

Nashville-Davidson County Air Monitoring Network Plan 2024

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Nashville / Davidson County

Promoting and Protecting Health

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1.0 NASHVILLE AIR MONITORING NETWORK OVERVIEW

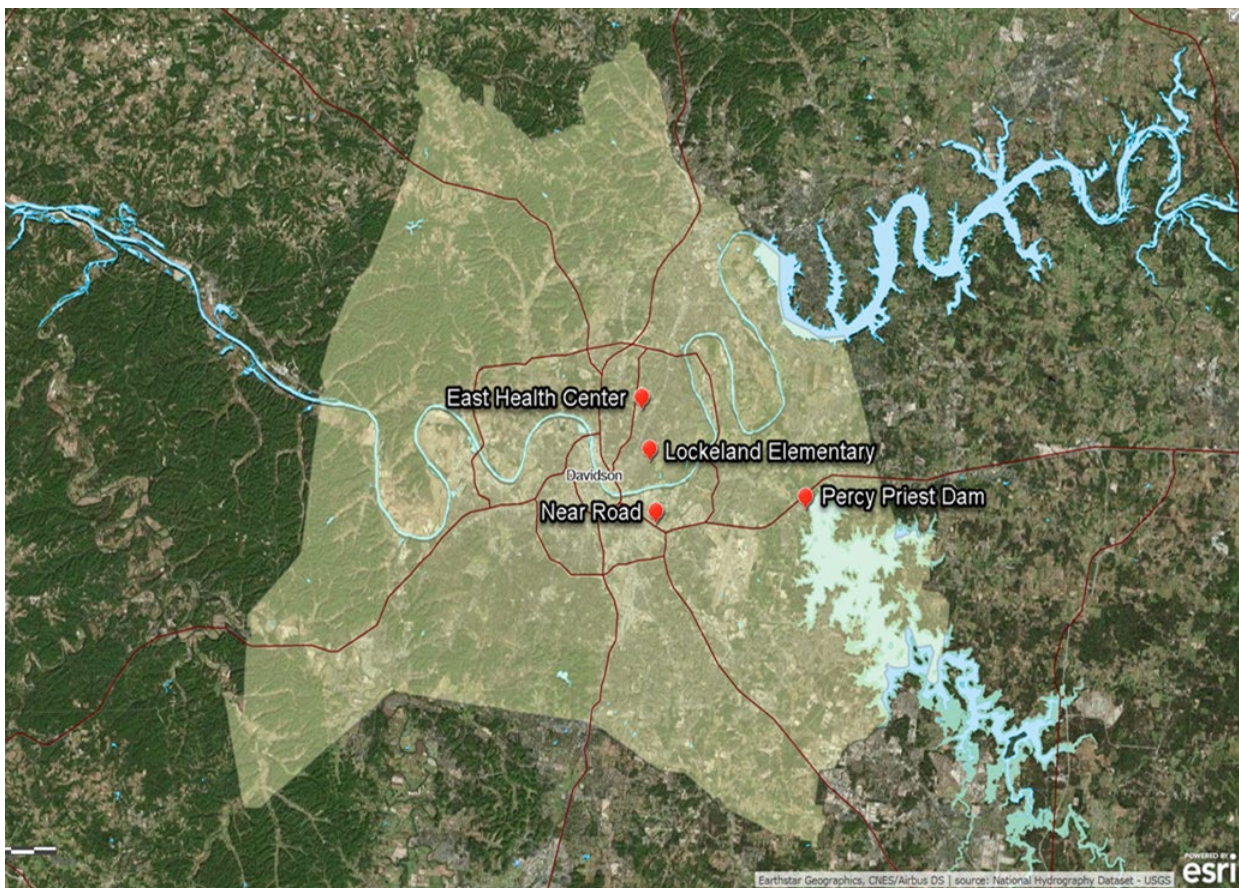
After the Clean Air Act (CAA) of 1970 was passed, the State of Tennessee's Department of Environment and Conservation Air Monitoring Program ("TDEC") was established in the mid-1970s. Shortly thereafter, the Nashville-Davidson County Air Monitoring Program ("Nashville") was established and worked in partnership with TDEC as a single Primary Quality Assurance Organization (PQAO). Beginning January 1st, 2015, Nashville became its own (PQAO) and has continually operated as such since. With that said, Nashville still works closely with TDEC as the requirements for the Nashville-Davidson-Murfreesboro-Franklin Core-Based Statistical Area (CBSA) are met by monitors operated within both the Nashville and TDEC's air monitoring networks.

This document provides information on Nashville's current 2024 Ambient Air Monitoring Network. With that, it details any proposed changes to the network, monitoring site descriptions, and monitoring site evaluations. This document is intended to fulfill the requirements of *40 CFR Part 58.10*, in which a monitoring organization must review their network on an annual basis to ensure that all requirements (within *40 CFR, Part 58, Appendices A, B, C, D, and E*) are being met.

1.1 CURRENT 2024 MONITORING NETWORK

The 2024 Nashville-Davidson County Ambient Air Monitoring Network has had no significant changes made compared to 2023. The map shown in *Figure 1-1* below depicts the location of each ambient air monitoring site within Nashville's 2024 monitoring network.

Figure 1-1: Nashville-Davidson County Air Monitoring Network



Nashville has four (4) monitoring sites in operation for 2024. These sites are listed below along with the criteria pollutants monitored at each site.

- 1) The [EAST HEALTH CENTER \(“EAST”\)](#) site monitors for ozone (O₃) and nitrogen dioxide (NO₂) (*along with its supporting parameters Nitrous Oxide (NO) and Nitrogen Oxides (NO_x)*);
- 2) The [LOCKELAND ELEMENTARY SCHOOL \(“LL”\)](#) site monitors for continuous PM₁₀, continuous PM_{2.5} (*Regulatory and AQI specific*), and intermittent filter-based PM_{2.5};
- 3) The [PERCY PRIEST DAM \(“PPD”\)](#) site monitors for O₃; and
- 4) The [NEAR ROAD SITE \(“NRS”\)](#) monitors for PM_{2.5}, carbon monoxide (CO), NO₂ (*along with NO/NO_x*), and sulfur dioxide (SO₂) (*along with its supporting parameter SO₂MAX*).

Nashville’s 2024 air monitoring network meets all minimum monitoring requirements laid out in 40CFR for all parameter pollutants (PM_{2.5}, O₃, SO₂, NO₂, and CO) except PM₁₀, which is discussed in further detail below.

In response to its 2016 Annual Network Plan, Nashville gained EPA approval for waiver of a 40CFR requirement (*Part 58, Appendix D, Section 4.6*), which outlines the need for two (2) PM₁₀ monitors to be operated within the Nashville-Davidson-Murfreesboro-Franklin CBSA. This waiver allows Nashville to have only one (1) PM₁₀ monitor in operation within its monitoring network and was approved due to the historically low PM₁₀ concentrations recorded in Davidson County. This waiver was reviewed during Nashville’s 2020 Five-Year Network Assessment.

Additionally, from the start of its operation on September 1st, 2020, until August 30th, 2022 (*a 2-year period*), the Teledyne T640x PM_{2.5} continuous FEM monitor, located at the “LL” site, was operating under an EPA approved 2-year NAAQS exclusion. This exclusion was granted while an investigation into the monitor’s comparability to the FRM occurred. The investigation resulted in the conclusion that the T640x PM_{2.5} Continuous FEM monitor had poor comparability to the FRM. In response to its 2023 Annual Network Plan, the AMP received EPA approval for continuing the NAAQS exclusion for the T640x PM_{2.5}. Granted, the T640x PM_{2.5} monitor data has been deemed to have sufficient comparability to the FRM to be used in AQI reporting. Thus, all data (*from the start of operation continuing on*) reported for Nashville’s T640x PM_{2.5} Continuous FEM monitor at “LL” will be used solely for AQI reporting purposes and is excluded from NAAQS comparison.

Nashville has continued to operate its collocated PM_{2.5} FRM and PM_{2.5} continuous FEM monitors to support the objective of comparison to the NAAQS, consequently all of Nashville’s PM_{2.5} monitors have been operated in such a way to meet the objectives of *the Network Design Criteria for Ambient Air Quality Monitoring* described in *Appendix D to Part 58*.

2.0 PROPOSED CHANGES TO MONITORING NETWORK

No major changes are proposed to take place in 2024 for the Nashville-Davidson County Monitoring Network.

1.3.1 OZONE MONITORING

No changes are proposed for this portion of the Nashville Davidson County Air Monitoring Network in 2024. Although, discussions have taken place with the EPA with regards to moving the ozone monitor, currently located at the “PPD” monitoring site, to a new location for future monitoring. This new site has not yet been confirmed but likely will be in the Southeast quadrant of Davidson County, located to ensure the capture of pollutants downwind of the secondary wind direction. Some things must be kept in mind during this location scouting such as ideally positioning the new site 5-10 miles downwind from NO_x production areas (downtown highway loop). The new location should be relevant to current population dynamics and ensure that afternoon wind directions during O₃ season are considered.

2.2 PM₁₀ MONITORING

No changes are proposed for this portion of the Nashville Davidson County Air Monitoring Network.

2.3 PM_{2.5} MONITORING

No changes are proposed for this portion of the Nashville Davidson County Air Monitoring Network.

2.4 NITROGEN DIOXIDE MONITORING

No changes are proposed for this portion of the Nashville Davidson County Air Monitoring Network.

2.5 CARBON MONOXIDE MONITORING

No changes are proposed for this portion of the Nashville Davidson County Air Monitoring Network.

2.6 SULFUR DIOXIDE MONITORING

No changes are proposed for this portion of the Nashville Davidson County Air Monitoring Network.

3.0 NASHVILLE SITE DESCRIPTIONS

3.1 (“EAST”) EAST HEALTH CENTER – DAVIDSON COUNTY, TN

The East Health Center Monitoring Site has been in operation since 1972. Since its start, this site has been used to monitor for O₃ and NO₂ (and NO/NO_x) and will continue to do so in 2024.

Additionally, although Nashville had its SO₂ monitor at this site, starting January 2020, SO₂ monitoring was moved to the “NRS” site location, where it has remained since.

Figure 3-1: East Health Center



Figure 3-2: East Health Center (Aerial View)



Table 3-1: East Health Center Site Information

Agency Name (Code)	Metro Public Health Department (0682)	
AQS ID	470370011	
County Name	Davidson	
Address	1015 Trinity Lane	
CBSA	34980	
Latitude, Longitude	36.205000, -86.744722	
Parameter Code	42602	44201
Parameter Name	NO ₂	O ₃
Monitor Type	SLAMS	SLAMS
POC	1	1
Collection Frequency	Hourly	Hourly
Method	74	47
Monitoring Instrument	Thermo 42i	Thermo 49i
Analysis	Chemiluminescence	Photometric
Ref. Method ID	RFNA-1289-074	EQOA-0880-047
Monitor Objective	Highest Concentration	Population Exposure
Dominant Source	Area	Area
Measurement Scale	Neighborhood	Neighborhood
Land Use Type	Residential	Residential
Location Setting	Urban	Urban
Date Established	1/6/1975	1/1/1972

3.2 (“PPD”) PERCY PRIEST DAM – DAVIDSON COUNTY, TN

The Percy Priest Dam monitoring site was established in 1978. It is located on the Army Corps of Engineers Percy Priest Dam campus. This site is used to monitor solely for O₃.

Figure 3-3: Percy Priest Dam Site



Figure 3-4: Percy Priest Dam Site (Aerial View)



Table 3-2: Percy Priest Dam Site Information

Agency Name (Code)	Metro Public Health Department (0682)
AQS ID	470370026
County Name	Davidson
Address	3711 Bell Road
CBSA	34980
Latitude, Longitude	36.150742, -86.623301
Parameter Code	44201
Parameter Name	O ₃
Monitor Type	SLAMS
POC	1
Collection Frequency	Hourly
Method	47
Monitoring Instrument	Thermo 49i
Analysis	Photometric
Ref. Method ID	EQOA-0880-047
Monitor Objective	Highest Concentration
Dominant Source	Area
Measurement Scale	Urban
Land Use Type	Agricultural
Location Setting	Urban
Date Established	28491

3.3 (“LL”) LOCKELAND ELEMENTARY SCHOOL – DAVIDSON COUNTY, TN

The “LL” monitoring site began operation in 1999 and monitors for $PM_{2.5}$ and PM_{10} . This will continue in 2024.

At the end of 2014, this site was defunded as a CSN site and the SASS and URG monitors were shut down. At the end of 2016, the Hi-Vol PM_{10} monitors at Trevecca and McCann were approved to be shut down and in January 2017 a PM_{10} TEOM monitor began operation at this location. Starting July 1st, 2019, an FEM (POC 3) MetOne BAM 1022 $PM_{2.5}$ monitor was added to the “LL” site to replace the Thermo 2025i FRM (POC 1) monitor. This decision to replace the FRM with an FEM was justified in the 2019 Annual Network Plan and approved by EPA.

In the beginning on 2020, a Tornado caused damage to the “LL” site and the equipment stationed there, causing this site to be shut down for repair. All equipment had to be replaced and monitoring began again in August/September 2020. As a result of this incident, several changes were made to the type of PM monitors that were previously at the site. The two (2) Thermo TEOM 1405 monitors (*which captured data for $PM_{2.5}$ (AQI) and PM_{10}*) were replaced with a single piece of equipment, the Teledyne T640x which measures for both criteria pollutants ($PM_{2.5}$ & PM_{10}). As discussed previously, the T640x $PM_{2.5}$ monitor at “LL” is used solely for AQI reporting.

In September 2023, Nashville’s T640x monitors underwent a software configuration, released by Teledyne, to help more closely align the T640x with the FRM. After this update, the $PM_{2.5}$ and PM_{10} method codes changed (*from 238 and 239 to 638 and 639, respectively*), and although the T640x $PM_{2.5}$ has a NAAQs exclusion and is considered a Special Purpose Monitor (SPM), it will be reported with the 88101 Parameter Code instead of 88502, as the 88502 code does not yet work in AQS with the new 638 method code.

Figure 3-6: Lockeland Site



Figure 3-5: Lockeland Aerial View

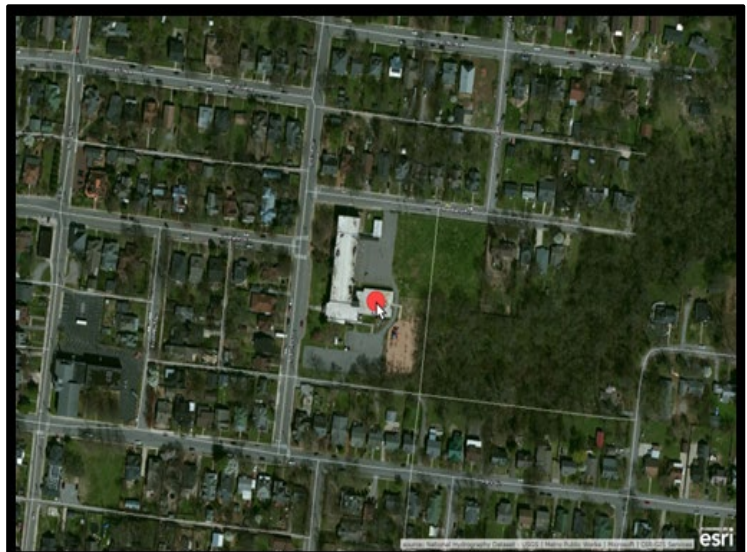


Table 3-3: Lockeland Site Information

Agency Name (Code)	Metro Public Health Department (0682)			
AQS ID	470370023			
County Name	Davidson			
Address	105 South 17th Street			
CBSA	34980			
Latitude, Longitude	36.176326, -86.738902			
Parameter Code	88101	88101	88101	81102
Parameter Name	PM _{2.5}	PM _{2.5}	PM _{2.5}	PM ₁₀
Monitor Type	SLAMS	SLAMS	AQI (NAAQS Exclusion)	SLAMS
POC	2	3	4	2
Collection Frequency	1:6	Hourly	Hourly	Hourly
Method	145	209	638	639
Monitoring Instrument	Thermo 2025i	MetOne BAM 1022	Teledyne T640x	Teledyne T640x
Analysis	Gravimetric	Beta Attenuation	Light Scattering	Light Scattering
Ref. Method ID	EQPM-0202-145	EQPM-1013-209	EQPM-0516-638	EQPM-0516-639
Monitor Objective	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Dominant Source	Area	Area	Area	Area
Measurement Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Land Use Type	Residential	Residential	Residential	Residential
Location Setting	Urban	Urban	Urban	Urban
Date Established	1/1/1999	1/1/1999	3/1/2001	1/1/2017

3.4 (“NRS”) NEAR ROAD SITE – DAVIDSON COUNTY, TN

As a result of the 40CFR near road NO₂ monitoring requirement, Nashville’s Near Road monitoring site was established in July 2014, along the I-24/I-40 split in downtown Nashville. CO, NO₂, and PM_{2.5} monitors have been in operation at this site since its start.

Although initially using a PM_{2.5} FRM monitor (Thermo 2025i) at this site, in July 2019, Nashville replaced it with an FEM PM_{2.5} monitor (MetOne BAM1022). In January 2020, SO₂ monitoring began at this site after being moved from the “EAST” site. Nashville will continue to monitor for PM_{2.5}, CO, SO₂ (& SO_{2MAX}), and NO₂ (& NO/NO_x) at “NRS” in 2024.

Figure 3-7: Near Road Site



Figure 3-8: Near Road Site (Aerial View)

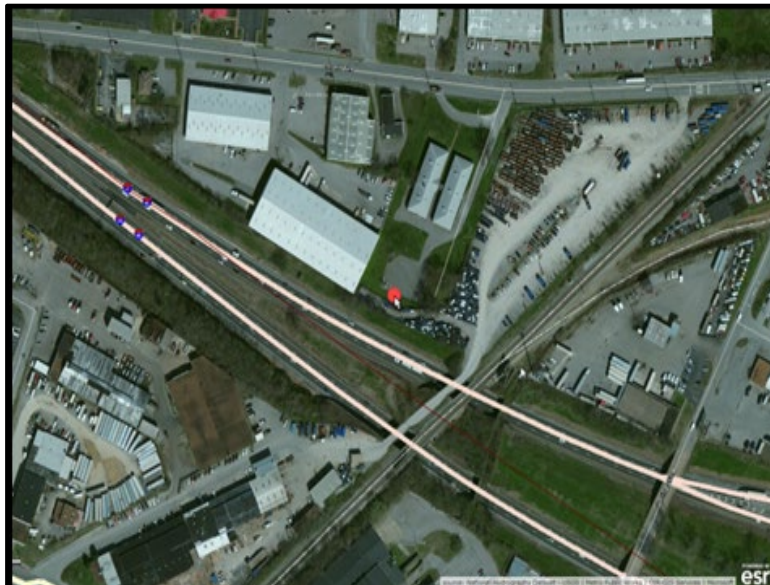


Table 3-4: Near Road Site Information

Agency Name	Metro Public Health Department (0682)			
AQS ID	470370040			
County Name	Davidson			
Address	1113 Elm Hill Pike			
CBSA	34980			
Latitude, Longitude	36.142377, -86.734142			
Parameter Code	42101	42602	42401	88101
Parameter Name	CO	NO ₂	SO ₂	PM _{2.5}
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
POC	1	1	1	3
Collection Frequency	Hourly	Hourly	Hourly	Hourly
Method	54	74	60	209
Monitoring Instrument	Thermo 48i	Thermo 42i-TL	Thermo 43i	MetOne BAM 1022
Analysis	Infrared	Chemiluminescence	Pulsed Fluorescence	Beta Attenuation
Ref. Method ID	RFCA-0981-054	RFCA-1289-574	EQSA-0486-060	EQPM-1013-209
Monitor Objective	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Dominant Source	Area	Area	Area	Area
Measurement Scale	Urban	Urban	Urban	Urban
Land Use Type	Industrial	Industrial	Residential	Industrial
Location Setting	Urban	Urban	Urban	Urban
Date Established	7/1/2014			

4.0 CURRENT SITE ASSESSMENTS

Each year, siting evaluations are performed to assess the impact of obstructions, such as trees and buildings, on the sampling inlets at Nashville’s monitoring sites. These assessments should be measured while the leaf canopy is full to assess the potential issues fully.

Each of Nashville’s monitoring sites have been assessed in the last calendar year, and meet requirements laid out in *40 CFR Part 58, Appendix E*. The results of these site assessments can be found below in: *Table 3-1 “2024 Site Assessment Results Summary”*, the filled-out *Site Evaluation Forms [PCD-AM-020]* for each site, as well as pictures showing 360° around the site monitor inlet. Additionally, included in *Appendix A* of this document, is the *Site Evaluation Form [PCD-AM-020]* that Nashville’s Field Technicians will use to conduct these site evaluations.

Table 4-1: 2024 Site Assessment Results Summary

East Health Center							
							<i>Assessment Date: 4/22/24</i>
Site Pollutant	Probe Inlet Height (IH)	Obstruct. Height (OH)	Dripline	Obstruct. Distance (OD)	Obstruct. Type	Unrestricted Airflow	Findings
O ₃	10.0 m	16.3 m	17.0 m	19.3 m	Trees	300°	Site OK; trees to the north and east will be monitored.
NO ₂	10.0 m	16.3 m	17.0 m	19.3 m	Trees	300°	
Percy Priest Dam							
							<i>Assessment Date: 4/18/24</i>
Site Pollutant	Probe Inlet Height (IH)	Obstruct. Height (OH)	Dripline	Obstruct. Distance (OD)	Obstruct. Type	Unrestricted Airflow	Findings
O ₃	5.3 m	18.0 m	38.0 m	45.0 m	Trees	310°	Site OK; trees to the north will be monitored.
Lockeland Elementary							
							<i>Assessment Date: 4/18/24</i>
Site Pollutant	Probe Inlet Height (IH)	Obstruct. Height (OH)	Dripline	Obstruct. Distance (OD)	Obstruct. Type	Unrestricted Airflow	Findings
PM _{2.5} <i>(Primary FEM - Collocated)</i>	5.8 m	6.1 m	30.0 m	19.0 m	Building	280°	Site OK; all large trees lost at site due to 2020 tornado/2021 storms. Collocated Distance: 3.0 m
PM _{2.5} <i>(FRM - Collocated)</i>	5.8 m	6.1 m	30.0 m	20.5 m	Building	280°	
PM _{2.5} <i>(AQI only)</i>	5.8 m	6.1 m	30.0 m	18.5 m	Building	280°	
PM ₁₀							
Near Road Site							
							<i>Assessment Date: 4/22/24</i>
Site Pollutant	Probe Inlet Height (IH)	Obstruct. Height (OH)	Dripline	Obstruct. Distance (OD)	Obstruct. Type	Unrestricted Airflow	Findings
SO ₂	4.5 m	14.4 m	19.9 m	23.0 m	Trees	300°	Site OK; vegetation on fence line and trees to the east will be monitored. Distance to nearest road: 28.9 m
CO	4.5 m	14.4 m	19.9 m	23.0 m	Trees	300°	
NO ₂	4.5 m	14.4 m	19.9 m	23.0 m	Trees	300°	
PM _{2.5}	4.5 m	14.4 m	19.9 m	23.0 m	Trees	300°	

4.1 (“EAST”) EAST HEALTH CENTER SITE ASSESSMENT

Figure 4-1: “EAST” NORTH-Facing View



Figure 4-4: “EAST” East-Facing View



Figure 4-2: “EAST” South-Facing View



Figure 4-3: “EAST” West-Facing View

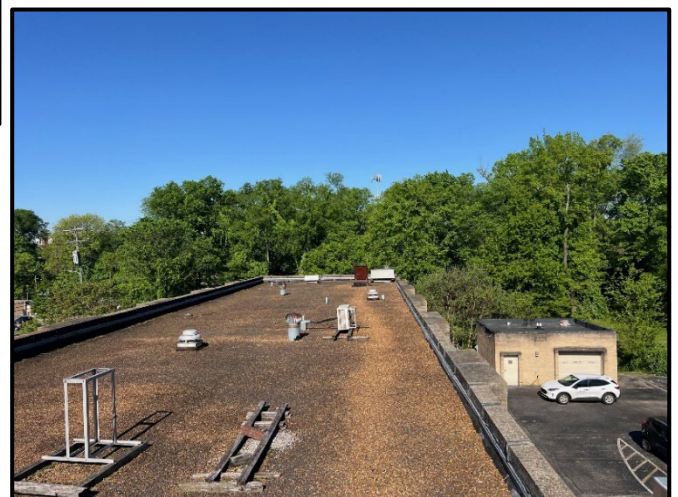


Figure 4-5: "EAST" 2024 Site Assessment Form

Revision 1		SITING EVALUATION FIELD FORM				Rev. 5/01/23
Metro Public Health Department Air Pollution Lab PCD-AM-020						
Site Name:	East Health Clinic	Date:	4/22/24			
AQS I.D.:	47-037-0011	Time:	9:30 am			
Coordinates:	36.204, -83.744	Inspected by:	HM			
Scale:	Neighborhood	Signature:	<i>[Signature]</i>			
EQUIPMENT USED DURING EVALUATION (List Below)						
PARTICULATE MONITORS						
	Units	PM _{2.5}	PM _{2.5} (FRM)	PM ₁₀ / PM _{2.5} (AQI)		
Probe Inlet Height [IH]	m	/				
Distance to nearest road	m					
Obstruction Type	/					
Obstruction Height [OH]	m					
Obstruction Distance [OD]	m					
Collocated Distance	m					
Unrestricted Airflow	degrees					
Dripline	m					
GASEOUS MONITORS						
	Units	CO	OZONE	NO _x	SO ₂	
Probe Inlet Height [IH]	m	/	10m	10m	/	
Distance to nearest road	m		31m	31m		
Obstruction Type	/		Tree	Tree		
Obstruction Height [OH]	m		16.3	16.3		
Obstruction Distance [OD]	m		19.3	19.3		
Collocated Distance	m		/			
Unrestricted Airflow	degrees		300	300		
Dripline	m		17.0	17m		
				YES/NO	PASS/FAIL	
Are all probes at least 1 meter apart?				Yes		
Are all probes located in an area that is paved or has vegetative ground cover?				Yes		
Are all rooftop samplers located at least 2 meters away from any structures?				Yes		
There MUST be 270 degrees of unrestricted airflow around the probe or sampler.				$2(16.3 - 10) = 12.6$	Pass	
Obstruction Distance MUST be $\geq 2 \times (OH - IH)$.				$19.3 > 12.6$	Pass	
Dripline must be at least 10m away when tree is an obstruction.					Pass	

4.2 (“PPD”) PERCY PRIEST DAM SITE ASSESSMENT

Figure 4-6: “PPD” North-Facing



Figure 4-9: “PPD” East-Facing



Figure 4-7: “PPD” SOUTH-FACING View



Figure 4-8: “PPD” West-Facing View



Figure 4-10: "PPD" 2024 Site Assessment Form

Revision 1	SITING EVALUATION FIELD FORM			Rev. 5/01/23
Metro Public Health Department Air Pollution Lab PCD-AM-020				
Site Name:	<u>Percy Priest Dam</u>	Date:	<u>4/18/24</u>	
AQS I.D.:	<u>47.037.0026</u>	Time:	<u>10:00</u>	
Coordinates:	<u>36.150, -86.623</u>	Inspected by:	<u>GTW</u>	
Scale:	<u>Urban</u>	Signature:		
EQUIPMENT USED DURING EVALUATION (List Below)				
PARTICULATE MONITORS				
	Units	PM _{2.5}	PM _{2.5} (FRM)	PM ₁₀ / PM _{2.5} (AQI)
Probe Inlet Height [IH]	m	/		
Distance to nearest road	m	/		
Obstruction Type	/	/		
Obstruction Height [OH]	m	/		
Obstruction Distance [OD]	m	/		
Collocated Distance	m	/		
Unrestricted Airflow	degrees	/		
Dripline	m	/		
GASEOUS MONITORS				
	Units	CO	OZONE	NO _x
Probe Inlet Height [IH]	m	/		
Distance to nearest road	m	/		
Obstruction Type	/	Tree		
Obstruction Height [OH]	m	18		
Obstruction Distance [OD]	m	45		
Collocated Distance	m	/		
Unrestricted Airflow	degrees	310		
Dripline	m	38		
		YES/NO	PASS/FAIL	
Are all probes at least 1 meter apart?		Yes		
Are all probes located in an area that is paved or has vegetative ground cover?		Yes		
Are all rooftop samplers located at least 2 meters away from any structures?		Yes		
There MUST be 270 degrees of unrestricted airflow around the probe or sampler.				PASS
Obstruction Distance MUST be $\geq 2 \times (OH - IH)$.				PASS
Dripline must be at least 10m away when tree is an obstruction.				PASS

The diagram illustrates the siting requirements for an air sampler. It shows a sampler unit with a probe. Key dimensions are labeled: Sampler Inlet Height [IH] (the height from the ground to the probe inlet), Probe Height [PH] (the height from the ground to the top of the sampler unit), Obstruction Distance [OD] (the horizontal distance from the probe to the base of an obstruction), and Obstruction Height [OH] (the vertical height of the obstruction, shown as a tree). The diagram also shows a smaller sampler unit to the left for comparison.

4.3 LOCKELAND ELEMENTARY (“LL”) 2024 SITE ASSESSMENT

Figure 4-11: “LL” NORTH-FACING VIEW



Figure 4-12: “LL” EAST-FACING VIEW



Figure 4-13: “LL” SOUTH-FACING VIEW



Figure 4-14: “LL” WEST-FACING



Figure 4-15: "LL" 2024 Site Assessment Form

Revision 1		SITING EVALUATION FIELD FORM				Rev. 5/01/23
Metro Public Health Department Air Pollution Lab PCD-AM-020						
Site Name:	Lockeland			Date:	4/18/24	
AQS I.D.:	47.0037.0023			Time:	9:00	
Coordinates:	36.176, -86.738			Inspected by:	GTL	
Scale:	Neighborhood			Signature:		
EQUIPMENT USED DURING EVALUATION (List Below)						
PARTICULATE MONITORS						
	Units	PM _{2.5}	PM _{2.5} (FRM)	PM ₁₀ / PM _{2.5} (AQI)		
Probe Inlet Height [IH]	m	5.8	5.8	5.8		
Distance to nearest road	m	66	66	66		
Obstruction Type	/	Building	Building	Building		
Obstruction Height [OH]	m	6.1	6.1	6.1		
Obstruction Distance [OD]	m	19.0	20.5	18.5		
Collocated Distance	m	3	3			
Unrestricted Airflow	degrees	280	280	280		
Dripline	m	30	30	30		
GASEOUS MONITORS						
	Units	CO	OZONE	NO _x	SO ₂	
Probe Inlet Height [IH]	m	/				
Distance to nearest road	m	/				
Obstruction Type	/	/				
Obstruction Height [OH]	m	/				
Obstruction Distance [OD]	m	/				
Collocated Distance	m	/				
Unrestricted Airflow	degrees	/				
Dripline	m	/				
				YES/NO	PASS/FAIL	
Are all probes at least 1 meter apart?				Yes		
Are all probes located in an area that is paved or has vegetative ground cover?				Yes		
Are all rooftop samplers located at least 2 meters away from any structures?				Yes		
There MUST be 270 degrees of unrestricted airflow around the probe or sampler.					PASS	
Obstruction Distance MUST be $\geq 2*(OH - IH)$.					PASS	
Dripline must be at least 10m away when tree is an obstruction.					PASS	

4.4 NEAR ROAD (“NRS”) 2024 SITE ASSESSMENT

Figure 4-16: “NRS” NORTH-FACING



Figure 4-17: “NRS” EAST-FACING



Figure 4-18: “NRS” SOUTH-FACING VIEW



Figure 4-19: “NRS” WEST-FACING VIEW

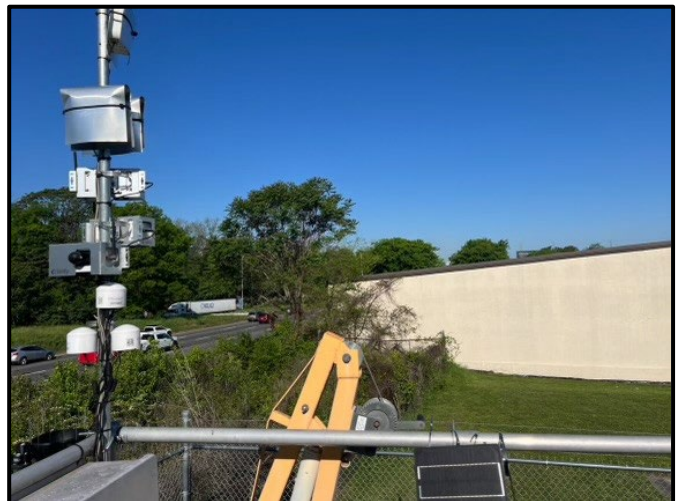
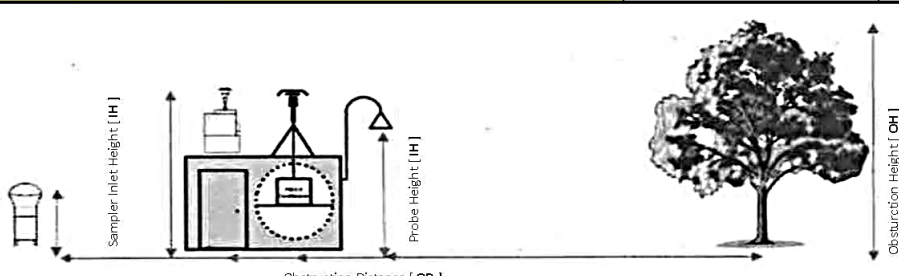


Figure 4-20: "NRS" 2024 Site Assessment Form

Revision 1		SITING EVALUATION FIELD FORM				Rev. 5/01/23
Metro Public Health Department Air Pollution Lab PCD-AM-020						
Site Name:	Near Road Site	Date:	4/22/24			
AQS I.D.:	47-037-0040	Time:	1:30 pm			
Coordinates:	36.142, -86.734	Inspected by:	HM			
Scale:	Urban	Signature:	<i>[Handwritten Signature]</i>			
EQUIPMENT USED DURING EVALUATION (List Below)						
PARTICULATE MONITORS						
	Units	PM _{2.5}	PM _{2.5} (FRM)	PM ₁₀ / PM _{2.5} (AQI)		
Probe Inlet Height [IH]	m	4.5	/	/		
Distance to nearest road	m	28.9				
Obstruction Type	/	Tree				
Obstruction Height [OH]	m	14.4				
Obstruction Distance [OD]	m	23				
Collocated Distance	m					
Unrestricted Airflow	degrees	295				
Dripline	m	19.9				
GASEOUS MONITORS						
	Units	CO	OZONE	NO _x	SO ₂	
Probe Inlet Height [IH]	m	4.5	/	4.5	4.5	
Distance to nearest road	m	28.9		28.9	28.9	
Obstruction Type	/	Tree		Tree	Tree	
Obstruction Height [OH]	m	14.4		14.4	14.4	
Obstruction Distance [OD]	m	23		23	23	
Collocated Distance	m					
Unrestricted Airflow	degrees	295		295	295	
Dripline	m	19.9		19.9	19.9	
				YES/NO	PASS/FAIL	
Are all probes at least 1 meter apart?				Yes		
Are all probes located in an area that is paved or has vegetative ground cover?				Yes		
Are all rooftop samplers located at least 2 meters away from any structures?				Yes		
There MUST be 270 degrees of unrestricted airflow around the probe or sampler.				$2(14.4 - 4.5) = 19.8$	Pass	
Obstruction Distance MUST be $\geq 2*(OH - IH)$.				$23 > 19.8$	Pass	
Dripline must be at least 10m away when tree is an obstruction.					Pass	
<p>The diagram illustrates the siting requirements. It shows a sampler with a probe. The 'Sampler Inlet Height [IH]' is the height from the ground to the top of the sampler. The 'Probe Height [IH]' is the height from the ground to the probe tip. The 'Obstruction Distance [OD]' is the horizontal distance from the probe to the base of an obstruction (a tree). The 'Obstruction Height [OH]' is the height of the tree. A calculation shows that the obstruction distance (23m) is greater than the required distance $2*(OH - IH) = 19.8m$, indicating a pass.</p>						

APPENDIX A: SITE EVALUATION FORM [PCD-AM-020]

SITING EVALUATION FIELD FORM					Rev. 4/12/23
Metro Public Health Department Air Pollution Lab PCD-AM-020					
Site Name: _____ AQS I.D.: _____ Coordinates: _____ Scale: _____	Date: _____ Time: _____ Inspected by: _____ Signature: _____				
LIST EQUIPMENT USED					
PARTICULATE MONITORS					
	Units	PM2.5	PM2.5 Collocated	PM10	
Probe Inlet Height [IH]	m				
Distance to nearest road	m				
Obstruction Type	/				
Obstruction Height [OH]	m				
Obstruction Distance [OD]	m				
Collocated Distance	m				
Unrestricted Airflow	degrees				
Dripline	m				
GASEOUS MONITORS					
	Units	CO	OZONE	NOx	SO2
Probe Inlet Height [IH]	m				
Distance to nearest road	m				
Obstruction Type	/				
Obstruction Height [OH]	m				
Obstruction Distance [OD]	m				
Collocated Distance	m				
Unrestricted Airflow	degrees				
Dripline	m				
				YES/NO	PASS/FAIL
Are all probes at least 1 meter apart?					
Are all probes located in an area that is paved or has vegetative ground cover?					
Are all rooftop samplers located at least 2 meters away from any structures?					
There MUST be 270 degrees of unrestricted airflow around the probe or sampler.					
Obstruction Distance MUST be $\geq 2 \times (\text{OH} - \text{IH})$.					
Dripline must be at least 10m away when tree is an obstruction.					
 <p>The diagram illustrates the required clearances for air quality monitoring. It shows a sampler with a probe inlet. Key dimensions are labeled: Sampler Inlet Height [IH], Probe Height [IH], Obstruction Distance [OD], and Obstruction Height [OH]. A tree is shown as an obstruction, with its height measured from the ground to the top of the canopy. The diagram indicates that the obstruction distance must be at least twice the difference between the obstruction height and the probe height.</p>					