

# Annual Monitoring Plan



# KNOX COUNTY

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# TENNESSEE

## HEALTH DEPARTMENT

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## 1 Introduction

In 2007, the U.S Environmental Protection Agency (EPA) finalized amendments to the ambient air monitoring regulations. These amendments revised the technical requirements for certain types of monitoring sites, programs and analyzers. Monitoring agencies are required to submit annual monitoring network plans. Knox County Air Quality (Air Quality) is a local monitoring agency operating under a certificate of exemption from the State of Tennessee. The regulations from title 40, part 58, Section 10(1) of the Code of Federal Regulations state that: (40 CFR 58.10 (a)(1))

*The State, or where applicable local, agency shall submit to the Regional Administrator an annual monitoring network plan which shall provide for the documentation of the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations that can include FRM and FEM monitors that are part of SLAMS, NCore, CSN, PAMS, and SPM stations. The plan shall include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E to this part, where applicable. The Regional Administrator may require additional information in support of this statement. The annual monitoring network plan must be made available for public inspection and comment for at least 30 days prior to submission to the EPA and the submitted plan shall include and address, as appropriate, any received comments.*

This document is prepared and submitted to fulfill the requirements of the annual monitoring plan (AMP), as well as provide an opportunity for Air Quality to solicit, evaluate and respond to comments and input from the State of Tennessee Department of Environment and Conservation Division of Air Pollution Control (TDEC-APC) and the public regarding the network. This comprehensive review serves to evaluate whether the current monitoring strategies are meeting the needs of the County, to determine compliance with all current Federal, State, and Local regulations and to aid in the development of future strategies and decisions. It also serves to identify and report the needs for changes within the network and request approval for those changes from U.S. EPA Regional Office.

### 1.1 Scope and Organization

Air Quality operates five locations where ambient air quality is routinely measured for air pollutants. The measured data provides the public with information on the status of the air quality. Health researchers, business interests, and others can also use the data.

As required by the CFR, this document includes equipment which has federal reference methods (FRM) or federal equivalent methods (FEM) designations. The terms FRM and FEM denote monitoring instruments that produce measurements of the ambient pollution concentrations that regulations allow to be compared to the national ambient air quality standards (NAAQS) for regulatory purposes. Also included is information regarding non-regulatory and non-criteria pollutant monitoring.

## 1.2 Description of Monitoring

The criteria pollutants consist of ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), lead (Pb) and particulate matter (PM). Air Quality operates monitoring stations for ozone, particulate matter, and lead. Air Quality operates an additional EPA monitoring program, the Chemical Speciation Network (CSN).

The ambient air monitoring network is designed considering criteria which meet the monitoring objectives. The primary monitoring objectives are monitoring compliance with the NAAQS and providing data to the public regarding compliance in a timely manner. Logistics to be considered in design and continuation of a site include:

- Safety, security, and accessibility
- Cost of site, relocation, maintenance, e.g., fencing, roads, vegetation clearing
- Level footprint for shelter, platforms, or concrete pads
- Availability of power and communications
- Meeting pollutant specific location objectives
- Funding
- Staffing
- Proximity to other monitors and statistical relevance of data

## 1.3 Climate and Topography

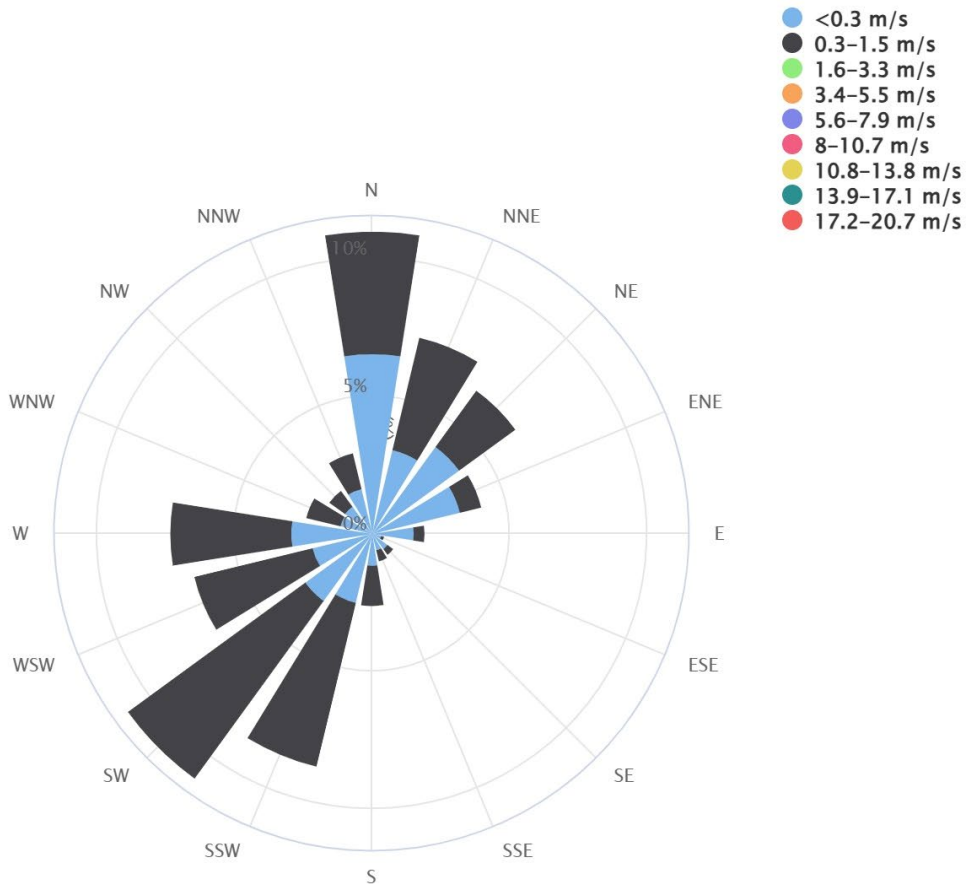
Knox County is located within the Great Valley of East Tennessee. It is parallel with an elevated plateau to the west and the Great Smoky Mountains to the east. The valley, characterized by long, narrow ridges, flanked by broad valleys, contains slopes from 700 to 1,500 feet above sea level. The highest peak is 2,064 feet above sea level located in the northeast quadrant. This topography is relevant in monitoring plans due to the influence on inversion events. Additionally, topography can drive pollutant levels of contributors and recipients of transport pollutants.

Knox County temperatures fall within the humid subtropical climate zone. Temperature is variable due to elevation between valleys and peaks as well as the surrounding plateau and mountains. In the valley, summers are hot and humid, with the average high temperature in July of 88°F. East Tennessee averages temperatures cooler than Middle or West Tennessee. The average January low is 28 °F. The average annual precipitation is 57 inches consisting of 51 inches of rain and 6 inches of snow. Weather data gathered from the National Oceanic and Atmospheric Administration (NOAA).

The wind rose for the last five years indicates the winds continue to alternate between blowing from the southwest to blowing from the north. Figure 1.1 wind rose data was created with data from SAFARIS Wind Rose Web Tool. The wind rose uses the Knoxville McGhee Tyson Airport located in Blount County metrological data from January 1, 2021, through January 1, 2026.

### Wind rose for Station: 723260 : MC GHEE TYSON AIRPORT

Percentage of Calm Winds: 22.871%



Highcharts.com

Figure 1.1 Wind Rose Knoxville (Wind Rose Tool)

## 1.4 Population

The population of Knox County has been increasing, with a projected variable growth rate of about 0.6% to 0.7% over the next several decades. Air monitoring network design considers two different population data metrics: The Core Based Statistical Area (CBSA) and the Metropolitan Statistical Area (MSA). The Knoxville CBSA and MSA, defined by the Office of Management and Budget in the 2020 delineations, consists of Anderson, Blount, Campbell, Knox, Loudon, Morgan, Roane and Union Counties. Air Quality works in conjunction with the State of Tennessee for meeting the area monitoring objectives.

Table 1.2 below details the estimated population change over from the 2010 to 2020 census as well as population estimates from 2021-2025. The American Community Survey and the Population Estimate Program, both part of the US Census Bureau, perform population estimates.

Table 1.2 Population Estimates

Geographic Area	Census		Population Estimates (July 1)				
	2010	2020	2021	2022	2023	2024	2025
<b>Anderson County</b>	75,129	77,123	77,567	78,913	80,234	81,449	82,066
<b>Blount County</b>	123,010	135,280	137,649	139,958	141,456	144,983	143,820
<b>Campbell County</b>	40,716	39,272	39,409	39,584	40,223	41,541	40,290
<b>Knox County</b>	432,226	478,971	486,812	494,574	500,669	506,748	511,453
<b>Loudon County</b>	48,556	54,886	56,672	58,181	60,591	62,129	63,764
<b>Morgan County</b>	21,987	21,035	21,101	21,224	21,573	21,954	22,160
<b>Roane County</b>	54,181	53,404	54,056	55,082	56,096	56,742	57,395
<b>Union County</b>	19,109	19,802	19,996	20,452	20,741	21,064	21,450
<b>Knoxville MSA/ CBSA Totals</b>	814,914	879,781	893,262	907,968	921,583	957,608	968,137

## 1.5 Demographics

The department reviews the placement of sites and monitors as part of the 5-year network assessment required in 40 CFR 58.10(d). This review includes meeting the required network objectives as well as ensuring the fair treatment of all Knox County citizens. Air Quality submitted this assessment to EPA in 2025.

## 2 Monitoring Network

The term ‘ambient air’ is defined in 40 CFR 50.1 as “that portion of the atmosphere, external to buildings, to which the general public has access.” Federal rules implemented by the US EPA require each state to establish a network of monitors to measure concentrations of criteria pollutants in ambient air based upon population, regional air quality, and regulatory concerns. There are 5 monitoring sites operated in Knox County that collect criteria pollutant data (see Table 2.1 and Figure 2.2).

Table 2.3 Station Identification

Station Name	Address	Latitude/Longitude	AQS ID	Criteria Pollutant
Air Lab	939 Stewart St	35.980756,-83.925802	47-093-1013	PM <sub>2.5</sub> , PM <sub>10</sub>
Ameristeel	1526 New York Ave	35.98102,-83.9544	47-093-0023	Lead
East Knox	9315 Rutledge Pike	36.0855,-83.7649	47-093-0021	Ozone
Rule	1613 Vermont Ave	35.97773,-83.9504	47-093-1017	PM <sub>2.5</sub>
Springhill	4711 Mildred Dr.	36.01914,-83.8739	47-093-1020	PM <sub>2.5</sub> , Ozone



Figure 2.4 Map of Monitoring Stations

### 2.1 Ozone (O<sub>3</sub>) Monitoring

Ozone at ground level can trigger a variety of health effects, particularly in young children, the elderly, and those with existing health conditions. Ground level ozone is created by chemical reactions triggered by sunlight between oxides of nitrogen and volatile organic compounds. Ambient ground level ozone is sampled on a continuous basis from March – October at 2 sites in Air Quality’s network and referenced to the NAAQS ozone

standard. The minimum number of ozone monitors required by 40 CFR Part 58, Appendix D is summarized in Table 2.3 below.

Table 2.5 Minimum O<sub>3</sub> Requirements (1)

Metropolitan Statistical Area (MSA) population <sup>(2,3)</sup>	Number of Monitors per MSA	
	Most recent 3-year design value $\geq$ 85% of NAAQS <sup>(4)</sup>	Most Recent 3-year design value <85% of NAAQS <sup>(4,5)</sup>
>10 million	4	2
4-10 million	3	1
350,000- < 4 million	2	1
50,000-349,999 <sup>(6)</sup>	1	0

(1) From 40 CFR Part 58, Appendix D, Table D-2

(2) Minimum monitoring requirements that apply to the MSA

(3) Population based on latest available census figures

(4) O<sub>3</sub> NAAQS levels are defined in 40 CFR Part 50

(5) Minimum monitoring requirements apply in absence of a design value

(6) MSA defined as urbanized area of 50,000 or more population.

According to the 2020 Census and the extrapolated US Census Bureau's Population Estimate Program, the Knoxville MSA falls within the 350,000 - <4 million population category. Air Quality operates ozone monitoring sites at Springhill Elementary (47-093-1020) and East Knox Elementary (47-093-0021).

Table 2.4 summarizes the Daily Max 8-hour O<sub>3</sub> values measured at the monitoring sites during the designated ozone season (March-October) of 2025.

Table 2.6 Ozone Concentrations 2025

Station	Concentrations			Design Value 2025	NAAQS	Is Design Value $\geq$ 85% of NAAQS
	Minimum	Maximum	Average			
East Knox	0.013	0.063	0.039	0.061	0.070	Yes
Springhill	0.016	0.067	0.039	0.059	0.070	Yes

The monitoring directives in 40 CFR Part 58, Appendix D, Section 5 contain specific requirements for the operation of Photochemical Assessment Monitoring Stations (PAMS) in areas classified as serious, severe, or extreme nonattainment for O<sub>3</sub>. Knox County does not contain any O<sub>3</sub> nonattainment areas, therefore no PAMS monitoring is required in Knox County.

## 2.2 Carbon Monoxide (CO) Monitoring

Pursuant to 40 CFR Part 58, Appendix D, Section 4.2 the requirements for CO monitoring sites are closely related to the requirements for near-road NO<sub>2</sub> monitoring sites (see Section 2.3). Table 2.5 below summarizes the number of required CO monitoring sites. As documented in Section 1.4 of this document, the Knoxville

CBSA does not meet the population criteria, therefore none are required. There are no CO monitors in Air Quality's monitoring network.

Table 2.7 CO Monitoring Requirements

Criteria	Number of Near-Road CO Monitors Required
CBSA $\geq$ 1,000,000	One, collocated with an NO <sub>2</sub> monitor or in an alternative location approved by the EPA

## 2.3 Nitrogen Dioxide (NO<sub>2</sub>) Monitoring

Nitrogen dioxide (NO<sub>2</sub>) is one of a group of highly reactive nitrogen oxides gasses. NO<sub>2</sub> are created during the combustion process and react at different rates in the atmosphere dependent on sunlight and temperature. They are a precursor to ground level ozone and a component of fine particle pollution.

The minimum number of NO<sub>2</sub> monitoring sites required by 40 CFR Part 58, Appendix D, Section 4.3 is summarized in Table 2.6.

Table 2.8 NO<sub>2</sub> Monitoring Requirements (1)

Requirement Type	Criteria	Minimum Monitors Required
Near road	CBSA Population $\geq$ 1,000,000	1
	CBSA Population $\geq$ 2.5 million	2
	CBSA Population $\geq$ 1,000,000 and Road Segments with annual average daily traffic counts $\geq$ 250,000	2
Area- Wide	CBSA Population $\geq$ 1,000,000	1
Protection of Susceptible and Vulnerable Populations	Any area inside or outside CBSAs	As required by EPA Administrator <sup>(2)</sup>

<sup>(1)</sup> From 40 CFR Part 58, Appendix D, Section 4.3

<sup>(2)</sup> From 40 CFR Part 58, Appendix D, Section 4.3.4(b)

As documented in Section 1.4 of this document, the Knoxville CBSA does not meet the listed criteria. There are no NO<sub>2</sub> monitors in Air Quality's monitoring program.

## 2.4 Sulfur Dioxide (SO<sub>2</sub>) Monitoring

Sulfur dioxide and a group of other sulfur oxides, collectively known as SO<sub>x</sub>, are emitted into the atmosphere from burning of fossil fuels by power plants, industrial facilities, locomotives, etc. Short-term exposure to SO<sub>x</sub> compounds can harm the respiratory system. Children, the elderly and those with asthma or other breathing conditions are particularly sensitive to sulfur compounds.

The EPA criteria used to determine the numbers of required SO<sub>2</sub> monitors is based upon two metrics: The Core Based Statistical Area (CBSA), and the Population Weighted Emissions Index (PWEI). The emissions are based upon the most current emissions inventory calculations. The Knoxville CBSA PWEI can be calculated as follows:

Knoxville CBSA 2025 census estimate: 968,137

2020 SO<sub>2</sub> Emissions (tones per year): 1,634

PWEI= (968,137\*1634) /1,000,000 = 1,582

Calculation provided by Tennessee Department of Environment and Conservation

Table 2.9 SO<sub>2</sub> Monitoring Requirements (1)

PWEI	Number of SO <sub>2</sub> Monitors Required
>1,000,000	3 monitors within the CBSA
100,000 – 1,000,000	2 monitors within the CBSA
5,000- 100,000	1 monitor withing the CBSA

<sup>(1)</sup> From 40 CFR Part 58, Appendix D, Section 4.4

As illustrated in Table 2.7 above, there are no monitors required for the Knoxville CBSA. The largest emission sources for SO<sub>2</sub> in the CBSA lays outside the county. There are no SO<sub>2</sub> monitors required or located within Knox County.

## 2.5 Lead (Pb) Monitoring

The lead monitoring design rule in 40 CFR Part 58, Appendix D, Section 4.5 requires monitoring agencies to establish monitoring near industrial facilities that emit more than 0.5 tons per year (tpy) of lead into the atmosphere, and at specified airports. None of the listed airports are located within Knox County, but one facility has historically reported annual lead emissions in excess of the 0.5 tpy emissions threshold. Air Quality operates 1 lead monitoring site near the plant. The Ameristeel site (47-093-0023) is a source-oriented site required by the rule and includes the QA collocated monitor. This site was established as the site of maximum concentration to provide data at the fence line of the plant.

## 2.6 Particulate Matter (PM<sub>10</sub>) Monitoring

Particulate matter is a mixture of solid particles and liquid droplets found in the air such as dust, dirt, or soot. PM<sub>10</sub> are inhalable particles with diameters that are 10 micrometers and smaller. The minimum number of PM<sub>10</sub> monitoring sites required by 40 CFR Part 58, Appendix D, Section 4.6 is shown in Table 2.8.

Table 2.10 PM10 Monitoring Requirements (1)

Population Category	Number of Monitors per MSA <sup>(1)</sup>		
	High Conc. <sup>(2)</sup>	Medium conc. <sup>(3)</sup>	Low conc. <sup>(4)(5)</sup>
>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

<sup>(1)</sup> From 40 CFR Part 58, Appendix D, Table D-4. Selection of urban areas and number of stations per MSA within ranges shown are jointly determined by EPA, TDEC, and Air Quality.

<sup>(2)</sup> High concentration areas are those for which data exceeds the NAAQS by 20 % or more.

<sup>(3)</sup> Medium concentration areas are those for which data exceeds 80% of the NAAQS.

<sup>(4)</sup> Low concentration areas are those for which data is less than 80% of the NAAQS.

<sup>(5)</sup> Low concentration requirements apply in the absence of a design value.

The Knoxville MSA is a low concentration 500,000-1,000,000 population category requiring 1-2 monitors. Air Quality operates one continuous monitor at the Air Lab site, the Teledyne API-T640x.

## 2.7 Fine Particulate Matter (PM<sub>2.5</sub>) Monitoring

Fine particulate matter (PM<sub>2.5</sub>) are inhalable particles with diameters that are generally 2.5 micrometers and smaller. These fine particles can be inhaled deep into the lungs and even into the blood stream. People with heart or lung diseases, children and older adults are most likely to be affected by particle pollution exposure.

The minimum number of PM<sub>2.5</sub> monitoring sites required by 40 CFR Part 58, Appendix D, Section 4.7 is shown in Table 2.9. In addition to the minimum number of primary monitors required in the network, 40 CFR Part 58, Appendix A requires:

*“For each distinct monitoring method designation (FRM or FEM) that a PQAQO is using for a primary monitor, the PQAQO must have 15 percent of the primary monitors of each method designation collocated (values of 0.5 and greater round up); and have at least one collocated quality control monitor (if the total number of monitors is less than three). The first collocated monitor must be a designated FRM monitor”*

Table 2.11 PM<sub>2.5</sub> Monitoring Requirements (1)

MSA Population (2)	Number of Monitors per MSA	
	Most recent 3-year design value $\geq$ 85% of any PM <sub>2.5</sub> NAAQS <sup>(3)</sup>	Most recent 3-year design value $<$ 85% of any PM <sub>2.5</sub> NAAQS <sup>(3)</sup>
> 1,000,000	3	2
500,000 - 1,000,000	2	1
50,000 - <500,000	1	0

(1) From 40 CFR Part 58, Appendix D, Table D-5.

(2) Population based on latest available census figures.

(3) Minimum monitoring requirements apply in absence of design value.

Table 2.10 provides the NAAQS standard and the 2025 design values by site. Based upon the MSA population data and the design values the Knoxville MSA is required to operate 2 primary and 2 collocated PM<sub>2.5</sub> monitors. The collocation requirement is increased to collocate each method type. Air Quality operates 5 SLAMS monitors which include 3 primary monitors (all Teledyne API T640 or T640x continuous method) and 2 collocated FRM monitors. All continuous monitors are also used for Air Quality Index (AQI) reporting.

Table 2.12 PM<sub>2.5</sub> NAAQS Comparisons

Site	NAAQS – 35 $\mu\text{g}/\text{m}^3$		NAAQS - 9 $\mu\text{g}/\text{m}^3$	
	Design Values( $\mu\text{g}/\text{m}^3$ )			
	24 hour		Annual	
Air Lab	20		8.4	
Rule	21		8.4	
Springhill	21		8.7	

Additionally, 40 CFR Part 58, Appendix D, Section 4.7.2 requires that agencies operate continuous analyzers in at least one-half of the required PM<sub>2.5</sub> monitoring sites and at least one analyzer per MSA must be collocated with a sequential Federal Reference Method (FRM) monitor. All primary monitors in the network are continuous analyzers. The monitors at Rule and Air Lab are both collocated with a sequential FRM monitor.

## 2.8 Chemical Speciation

The PM<sub>2.5</sub> monitoring criteria in 40 CFR Part 58, Appendix D, Section 4.7.4 requires that each state continue to conduct PM<sub>2.5</sub> Chemical Speciation monitoring at locations designated to be part of the National Speciation Trends Network (STN). Air Quality operates one supplemental speciation site: Rule (47-093-1017).

## 2.9 National Core Monitoring

40 CFR Part 58, Appendix D, Section 3 requires that each state operate at least one NCore multi-pollutant monitoring site. By definition, each NCore site must include monitoring equipment to measure PM<sub>2.5</sub>, PM<sub>10-2.5</sub>, speciated PM<sub>2.5</sub>, O<sub>3</sub>, SO<sub>2</sub>, CO, NO, NO<sub>x</sub>, lead, and basic meteorology. Knox County is not a chosen NCore site within the State of Tennessee.

## 2.10 AQI Reporting

40 CFR 58.50 requires state or local agencies with individual MSAs with a population exceeding 350,000 to report the air quality index (AQI) daily. Air Quality participates in AQI reporting with hourly reports to the AirNow database from all continuous monitors (O<sub>3</sub> and PM<sub>2.5</sub>). This database provides real-time AQI data and, in conjunction with TDEC, is used for modeling future AQI.

### 3 Monitoring Sites

The following section shall detail the individual sites within the monitoring network. All monitors meet requirements of appendices A, B, C, D and E where applicable. Included in this section are the location, equipment, pollutants monitored and most recent siting evaluation to ensure adherence to 40 CFR Part 58, Appendix E requirements. Satellite diagrams have a grey circle encapsulating the representative spatial scale.

#### 3.1 Air Lab



Figure 3.13 Air Lab Site View



Figure 3.14 Air Lab Satellite Scale

Address	939 Stewart St, Knoxville 37917		This site monitors particulate matter (PM <sub>10</sub> & PM <sub>2.5</sub> ) within the city limits of Knoxville in a mixed-use zoning area. This site is closer than 1 kilometer to interstates I-275, I-40, and I-75. Residential and commercial facilities surround it. Nearest road with a traffic count is W. Baxter Avenue at 6,997 approximately 600 meters from the site. The Teledyne T640X light scattering monitor is the primary monitor for PM <sub>2.5</sub> and PM <sub>10</sub> . It reports PM <sub>2.5</sub> data to the Air Quality Index (AQI). The Thermo Partisol Plus 2025i is utilized as the quality assurance collocated federal reference method for PM <sub>2.5</sub> . The PM 2.5 monitors at this site are comparable to the NAAQS.
AQSID	470931013		
Latitude	35.980756		
Longitude	-83.925769		
Pollutant	PM 2.5	PM 2.5/ PM 10	
Parameter Code	88101	88101, 81102	
Monitor Type	SLAMS	SLAMS	
POC	1	3,4	
Interval	24-Hour	24-Hour	
Collection Frequency	1:6	Hourly	
Method	145	638,639	
FRM/FEM Monitoring Instrument	Thermo Partisol Plus 2025i	Teledyne T640X	
Analysis	Gravimetric	Light Scattering	
Ref Method ID	RFPS-0498-118	EQPM-0516-238 EQPM-0516-239	
Monitor Objective Type	QA Collocation	Population Exposure	
Dominant Source	Mobile		
Measurement Scale	Middle Scale		
Land Use Type	Mobile		
Location Setting	Urban and City Center		

Date Established	20070201	20171001	
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Siting Evaluation Form

Site Name: Air Lab  
 AQSNo: 47-093-1013  
 Coordinate 35.980756, -83.925802

Date: 11/12/2025  
 Site Address: 939 Stewart St  
 Inspected by: Amy Mullikin

Pollutant	Scale	Probe Height <sup>1</sup>	Flow (hi or Low)	Separation from samplers <sup>1</sup>	Pass/Fail	Distance to Road <sup>1</sup>	Pass/Fail
PM <sub>2.5</sub> FRM	Middle	4.6	Low	1.7	Pass	15.3	Pass
PM <sub>2.5/10</sub> Continuous	Middle	4.9	Low			15.8	Pass
PM <sub>2.5</sub> Backup instrument	Middle	4.5	Low	2.04	Pass	15.3	Pass

Obstruction type <sup>2</sup>	Obst. Height <sup>1</sup>	Obst. Distance <sup>1,2</sup>	Tree		
			Pass/Fail	Dripline <sup>1</sup>	Pass/ Fail
Closest Tree east	13.9	24.8	Pass	17.4	Pass

<sup>1</sup> All Measurements in meters  
<sup>2</sup> Including vertical and horizontal separation from walls &/or parapets if applicable

Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume  
 Obstruction Distance must be  $\geq 2 * (\text{Obst height} - \text{probe height})$   
 Tree Dripline must be  $>10$  m away, prefer  $>20$ m  
 Horizontal and vertical distance on rooftop 1m for O<sub>3</sub>/gases - 2m for all others  
 Unrestricted air flow must be  $\geq 270^\circ$

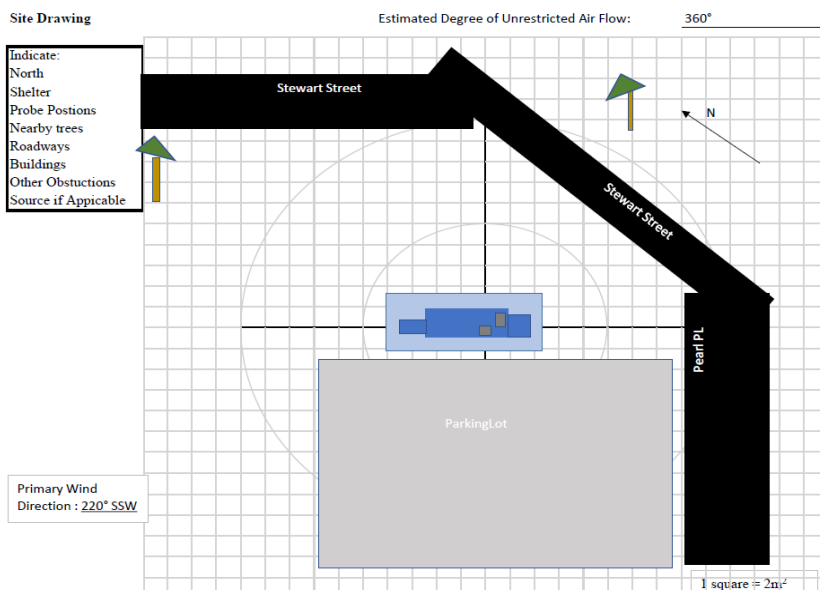


Figure 3.15 Air Lab Site Evaluation



Siting Evaluation Form

Photos facing out from monitor to cardinal direction

North



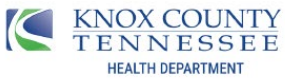
South



East



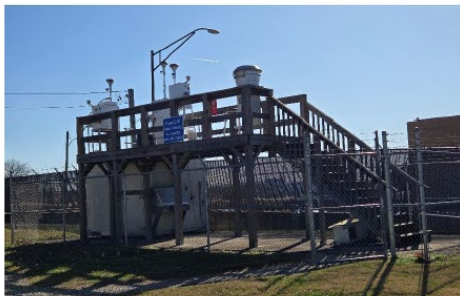
West



Siting Evaluation Form

Photos from cardinal direction facing in towards monitor

North



South



East



West



Figure 3.16 Air Lab Site Photos

## 3.2 Ameristeel



Figure 3.17 Ameristeel Site View



Figure 3.18 Ameristeel Satellite Scale

Address	1526 New York Ave, Knoxville 37921		This is a lead only site established as a source-oriented site to fulfill the requirements in 40 CFR Part 58, Appendix D, Section 4.5. It is located in the urban core, downwind of the source. Nearest traffic count, 2,821, is on Texas Avenue approximately 1,100 meters from the site. This is the maximum concentration site for this pollutant.
AQSID	470930023		
Latitude	35.981040		
Longitude	-83.954311		
Pollutant	Lead	Lead	
Parameter Code	14129	14129	
Monitor Type	SLAMS	SLAMS	
POC	1	2	
Interval	24-Hour	24-Hour	
Collection Frequency	1:06	1:06	
Method	193	193	
FRM/FEM Monitoring Instrument	Hi-Vol Pb-TSP	Hi- Vol Pb-TSP	
Analysis	ICP-Mass Spectroscopy	ICP- Mass Spectroscopy	
Ref Method ID	RFLA-0813-0813	RFLA-0813-0813	
Monitor Objective Type	Source Oriented	QA Collocation	
Dominant Source	Point		
Measurement Scale	Microscale		
Land Use Type	Industrial		
Location Setting	Urban and City Center		
Date Established	20110101	20211101	



Siting Evaluation Form

Site Name: Ameristeel  
 AQSNo: 47-093-0023  
 Coordinates: 35.98102, -83.9544

Date: 11/14/2025  
 Site Address: 1526 New York Ave  
 Inspected by: Amy Mullikin

Pollutant	Scale	Probe Height <sup>1</sup>	Flow (hi or Low)	Separation from samplers <sup>1</sup>	Pass/Fail	Distance to Road <sup>1</sup>	Pass/Fail
Lead	Microscale	2.1	Hi	3.9	Pass	12.8	Pass
Lead Collocate	Microscale	2.1					

Obstruction type <sup>2</sup>	Obst. Height <sup>1</sup>	Obst. Distance <sup>1,2</sup>	Pass/Fail	Tree	
				Dripline <sup>1</sup>	Pass/ Fail
Apple tree 1 NNE	5.4	14	Pass	12.2	Pass
Apple tree 2 NNE	4.7	14.5	Pass	13.2	Pass
Apple tree 3 NNE	3	13.7	Pass	12.2	Pass
Privacy Fence	2.1	2.44	Pass	NA	

<sup>1</sup> All Measurements in meters  
<sup>2</sup> Including vertical and horizontal separation from walls &/or parapets if applicable

Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume  
 Obstruction Distance must be  $\geq 2 \times$  (Obst height - probe height)  
 Tree Dripline must be  $>10$  m away, prefer  $>20$ m  
 Horizontal and vertical distance on rooftop 1m for O<sub>3</sub> gases - 2m for all others  
 Unrestricted air flow must be  $\geq 270^\circ$

Site Drawing

Estimated Degree of Unrestricted Air Flow: 360°

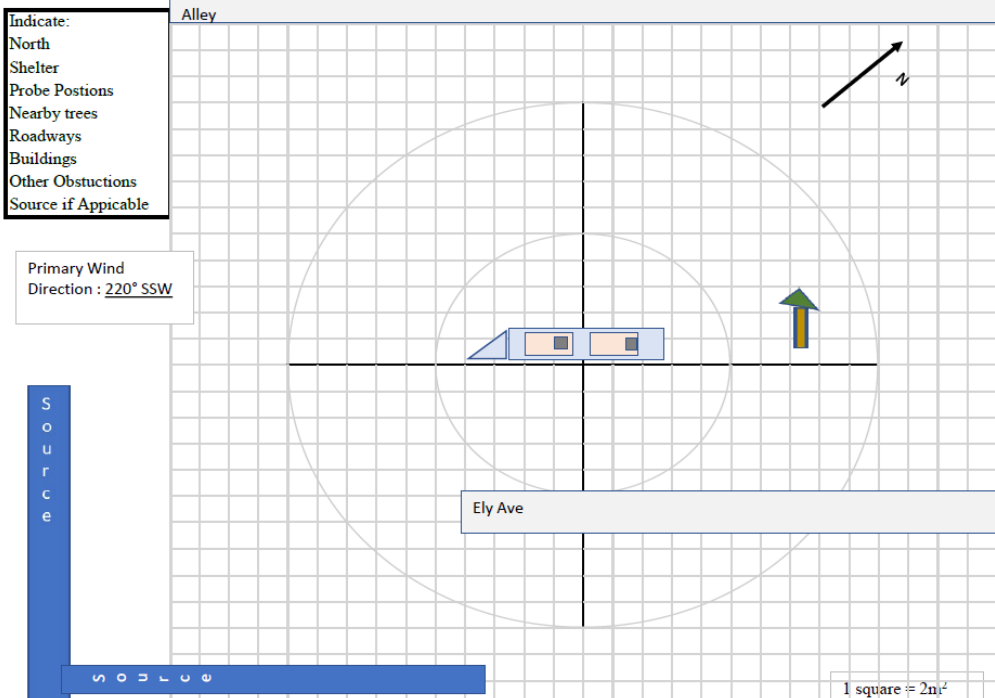


Figure 3.19 Ameristeel Site Evaluation



Siting Evaluation Form

Photos facing out from monitor to cardinal direction

North



South



East



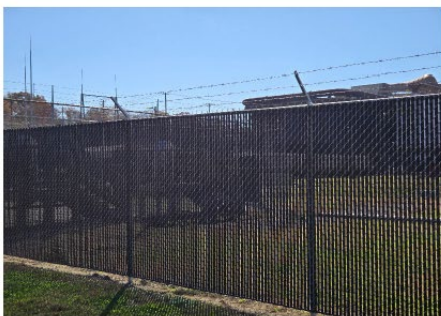
West



Siting Evaluation Form

Photos from cardinal direction facing in towards monitor

North



South



East



West



Figure 3.20 Ameristee Site Photos

### 3.3 East Knox



Figure 3.21 East Knox Site View

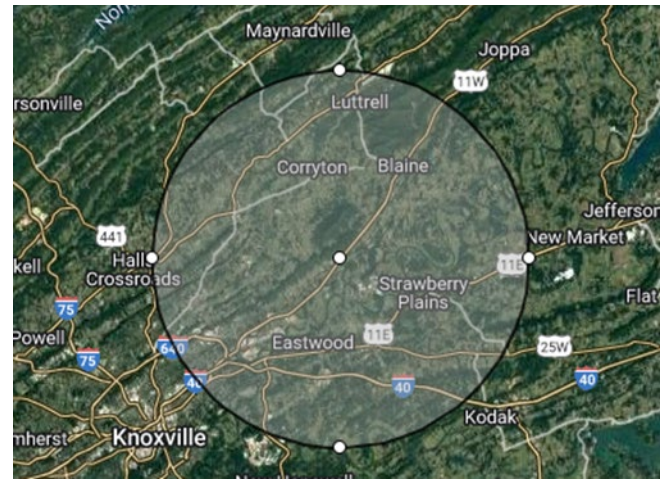


Figure 3.22 East Knox Satellite Scale

Address	9315 Rutledge Pike, Mascot, 37806	This site is located in east Knox County and currently monitors for ozone. The site was initially established in 1981. It is located downwind from the core Knoxville MSA area. Traffic count from nearest road, Roseberry Road, is 430. The traffic counter is 277 meters from the site. The urban scale represented in figure 3.10 above is 15KM radius. This site serves in assessing the highest concentration of ozone in the Knoxville area and used in the AQI forecasting program.
AQSID	470930021	
Latitude	36.085508	
Longitude	-83.764806	
Pollutant	Ozone	
Parameter Code	44201	
Monitor Type	SLAMS	
POC	1	
Interval	24 hour continuous	
Collection Frequency	Minute & hourly	
Method	087	
FRM/FEM Monitoring Instrument	Teledyne 400E	
Analysis	Ultraviolet	
Ref Method ID	EQOA-0992-087	
Monitor Objective Type	Highest Concentration	
Dominant Source	N/A	
Measurement Scale	Urban	
Land Use Type	Agricultural	
Location Setting	Rural	
Date Established	19810601	



Siting Evaluation Form

Site Name: East Knox  
 AQSNo: 47-093-0021  
 Coordinate 36.0855,-83.7649

Date: 11/17/2025  
 Site Address: 9315 Rutledge Pike  
 Inspected by: Amy Mullikin

Pollutant	Scale	Probe Height <sup>1</sup>	Flow (hi or Low)	Separation from samplers <sup>1</sup>	Pass/Fail	Distance to Road <sup>1</sup>	Pass/Fail
Ozone	Urban	3.96	Low	n/a		180	Pass

Obstruction type <sup>2</sup>	Obst. Height <sup>1</sup>	Obst. Distance <sup>1,2</sup>	Pass/Fail	Tree	
				Dripline <sup>1</sup>	Pass/ Fail
1. Pine West	19.9	33	Pass	>20	Pass
2. Tallest Pine WSW	19.4	31.6	Pass	>20	Pass
3. Mimosa tree S	8.4	18.6	Pass	12.4	Pass
4. Tree WSW	9.6	20.5	Pass	17.2	Pass
5. Tree WSW	8.6	19.8	Pass	15.8	Pass

This site should be monitored for tree growth carefully, keep smaller brush maintained

<sup>1</sup> All Measurements in meters  
<sup>2</sup> Including vertical and horizontal separation from walls &/or parapets if applicable

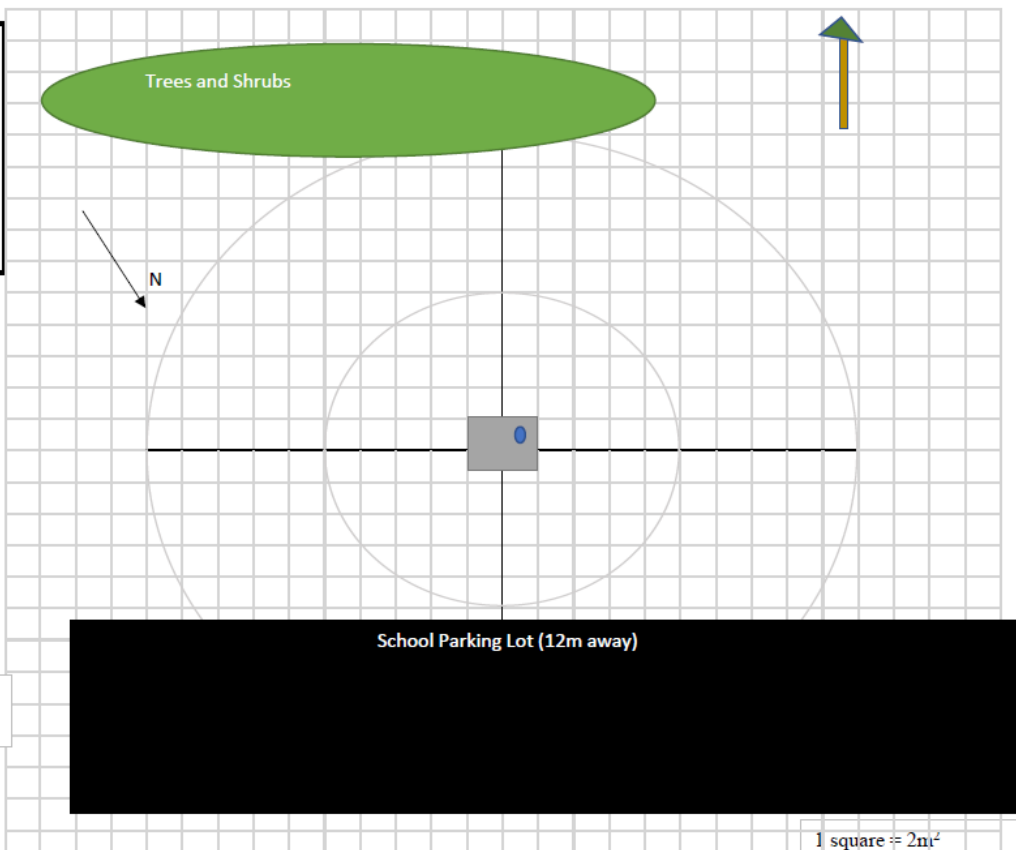
Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume  
 Obstruction Distance must be  $\geq 2 * (\text{Obst height} - \text{probe height})$   
 Tree Dripline must be >10 m away, prefer >20m  
 Horizontal and vertical distance on rooftop 1m for O<sub>3</sub> gases - 2m for all others

Site Drawing

Estimated Degree of Unrestricted Air Flow:

360

- Indicate:
- North
- Shelter
- Probe Postions
- Nearby trees
- Roadways
- Buildings
- Other Obstructions
- Source if Applicable



Primary Wind  
 Direction : 220° SSW

Figure 3.23 East Knox Site Evaluation

Photos facing out from monitor to cardinal direction

North



South



East



West



Photos from cardinal direction facing in towards monitor

South



West



Figure 3.24 East Knox Site Photos

### 3.4 Rule



Figure 3.13 Rule Site View



Figure 3.25 Rule Satellite Scale

Address	1613 Vermont Ave, Knoxville 37921				The Rule site serves as a population exposure site for PM <sub>2.5</sub> and a QA collocated site. It is the location of the Chemical Speciation samplers as well. It is located in a residential area that is less than .5 kilometers southeast of several industries. Additionally, the scale of the site includes 3 identified environmental justice communities: Lonsdale, Beaumont, and Mechanicsville. Beaumont Avenue is the closest road with a traffic count of 2,821. The traffic county location is 800 meters from the monitor. The Partisol 2025i and the Teledyne T640 are both comparable to the NAAQS.
AQSID	470931017				
Latitude	35.948074				
Longitude	-83.950666				
Pollutant	PM <sub>2.5</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub> Speciated		
Parameter Code	88101	88101	88502	88502	
Monitor Type	SLAMS	SLAMS	CSN supplemental	CSN supplemental	
POC	1	3	5	5	
Interval	24-Hour	24-Hour - continuous	24-Hour Average		
Collection Frequency	1:6	Hourly	1:06	1:06	
Method	145	636	898	838	
FRM/FEM Monitoring Instrument	Thermo Partisol 2025i	Teledyne T640	Met One Super Sass	URG 3000	
Analysis	Gravimetric	Light Scattering	Gravimetric	Gravimetric	
Ref Method ID	RFPS-0498-118	EQPM-0516-236	n/a		
Monitor Objective Type	QA Collocation	Population Exposure			
Dominant Source	Mobile				
Measurement Scale	Neighborhood				
Land Use Type	Residential				
Location Setting	Urban and City Center				
Date Established	20020101	20201101	20020619	20020619	



Siting Evaluation Form

Site Name: Rule  
 AQSNo: 47-093-1017  
 Coordinate 35.97773, -83.9504

Date: 11/12/2025  
 Site Address: 1613 Vermont Ave  
 Inspected by: Amy Mullikin

Pollutant	Scale	Probe Height <sup>1</sup>	Flow (hi or Low)	Separation from samplers <sup>1</sup>	Pass/Fail	Distance to Road <sup>1</sup>	Pass/Fail
PM <sub>2.5</sub>	Neighborhood	2.36	Low	3.4	Pass	>42	Pass
PM <sub>2.5</sub> continuous	Neighborhood	2.3	Low	2.5	Pass	> 42	Pass
URG Speciation	Neighborhood	2.2	Low	2.7	Pass	> 42	Pass
SASS speciation	Neighborhood	2.2	Low	3.6	Pass	> 42	Pass

Obstruction type <sup>2</sup>	Obst. Height <sup>1</sup>	Obst. Distance <sup>1,2</sup>	Pass/Fail	Tree	
				Dripline <sup>1</sup>	Pass/ Fail
WaterTower	24.4	65.2	Pass	NA	
Tallest tree W	12	32.5	Pass	>20	Pass

<sup>1</sup> All Measurements in meters

<sup>2</sup> Including vertical and horizontal separation from walls &/or parapets if applicable

Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume

Obstruction Distance must be  $\geq 2 * (\text{Obst height} - \text{probe height})$

Tree Dripline must be >10 m away, prefer >20m

Horizontal and vertical distance on rooftop 1m for O<sub>3</sub> gases - 2m for all others

Site Drawing

Estimated Degree of Unrestricted Air Flow: 360°

- Indicate:
- North
- Shelter
- Probe Postions
- Nearby trees
- Roadways
- Buildings
- Other Obstructions
- Source if Applicable

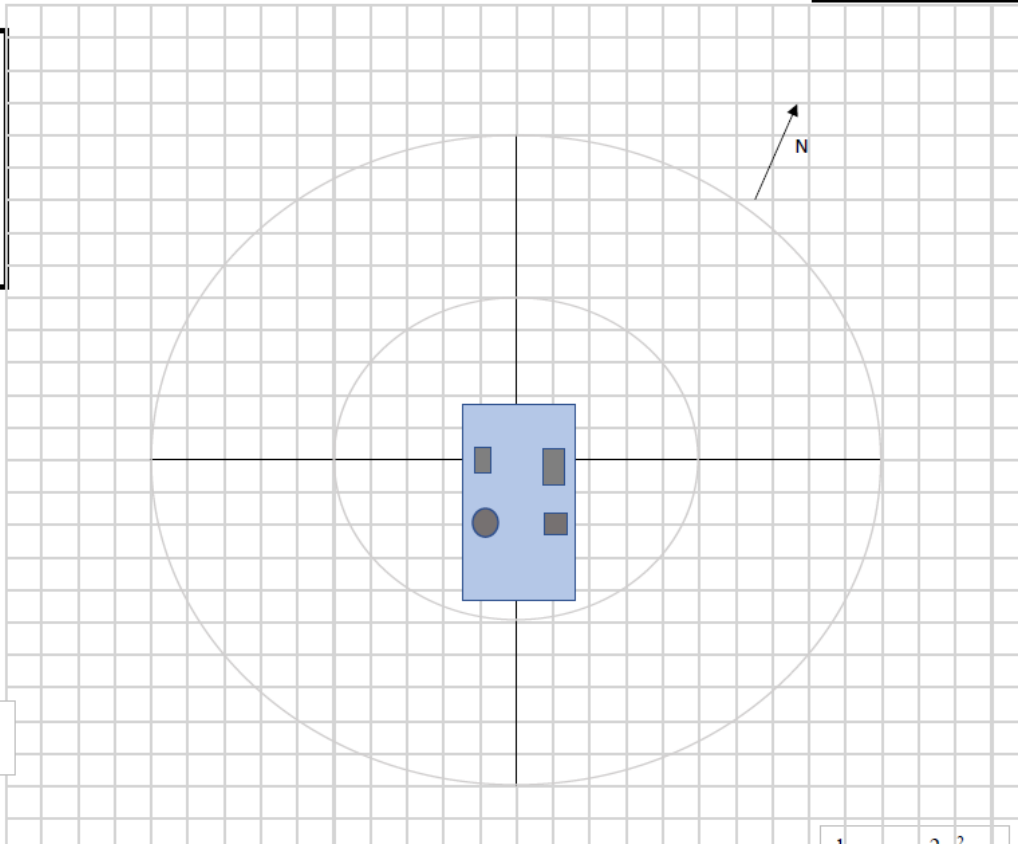


Figure 3.15 Rule Site Evaluation



Siting Evaluation Form



Photos facing out from monitor to cardinal direction

North



South



East



West



Siting Evaluation Form

Photos from cardinal direction facing in towards monitor

North



South



East



West



Figure 3.266 Rule Site Photos

### 3.5 Springhill



Figure 3.27 Springhill Site View



Figure 3.18 Springhill Satellite Scale

Address	4711 Mildred Drive, Knoxville, 37914		<p>The Springhill site is a neighborhood scale site monitoring ozone and PM 2.5. It is located downwind of the urban core of Knoxville where ozone precursors are likely to occur. Rutledge Pike is the closes road with a traffic count of 19,178. The site is 957 meters from the traffic count station. This PM 2.5 neighborhood scale site is the maximum concentration site for PM 2.5 in Air Quality's network. The PM 2.5 monitor at this site is comparable to the NAAQS.</p>
AQSID	470931020		
Latitude	36.01920		
Longitude	-83.87390		
Pollutant	Ozone	PM <sub>2.5</sub>	
Parameter Code	44201	88101	
Monitor Type	SLAMS	SLAMS	
POC	1	3	
Interval	24-Hour - continuous	24-Hour - continuous	
Collection Frequency	Hourly	Hourly	
Method	087	636	
FRM/FEM Monitoring Instrument	Teledyne T400	Teledyne T640	
Analysis	Ultraviolet	Light Scattering	
Ref Method ID	EQOA-0992-087	EQPM-0516-236	
Monitor Objective Type	Population Exposure		
Dominant Source	Mobile		
Measurement Scale	Neighborhood		
Land Use Type	Residential		
Location Setting	Suburban		
Date Established	20020101	19900101(pollutant) 20201101 (method)	



## Siting Evaluation Form

Site Name: Springhill

AQSNo: 47-093-1020

Coordinate 36.0114, -83.8739

Date: 11/19/2025

Site Address: 4711 Mildred Drive

Inspected by: Amy Mullikin

Pollutant	Scale	Probe Height <sup>1</sup>	Flow (hi or Low)	Separation from samplers <sup>1</sup>	Pass/Fail	Distance to Road <sup>1</sup>	Pass/Fail
Ozone	Neighborhood	4.3	Low	2.1	Pass	36.2	Pass
PM2.5	Neighborhood	5.1	Low	2.1	Pass	37.8	Pass

Obstruction type <sup>2</sup>	Obst. Height <sup>1</sup>	Obst. Distance <sup>1,2</sup>	Pass/Fail	Tree	
				Dripline <sup>1</sup>	Pass/ Fail
1. Tree NNE	12.8	18.6	Pass	13.3	Pass
2. Tallest Pine 1 East	21.8	28.7	Fail	19.4	Pass
2. Tallest Pine 1 East	21.8	29.4	Fail	19.4	Pass
4. Tree W of Pines	19	36.4	Pass	27	Pass
5. Tree East	13.5	22.8	Pass	17.6	Pass
6. Tree of Heaven	5.3	22.2	Pass	22.1	Pass

<sup>1</sup> All Measurements in meters<sup>2</sup> Including vertical and horizontal separation from walls &/or parapets if applicable

Collocated Samplers must be within 4 m of each other and at least 2 m apart for hi vol, at least 1 m for low volume

Obstruction Distance must be  $\geq 2 \times$  (Obst height - probe height)

Tree Dripline must be &gt;10 m away, prefer &gt;20m

Horizontal and vertical distance on rooftop 1m for O<sub>3</sub>/gases - 2m for all othersUnrestricted air flow must be  $\geq 270^\circ$

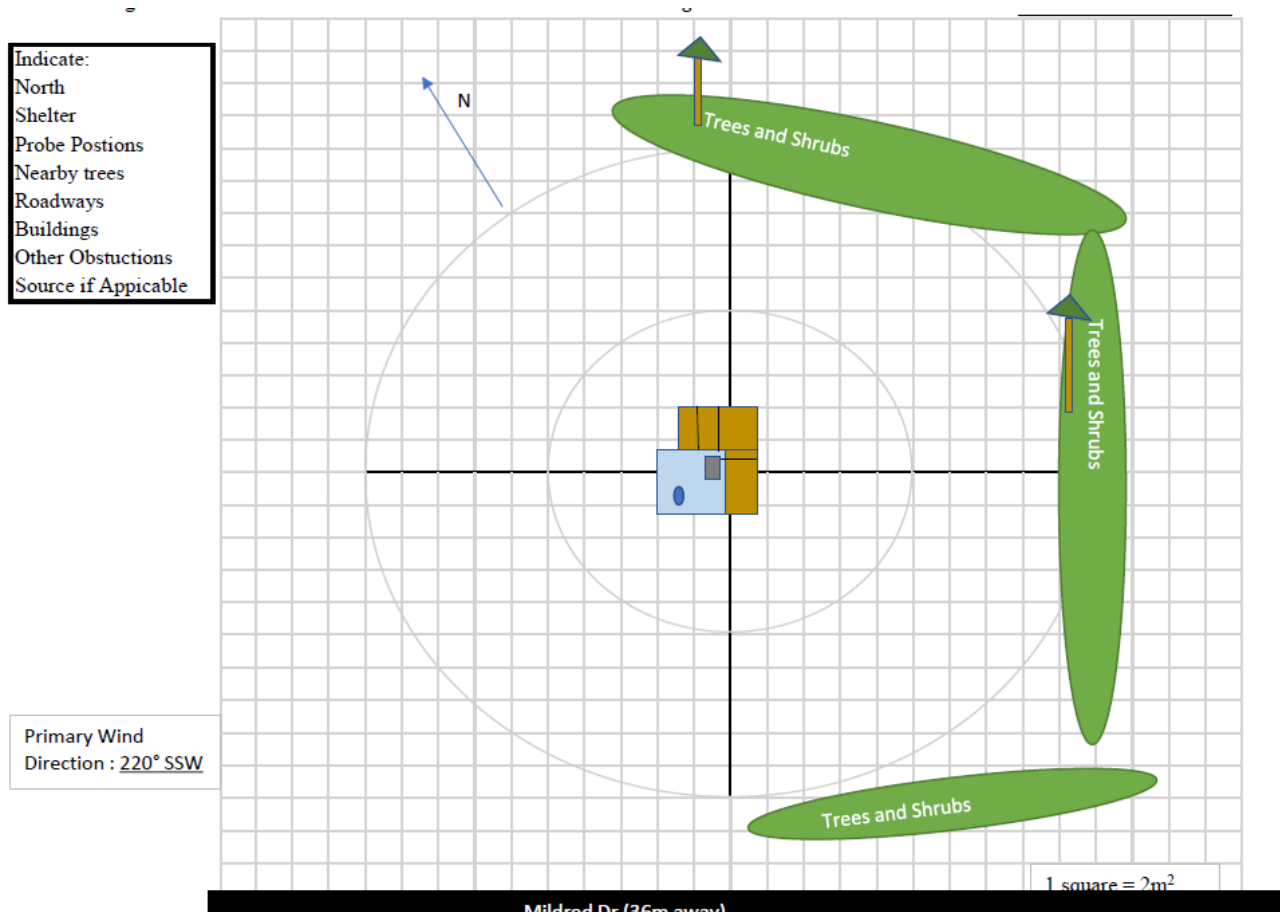


Figure 3.19 Springhill Site Evaluation



Siting Evaluation Form

Photos facing out from monitor to cardinal direction

North



South



East



West



Siting Evaluation Form

Photos from cardinal direction facing in towards monitor

North



South



East



West



Figure 3.280 Springhill Site Photos

## 4 Proposed Changes

The EPA Region 4 governing authority approves Knox County's distribution of monitors and the location of the collocated sites for compliance with Federal regulations. Any changes will be undertaken in partnership and direct advisement with the EPA (and TDEC, when applicable). Before decommissioning any SLAMS monitor, Air Quality will follow the procedure listed in 40 CFR 58.14, "System Modifications". Any proposed changes to the air monitoring network will be documented in the Annual Monitoring Plan.

Changes to the monitoring network may occur outside the Annual Monitoring Plan (AMP) and planning process due to unforeseen circumstances resulting from eviction or other situations that occur after the ANP has been posted for public inspection and approved by the EPA Regional Administrators. Any changes to the network due to circumstances beyond Air Quality's control will be communicated in writing to the EPA Regional Authority, (and TDEC authorities, when applicable), and identified in the subsequent Annual Monitoring Plan.

### 4.1 Decommission and Relocation

Air Quality learned that the ownership of the Rule High School site, 47-093-1017, was transferred to Knox County School System in March of 2025 with the intent to build a K-8 school. It is still unclear what the future of the site looks like for Air Quality's monitoring station. Air Quality has been in contact with the school system. The designers of the new school are evaluating if it is viable to leave the site where it currently is, if it can be relocated to another location on the property or if it will need to be relocated off the property. Air Quality is looking at surrounding properties for a viable relocation site if needed. If Air Quality must relocate the monitoring site, a request would be made to move the supplemental speciation monitor(s) to the Air Lab site 47-093-1013. Air Quality will keep EPA and TDEC up to date of any new developments.

### 4.2 Replacements and Reassignments

In the 2025 Network Plan, Air Quality planned to "replace the aging shelter at Springhill Elementary Site (47-093-1020) and remove the external wooden platform. This would include moving the PM continuous monitor (T640) from a small portable shelter to within a new walk-in shelter with the ozone. Funding was received through an Inflation Reduction Act (IRA) non-competitive grant. This will be scheduled for after the close of ozone season 2025." This project has not been completed due to unforeseen fees. Air Quality is working with EPA to determine an appropriate avenue to upgrade the Springhill shelter and platform within the grant scope of work and remaining funds.

### 4.3 Approved Waiver Requests and Renewals

Air Quality has no waiver request for 2026.