 deg C		POPULATION EXPOSURE	AREA	URBAN SCALE	COMMERCIAL	URBAN AND CENTER CITY	1/1/1999
470654002	Hamilton	SUPLMNTL SPECIATION	88502	PM Spec Carbon	MetOne Super SASS URG 3000	Gravimetric		POPULATION EXPOSURE	NULL	NULL	COMMERCIAL	URBAN AND CENTER CITY	1/1/1999
470654003	Hamilton	SLAMS	44201	O_3	THERMO ELECTRON 49	ULTRA VIOLET	EQOA-0880-047	POPULATION EXPOSURE	MOBILE	NEIGHBORHOOD	INDUSTRIAL	RURAL	3/1/2004

Chattanooga-Hamilton County Air Pollution Control Bureau
Network Review 2014

Ozone Attainment

The Chattanooga Area (for ozone is comprised of Hamilton and Meigs Counties in Tennessee and Catoosa and Walker Counties in Georgia) was designated attainment in April 2012 for the .075 ppm ozone standard for the years 2009-2011.

$PM_{2.5}$ Attainment

Chattanooga-Hamilton County's $PM_{2.5}$ data meets the recently promulgated 12 µg/m^3 $PM_{2.5}$ standard. Chattanooga-Hamilton County has submitted to EPA the request for attainment package for $PM_{2.5}$ attainment of the 15 µg/m^3 standard.

Active Sites

Chattanooga-Hamilton County Active Sites	Pollutant	Monitor	AQS #
3300 South Broad Street/ WDEF	PM_{10} Collocated (6-day)	Sierra Anderson 321B	470650006
911 Siskin Drive formerly University of Tennessee at Chattanooga (UTC)	$PM_{2.5}$ Collocated (3-day) $PM_{2.5}$ Speciation (6-day) Carbon (6-day) $PM_{2.5}$ Continuous TEOM	R & P 2025 Seq. Met 1 SuperSASS URG 3000 TEOM 1400A	470654002 CORE $PM_{2.5}$
1517 Tombras Avenue/ formerly 1510 Maxwell Rd	$PM_{2.5}$ (Collocation from 1/1/2009-1/17/2010) 3-day monitoring began 1/20/2010)	R & P 2025 Seq.	470650031
618 Sequoyah Access Road at Soddy-Daisy High School	$PM_{2.5}$ (6-day) Ozone Continuous Ozone Calibrator	R & P 2025 Seq. TECO 49C TECO 49CPS	470651011
6200 Bonny Oaks Drive Eastside Utility District	Ozone Continuous Ozone Calibrator	TECO 49C TECO 49CPS	470654003

Revisions to the Hamilton County portions of the AMP provided courtesy of the Chattanooga-Hamilton County Air Pollution Control Bureau

Site Changes for 2014

The Bureau is still searching for an appropriate location for a new Eastside Utility site within a mile radius of the current site. No other site changes are expected for 2014.

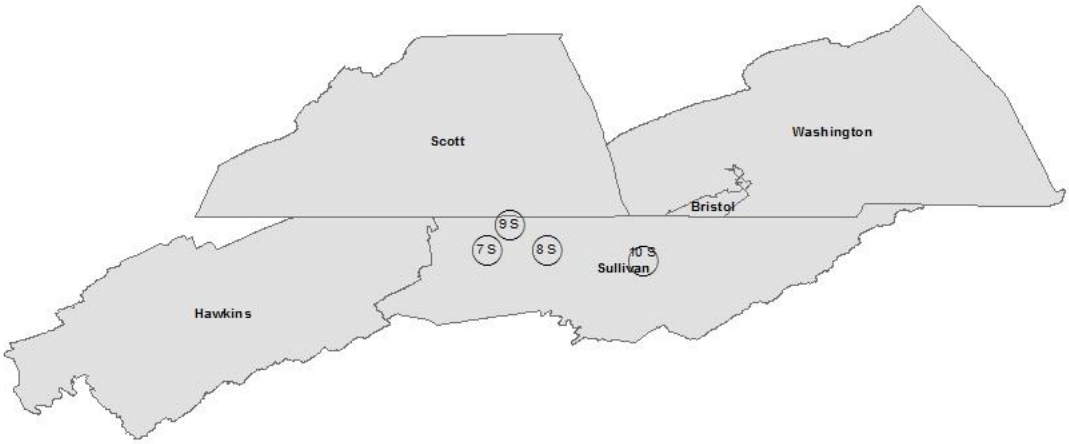
Monitoring Equipment Evaluation Chattanooga AMP

Equipment Condition

Equipment	Location	Serial Number	Condition
PM_{10}	0006	1847	Good
PM_{10}	0006	1845	Good
$PM_{2.5}$	4002	20781	Good
$PM_{2.5}$	4002	20775	Good
$PM_{2.5}$	0031	20772	Good
$PM_{2.5}$	Spare	20774	Good
$PM_{2.5}$	1011	90709	Good
$PM_{2.5}$ TEOM	4002	1400A 24452 Eq Unit SES1B 203940211 Sensor Unit 140AB 244520302	Good
Met One Speciation	4002	a5924/a5910	Good
URG 3000	4002	3N-B0768	Good
Ozone	1011	49C-58192-316	Good
Ozone	4003	49C-57404-313	Good
Ozone Calibrator	1011	49CPS-66337-352	Good
Ozone Calibrator	4003	49CPS-66338-352	Good
Datalogger	1011	ESC 8816	Good
Datalogger	4003	ESC 8816	Good
Datalogger	4002	ESC 8832 AO994	Good
Datalogger	Spare	ESC 8832 A 4010 K	Good
Audit Monitor	1011	49i- 0607415796	Good
Chart Recorder	1011	1001685	Good
Chart Recorder	4003	1001686	Good
Chart Recorder	Spare	Leeds/Northrup Speedomax 165 82-31986-1-1	Good
8 X 14 Shelter	1011	Shelter One 8148 SN21051	Good
8 X 14 Shelter	4003	Ekto 8814 SN 3473-1	Good
8 X 14 Shelter	4002	Ekto 8814 SN 3473-2	Good[1]

[1] Floor will be repaired or replaced due to water leak. Roof work will have to be completed before floor repair.

Kingsport Bristol Johnson City Area



State Sites (S Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
471631007	7 S	PM2.5, PM2.5 Cont	2014	28700	1649 D STREET	36.54065	-82.5217
471632002	8 S	O3	2014	28700	HILL ROAD	36.54119	-82.426
471632003	9 S	O3	2014	28700	KETRON MIDDLE SCHOOL ON BLOOMINGDALE RD.	36.58222	-82.4858
471633004	10 S	Pb Coloc	2014	28700	364 Exide Dr	36.52556	-82.2733

State Sites (S Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon

Tennessee's Interpretation of Ambient Air Monitors Needed to meet the 40CFR, Part 58 Requirements

Census Area Identification and Population Data			14129 Lead		42101 CO		42401 SO_2		42602 NO_2		44201 Ozone			81102 PM_{10}		88101 $PM_{2.5}$				88502 $PM_{2.5}$ Speciation		88101 or 88501 $PM_{2.5}$ Cont	
CBSA 2003 Code	Census 2010 / 2013	CBSA 2003 Title (MS Areas)	Operating	Required	Operating	Required	Operating	Required	Operating	Required	Operating	2011 2013 8 Hr DV	Required	Operating	Required	Operating	2011 2013 Annual DV ug/m^3	2011 2013 24 Hr DV ug/m^3	Required	Operating	Required	Operating	Required
27740	198716/ 200966	Johnson City, TN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Census Area Identification and Population Data			14129 Lead		42101 CO		42401 SO_2		42602 NO_2		44201 Ozone			81102 PM_{10}		88101 $PM_{2.5}$				88502 $PM_{2.5}$ Speciation		88101 or 88501 $PM_{2.5}$ Cont	
CBSA 2003 Code	Census 2010 / 2013	CBSA 2003 Title (MS Areas)	Operating	Required	Operating	Required	Operating	Required	Operating	Required	Operating	2011 2013 8 Hr DV	Required	Operating	Required	Operating	2011 2013 Annual DV ug/m^3	2011 2013 24 Hr DV ug/m^3	Required	Operating	Required	Operating	Required
28700	309544/ 308283	Kingsport-Bristol-Bristol, TN-VA	1	1	0	0	0	1	0	0	2	0.071	1	0	0	1	9.3	18	0	0	0	1	0

[1]Includes a collocated state monitor and a collocated company monitor.

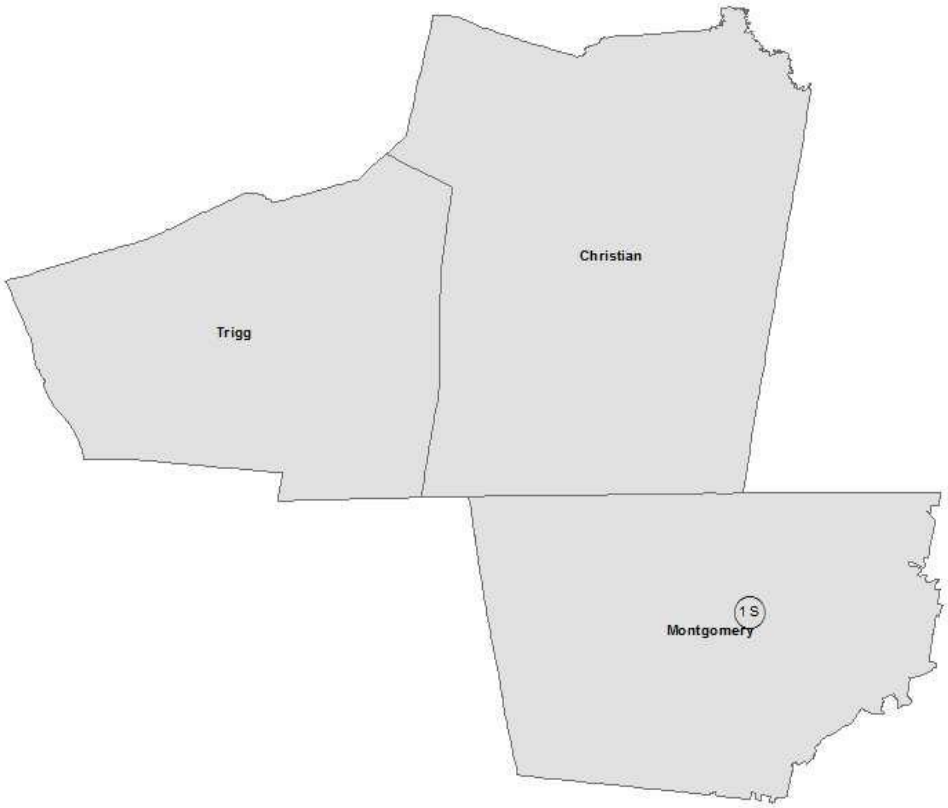
The TEOM POC 3 $PM_{2.5}$ particulate monitors and the speciation POC 5 STN monitors are generally not suited to be used for comparisons to the annual $PM_{2.5}$ standards.

Tennessee proposes to install and operate an SO_2 monitoring site in the Kingsport area. This site will be located based on predominate wind patterns and on modeled emissions impacts from the sources identified in the SO_2 nonattainment area centered around the Tennessee Eastman facility.

AQSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
471631007	Sullivan	SLAMS	88101	$PM_{2.5}$	1	7	2012	3	1649 D STREET	28700	36.54065	-82.5217	118	1025	Tennessee Division Of Air Pollution Control
471631007	Sullivan	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	1649 D STREET	28700	36.54065	-82.5217	716	1025	Tennessee Division Of Air Pollution Control
471632002	Sullivan	SLAMS	44201	O_3	1	1	2012	Hourly	HILL ROAD	28700	36.54119	-82.426	53	1025	Tennessee Division Of Air Pollution Control
471632003	Sullivan	SLAMS	44201	O_3	1	1	2012	Hourly	KETRON MIDDLE SCHOOL ON BLOOMINGDALE RD.	28700	36.58222	-82.4858	53	1025	Tennessee Division Of Air Pollution Control
471633004	Sullivan	SLAMS	14129	Pb	1	7	2012	6	364 Exide Dr	28700	36.52556	-82.2733	0	1025	Tennessee Division Of Air Pollution Control
471633004	Sullivan	SLAMS	14129	Pb	2	7	2012	6	364 Exide Dr	28700	36.52556	-82.2733	0	1025	Tennessee Division Of Air Pollution Control

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
471631007	Sullivan	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	NULL	NULL	RESIDENTIAL	SUBURBAN	10/1/1998
471631007	Sullivan	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont		TEOM Gravimetric 50 deg C		UPWIND BACKGROUND	AREA	NEIGHBOR HOOD	RESIDENTIAL	SUBURBAN	10/1/1998
471632002	Sullivan	SLAMS	44201	O_3	MONITOR LABS 8810	ULTRA VIOLET	EQOA-0881-053	POPULATION EXPOSURE	AREA	NEIGHBOR HOOD	RESIDENTIAL	RURAL	1/1/1980
471632003	Sullivan	SLAMS	44201	O_3	MONITOR LABS 8810	ULTRA VIOLET	EQOA-0881-053	POPULATION EXPOSURE	NULL	NEIGHBOR HOOD	RESIDENTIAL	SUBURBAN	4/1/1995
471633004	Sullivan	SLAMS	14129	Pb	Pb/TSP	ICP-MS	EQL0310-189	SOURCE ORIENTED	POINT	URBAN SCALE	INDUSTRIAL	URBAN AND CENTER CITY	1/1/2010
471633004	Sullivan	SLAMS	14129	Pb	Pb/TSP	ICP-MS	EQL0310-189	SOURCE ORIENTED	POINT	URBAN SCALE	INDUSTRIAL	URBAN AND CENTER CITY	1/1/2010

Clarksville, TN-KY Area



State Sites (S Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
471251009	1 S	PM2.5, PM2.5 Cont	2014	17300	1514 GOLF CLUB LANE	36.51444	-87.3278

Tennessee's Interpretation of Ambient Air Monitors Needed to meet the 40CFR, Part 58 Requirements

Census Area Identification and Population Data			14129 Lead		42101 CO		42401 SO_2		42602 NO_2		44201 Ozone			81102 PM_{10}		88101 $PM_{2.5}$				88502 $PM_{2.5}$ Speciation		88101 or 88501 $PM_{2.5}$ Cont	
CBSA Code	Census 2010 /. 2013	CBSA Title (MS Areas)	Operating	Required	Operating	Required	Operating	Required	Operating	Required	Operating	2011 2013 8 Hr DV	Required	Operating	Required	Operating	2011 2013 Annual DV ug/m	2011 2013 24 Hr DV ug/m	Required	Operating	Required	Operating	Required
17300	260625/ 272579	Clarksville, TN-KY	0	0	0	0	0	0	0	0	1	0.069	1	0	0	1	9.6	21	0	0	0	1	0

[1]State of Kentucky operates an ozone site in Christian County, Kentucky. See Appendix 1 for MSA monitoring agreement prepared by Kentucky for ozone monitoring. [2]State of Tennessee operates a continuous $PM_{2.5}$ monitor in Clarksville, Montgomery County, Tennessee. See Appendix 1 for MSA monitoring agreement prepared by Tennessee for continuous $PM_{2.5}$ monitoring. [3]Includes collocated monitor.

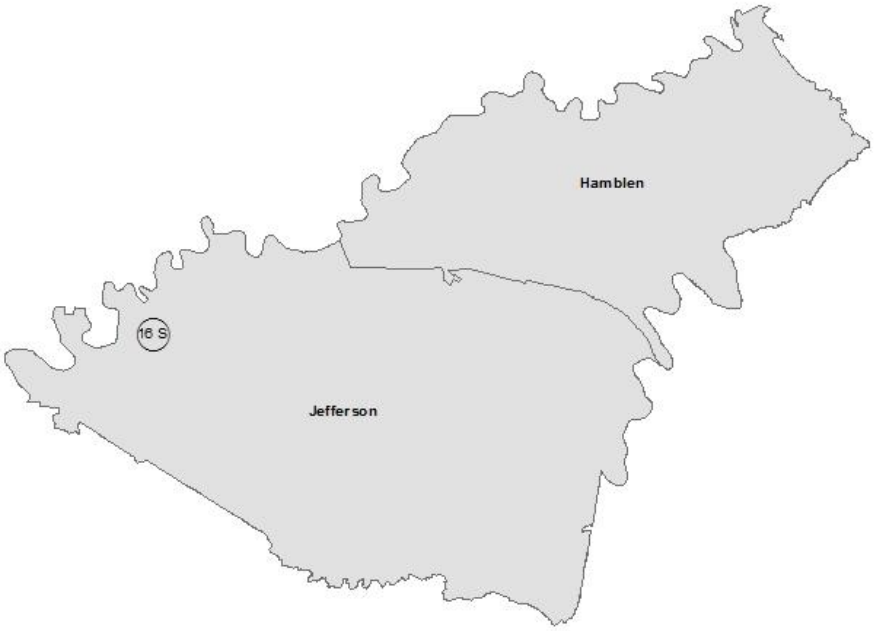
The TEOM POC 3 $PM_{2.5}$ particulate monitors are generally not suited to be used for comparisons to the annual $PM_{2.5}$ standards.

There are no plans to relocate or shutdown any existing monitoring sites in the MSA area described. The speciation sampling was approved to be discontinued by EPA and was shut down effective 12/31/2012.

AQSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
471251009	Montgomery	SLAMS	88101	$PM_{2.5}$	1	7	2012	1	1514 GOLF CLUB LANE	17300	36.51444	-87.3278	118	1025	Tennessee Division Of Air Pollution Control
471251009	Montgomery	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	1514 GOLF CLUB LANE	17300	36.51444	-87.3278	716	1025	Tennessee Division Of Air Pollution Control

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
471251009	Montgomery	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	NULL	NULL	RESIDENTIAL	SUBURBAN	5/4/1997
471251009	Montgomery	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont		TEOM Gravimetric 50 deg C		POPULATION EXPOSURE	AREA	NEIGHBORHOOD	RESIDENTIAL	SUBURBAN	5/4/1997

Morristown, TN Area



State Sites (S Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
470890002	16 S	O3	2014	34100	2393 Forrester Road	36.10609	-83.6019

Tennessee's Interpretation of Ambient Air Monitors Needed to meet the 40CFR, Part 58 Requirements

Census Area Identification and Population Data			14129 Lead		42101 CO		42401 SO_2		42602 NO_2		44201 Ozone			81102 PM_{10}		88101 $PM_{2.5}$				88502 $PM_{2.5}$ Speciation		88101 or 88501 $PM_{2.5}$ Cont	
CBSA Code	Census 2010 /. 2013	CBSA Title (MS Areas)	Operating	Required	Operating	Required	Operating	Required	Operating	Required	Operating	2011 2013 8 Hr DV	Required	Operating	Required	Operating	2011 2013 Annual DV ug/m	2011 2013 24 Hr DV ug/m	Required	Operating	Required	Operating	Required
34100	113951/ 115197	Morristown, TN	0	0	0	0	0	0	0	0	1	0.073	1	0	0	0	0	0	0	0	0	0	0

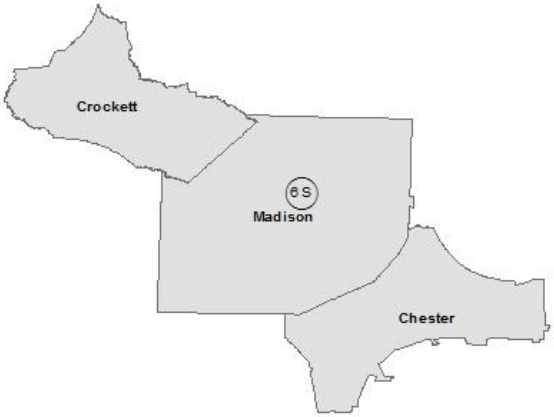
[1]Historical PM10 data does not reflect a need for PM_{10} monitoring in this area. [2]$PM_{2.5}$ monitoring in the adjacent MSA's should be sufficient to assess $PM_{2.5}$ levels in this MSA.

There are no plans to relocate or shutdown any existing monitoring sites in the MSA area described.

AQSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
470890002	Jefferson	SLAMS	44201	O_3	1	1	2012	Hourly	2393 FORESTER RD	34100	36.106	-83.602	87	1025	Tennessee Division Of Air Pollution Control

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
470890002	Jefferson	SLAMS	44201	O_3	MODEL 400 OZONE ANALYZER	ULTRA VIOLET ABSORPTION	EQOA-0992-087	UNKNOWN	NULL	NULL	AGRICULTURAL	RURAL	2/1/2010

Jackson, TN Area



State Sites (S Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
471130006	6 S	PM2.5, PM2.5 Cont	2014	27180	1371-A NORTH PARKWAY JACKSON, TN 38301	35.65154	-88.8097

Tennessee's Interpretation of Ambient Air Monitors Needed to meet the 40CFR, Part 58 Requirements

Census Area Identification and Population Data			14129 Lead		42101 CO		42401 SO_2		42602 NO_2		44201 Ozone			81102 PM_{10}		88101 $PM_{2.5}$				88502 $PM_{2.5}$ Speciation		88101 or 88501 $PM_{2.5}$ Cont	
CBSA Code	Census 2010 /. 2013	CBSA Title (MS Areas)	Operating	Required	Operating	Required	Operating	Required	Operating	Required	Operating	2011 2013 8 Hr DV	Required	Operating	Required	Operating	2011 2013 Annual DV ug/m	2011 2013 24 Hr DV ug/m	Required	Operating	Required	Operating	Required
27180	130011/ 130645	Jackson, TN	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9	19	0	0	0	1	0

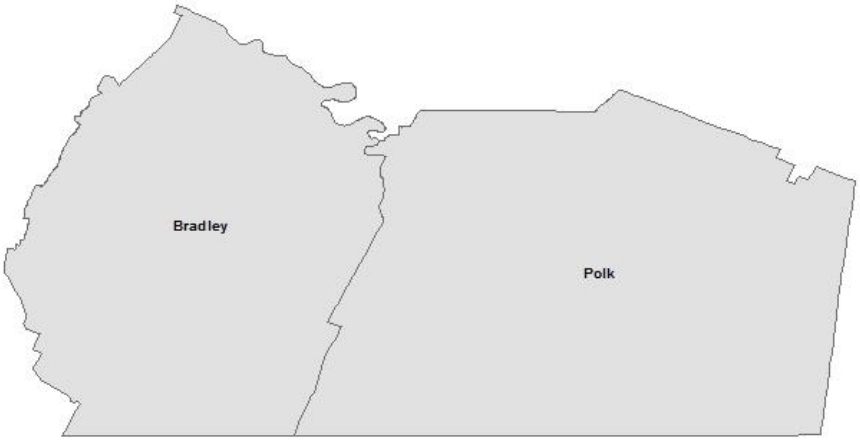
[1] Includes collocated monitor.

The TEOM POC 3 $PM_{2.5}$ particulate monitors are generally not suited to be used for comparisons to the annual $PM_{2.5}$ standards.

AQSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
471130006	Madison	SLAMS	88101	$PM_{2.5}$	1	7	2012	3	1371-A NORTH PARKWAY JACKSON, TN 38301	27180	35.65154	-88.8097	118	1025	Tennessee Division Of Air Pollution Control
471130006	Madison	SLAMS	88101	$PM_{2.5}$	2	7	2012	3	1371-A NORTH PARKWAY JACKSON, TN 38301	27180	35.65154	-88.8097	118	1025	Tennessee Division Of Air Pollution Control
471130006	Madison	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	1371-A NORTH PARKWAY JACKSON, TN 38301	27180	35.65154	-88.8097	716	1025	Tennessee Division Of Air Pollution Control

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
471130006	Madison	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	AREA	NEIGHBOR HOOD	RESIDENTIAL	SUBURBAN	11/17/2004
471130006	Madison	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	AREA	NEIGHBOR HOOD	RESIDENTIAL	SUBURBAN	11/17/2004
471130006	Madison	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont		TEOM Gravimetric 50 deg C		POPULATION EXPOSURE	AREA	NEIGHBOR HOOD	RESIDENTIAL	SUBURBAN	11/17/2004

Cleveland, TN Area



State Sites (S Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon

Tennessee's Interpretation of Ambient Air Monitors Needed to meet the 40CFR, Part 58 Requirements

Census Area Identification and Population Data			14129 Lead		42101 CO		42401 SO_2		42602 NO_2		44201 Ozone			81102 PM_{10}		88101 $PM_{2.5}$				88502 $PM_{2.5}$ Speciation		88101 or 88501 $PM_{2.5}$ Cont	
CBSA Code	Census 2010 /. 2013	CBSA Title (MS Areas)	Operating	Required	Operating	Required	Operating	Required	Operating	Required	Operating	2011 2013 8 Hr DV[1]	Required	Operating	Required	Operating	2011 2013 Annual DV ug/m	2011 2013 24 Hr DV ug/m	Required	Operating	Required	Operating	Required
17420	115788/ 118538	Cleveland, TN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The TEOM POC 3 $PM_{2.5}$ particulate monitors and the speciation POC 5 STN monitors are generally not suited to be used for comparisons to the annual $PM_{2.5}$ standards.

AQSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
471071002	McMinn	SPECIAL PURPOSE	88101	$PM_{2.5}$	1	7	2012	3	SAINT MARK AME ZION CHURCH, 707 NORTH JA	11940	35.45111	-84.5992	118	1025	Tennessee Division Of Air Pollution Control
471071002	McMinn	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	SAINT MARK AME ZION CHURCH, 707 NORTH JA	11940	35.45111	-84.5992	716	1025	Tennessee Division Of Air Pollution Control

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
471071002	McMinn	SPECIAL PURPOSE	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	AREA	NEIGHBORHOOD	COMMERCIAL	URBAN AND CENTER CITY	7/1/1986
471071002	McMinn	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont		TEOM Gravimetric 50 deg C		POPULATION EXPOSURE	AREA	NEIGHBORHOOD	COMMERCIAL	URBAN AND CENTER CITY	7/1/1986

Monitoring Sites Located In Non-MSA/CBSA Areas In Tennessee

State Sites (S Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
471410005	3 S	PM2.5	2014	18260	630 EAST 20TH STREET	36.18572	-85.4922

State Sites (S Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
470450004	4 S	PM2.5, PM2.5 Cont	2014	20540	175-B GREENWOOD STREET	36.05287	-89.3823

State Sites (S Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
470990002	15 S	PM2.5, PM2.5 Cont, PM Spec	2014	29980	BUSBY RD	35.11622	-87.47

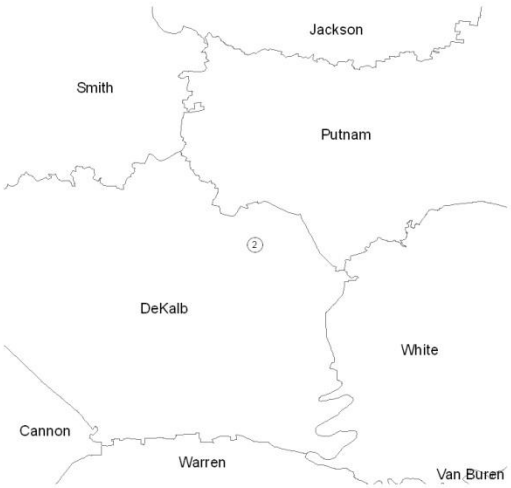
National Park Service Sites (SNPS Map ID)							
AQSID	Map ID	ParaName	Update Year	CBSA	Address	Lat	Lon
471550101	2 SNPS	SO2, O3	2014	42940	GREAT SMOKY MOUNTAIN NP COVE MOUNTAIN	35.69667	-83.6097
471550102	3 SNPS	O3	2014	42940	CLINGSMANS DOME, GREAT SMOKY MTNS. NP	35.56278	-83.4981

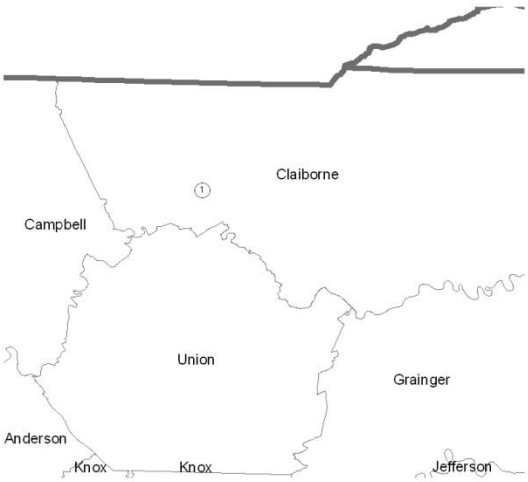
Additional monitoring sites are operated in areas outside of the CBSA/MSA areas to help establish background air quality levels and to help define the air quality for those areas less densely populated outside of the metropolitan areas. The TEOM POC 3 PM2.5 particulate monitors and the speciation POC 5 STN monitors are generally not suited to be used for comparisons to the annual PM2.5 standards. There are no plans to relocate or shutdown any existing monitoring sites in the areas described.

QSID	County Name	Monitor Type	Para	Para Name	POC	Int	Year	Collection Frequency	Address	CBSA	Lat	Lon	Mtd	RepOrg	RepOrgName
471550101	Sevier	NON-EPA FEDERAL	42401	SO_2	1	1	2012	Hourly	GREAT SMOKY MOUNTAIN NP COVE MOUNTAIN	42940	35.69667	-83.6097	9	745	National Park Service
471550101	Sevier	NON-EPA FEDERAL	44201	O_3	1	1	2012	Hourly	GREAT SMOKY MOUNTAIN NP COVE MOUNTAIN	42940	35.69667	-83.6097	47	745	National Park Service
471550102	Sevier	NON-EPA FEDERAL	44201	O_3	1	1	2012	Hourly	CLINGSMANS DOME, GREAT SMOKY MTNS. NP	42940	35.56278	-83.4981	47	745	National Park Service
470450004	Dyer	SLAMS	88101	$PM_{2.5}$	1	7	2012	3	175-B GREENWOOD STREET	20540	36.05287	-89.3823	118	1025	Tennessee Division Of Air Pollution Control
470450004	Dyer	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	175-B GREENWOOD STREET	20540	36.05287	-89.3823	716	1025	Tennessee Division Of Air Pollution Control
470990002	Lawrence	SLAMS	88101	$PM_{2.5}$	1	7	2012	3	BUSBY RD	29980	35.11622	-87.47	118	1025	Tennessee Division Of Air Pollution Control
470990002	Lawrence	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont	3	1	2012	Hourly	BUSBY RD	29980	35.11622	-87.47	716	1025	Tennessee Division Of Air Pollution Control
470990002	Lawrence	SUPLMNTL SPECIATION	88502	PM Spec	5	7	2012	6	BUSBY RD	29980	35.11622	-87.47	810	1025	Tennessee Division Of Air Pollution Control
471410005	Putnam	SPECIAL PURPOSE	88101	$PM_{2.5}$	1	7	2012	3	630 EAST 20TH STREET	18260	36.18572	-85.4922	118	1025	Tennessee Division Of Air Pollution Control

AQSID	County Name	Monitor Type	Para	Para Name	Monitoring Instrument	Analysis	Ref Mtd ID	Monitor Objective Type	Dominant Source	Measurement Scale	Land Use Type	Location Setting	Date Site Established
471550101	Sevier	NON-EPA FEDERAL	42401	SO_2	THERMO ELECTRON 43	PULSED FLUORESCENT	EQSA-0276-009	GENERAL/BACKGROUND	AREA	NEIGHBORHOOD	FOREST	RURAL	7/1/1988
471550101	Sevier	NON-EPA FEDERAL	44201	O_3	THERMO ELECTRON 49	ULTRA VIOLET	EQOA-0880-047	UNKNOWN	AREA	NEIGHBORHOOD	FOREST	RURAL	7/1/1988
471550102	Sevier	NON-EPA FEDERAL	44201	O_3	THERMO ELECTRON 49	ULTRA VIOLET	EQOA-0880-047	HIGHEST CONCENTRATION	NULL	REGIONAL SCALE	FOREST	RURAL	4/1/1993
470450004	Dyer	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	AREA	NEIGHBORHOOD	RESIDENTIAL	SUBURBAN	8/22/1999
470450004	Dyer	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont		TEOM Gravimetric 50 deg C		POPULATION EXPOSURE	AREA	NEIGHBORHOOD	RESIDENTIAL	SUBURBAN	8/22/1999
470990002	Lawrence	SLAMS	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	UPWIND BACKGROUND	NULL	NULL	AGRICULTURAL	RURAL	4/1/1997
470990002	Lawrence	SPECIAL PURPOSE	88501	$PM_{2.5}$ Cont		TEOM Gravimetric 50 deg C		MAX OZONE CONCENTRATION	NULL	NULL	AGRICULTURAL	RURAL	4/1/1997
470990002	Lawrence	SUPLMNTL SPECIATION	88502	PM Spec		Gravimetric		UPWIND BACKGROUND	AREA	URBAN SCALE	AGRICULTURAL	RURAL	4/1/1997
471410005	Putnam	SPECIAL PURPOSE	88101	$PM_{2.5}$	R & P CO PLUS MODEL 2025PM SEQ	GRAVIMETRIC	RFPS-0498-118	POPULATION EXPOSURE	AREA	NEIGHBORHOOD	RESIDENTIAL	SUBURBAN	8/15/2006

CastNet Monitoring Sites in Tennessee





Site	AQSID	ParaName	CBSAFP	Address
1	470259991	O3	0	718 Russell Hill Rd, Speedwell, TN 37870
2	470419991	O3	0	Edgar Evans State Park, Smithville, TN 3

Site ID	ESP127
Site name	Edgar Evins
County	DeKalb
State abbreviation	TN
Latitude; decimal degrees	36.0388
Longitude; decimal degrees	-85.7331
Elevation; m	302
Operating agency	EPA
Start date	03/15/1988
Primary Land Use	Forest
Terrain surrounding site	Rolling
NADP site code	KY10 EXIT EPA
Distance to nearest NADP site; km	126.835
Does site conform to assumptions of MLM?	No

Site ID	SPD111
Site name	Speedwell
County	Claiborne
State abbreviation	TN
Latitude; decimal degrees	36.47
Longitude; decimal degrees	-83.8268
Elevation; m	361
Operating agency	EPA
Start date	06/09/1989
Primary Land Use	Agric
Terrain surrounding site	Rolling
NADP site code	TN04 EXIT EPA
Distance to nearest NADP site; km	.096
Does site conform to assumptions of MLM?	Mixed

http://epa.gov/castnet/javaweb/ozone.html

Agreement Letters with Agencies Outside of Tennessee

Appendix 1: MSA Monitoring Agreements Prepared by Kentucky and Tennessee for Ozone and Continuous $PM_{2.5}$ Monitoring

Appendix 1: MSA Monitoring Agreements Prepared by Kentucky and Tennessee for Ozone and Continuous PM2.5 Monitoring

Tennessee Agreement Letter (page 1 of 2 pages)

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

DIVISION OF AIR POLLUTION CONTROL
9TH FLOOR, L & C ANNEX
401 CHURCH STREET
NASHVILLE, TN 37243-1531

RECEIVED
OCT 31 2007
DIRECTOR'S OFFICE
DIVISION FOR AIR QUALITY

October 25, 2007

John S. Lyons, Director
Kentucky Division for Air Quality
Kentucky Department for Environmental Protection
803 Schenkel Lane
Frankfort, KY 40601

Dear Mr. Lyons:

The United States Environmental Protection Agency (EPA) revised monitoring regulations promulgated in Federal Register / Vol. 71, No. 200 / Tuesday, October 17, 2006 / Rules and Regulations, 40 CFR Part 58, Appendix D states in part: "The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator." This revision of the CFR also describes the minimum monitoring requirements for the NAAQS pollutants, including continuous PM 2.5 as it applies to MSA areas where the population is sufficient to warrant monitoring for that pollutant. Tennessee and Kentucky share the Clarksville, TN-KY MSA, which is comprised of Trigg and Christian counties in Kentucky and Stewart and Montgomery counties in Tennessee. The US Census Bureau lists this area as containing a population in excess of 230,000:

CBSA Code	Geographic area	Legal/statistical area description	July 1, 2005 Estimate	2000 Census
17300	Clarksville, TN-KY	Metropolitan Statistical Area	243,665	232,000

The Tennessee Division of Air Pollution Control (TDAPC) currently operates one (1) PM 2.5 FRM monitor and one (1) speciation monitor in Montgomery county and is installing a new continuous PM 2.5 monitor in this area. The TDAPC believes the operation of the existing PM 2.5 monitors; (FRM, speciation and new continuous), are sufficient to properly characterize the particulate air quality in the entire Clarksville, TN-KY MSA and comply with the requirements for both population and concentration based monitoring identified in the revised monitoring regulations as found at FR Vol. 71, No. 200 / Tuesday, October 17, 2006 p. 61321, "Table D-5" and FR Vol. 71, No. 200 / Tuesday, October 17, 2006 p. 61322, "4.7.2 Requirement for Continuous PM2.5 Monitoring". The TDAPC would like to invite the Kentucky Division for Air Quality to participate in Tennessee's annual ambient air monitoring network review. Tennessee commits to sharing with Kentucky any and all quality assured ambient air

monitoring data collected in the Tennessee portion of the Clarksville, TN-KY MSA. Tennessee also will notify Kentucky in advance of the intent to relocate or shutdown any of the PM 2.5 monitors referenced above so that adequate monitoring arrangements can be made to meet the entire MSA monitoring requirements for PM 2.5.

Sincerely,

Barry R. Stephens, PE
Director, Air Pollution Control Division

BRS/erb
cc: Beverly Banister, US EPA Region IV

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET

Ernie Fletcher
Governor

Department for Environmental Protection
Division for Air Quality
803 Schenkel Lane
Frankfort, Kentucky 40601-1403

Teresa J. Hill
Secretary

November 27, 2007

Barry R. Stephens, PE
Director
Division of Air Pollution Control
9th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1531

Dear ~~Mr. Stephens~~ Barry:

In a letter from your office dated October 25, 2007, the Tennessee Division of Air Pollution Control (TDAPC) agrees to operate a continuous PM2.5 monitor in the Clarksville/Hopkinsville metropolitan statistical area (MSA) to meet U.S. EPA's monitoring requirements. The Kentucky Division for Air Quality (DAQ) appreciates TDAPC's commitment to operate the PM2.5 monitor to meet all of the regulatory requirements for the MSA. DAQ also looks forward to participating in TDAPC's annual ambient air monitoring network review.

In accordance with Table D-2 of Appendix D to 40 CFR Part 58, one (1) ozone monitor is required to be operated in the Clarksville/Hopkinsville MSA. To satisfy the regulatory requirement, the DAQ agrees to operate an ozone monitor at the Hopkinsville monitoring station. DAQ commits to sharing with TDAPC any and all quality assured ambient air monitoring data collected in the Kentucky portion of the Clarksville/Hopkinsville MSA.

In the event that a shutdown or relocation of the ozone monitor is necessary, DAQ will notify TDAPC prior to the shutdown or relocation. Also, DAQ will operate the ozone monitor in accordance with all ambient air monitoring requirements located in 40 CFR Parts 50, 53, and 58.

If you have questions or concerns, please contact me at (502) 573-3382.

Sincerely,

John S. Lyons
Director

JSL/SOA/bss
c: Doug Neeley, US EPA Region 4

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