


**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 04/14/2026 **Location:** Oak Ridge, Tennessee
AQS Number: 47-001-0101
Site Name: Freel's Bend O3 **Pollutants:** O3

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Local Site Name: Freel's Bend O3 Initials: EMH Date: 04/14/2026

Site meets EPA siting criteria: Yes No

If no, explain:

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
Freel's Bend Road	145.0 m	W	Thru Street	NA	NA
Bull Bluff Road	700.0 m	N	Local Street	NA	NA
Pumphouse Road	1492.0 m	NE	Local Street	NA	NA
Bethel Valley Road	1849.5 m	N	Local Street	8887	2025

Electrical

Utility Company: City of Oak Ridge Meter Number: 11523305

Additional Comments:

1. Arrival and departure times are Eastern time.
 2. Site is located in secured area of DOE property.
 3. The shelter temperature is 75 degrees F.
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MONITORING SITE EVALUATION FORM (MSEF)

Site Name: Freel's Bend O3 Initials: EMH Date: 04/14/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 1:30 pm Departure Time: 2:30 pm Primary Operator: Justin Long

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut
[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____
[Yes No] Police Report Filed

Comments: _____

SHELTER – Not Present

Interior
Arrival Temperature: 24.7 °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat
[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: Fire extinguisher (good condition)

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]
Height of Roof: 3.0 meters Roofing Material: Steel with Duro-last single ply membrane

[Yes No] Needs Maintenance (specify) _____

[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing

Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:
[Yes No] Electronic/ Hardcopy/ Both

Comments: Hard copy logbook on site; last entry 4/2/24

Site Name: Freel's Bend O3 Initials: EMH Date: 04/14/2026

MONITOR(s): Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
O3	Teledyne	T400	7266

CALIBRATOR(s): Not Present [Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date
Teledyne	T703	649	2/13/26	7/13/26

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Yes No] Calibrations (Not Required) [Yes No] Precision Checks (Required) [Yes No] Audits (Required)

Comments: _____

CYLINDER GAS STANDARDS: Not Present

VENDOR: _____ (PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number

Comments: _____

Site Name: Freel's Bend O3 Initials: EMH Date: 04/14/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93610268021016	Modem	Main
Agilaire	8872	533	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

Yes No] Temperature Sensor [Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 SN# 1339

Yes No] Needs Service Last Service Date: 02/24/2026 Condition: Good

Comments: _____

Probe Line(s): [Replaced / Cleaned] – Frequency: 1/year Last Service Date: 02/24/2026

[Yes No] Clean [Yes No] Heated [Yes No] Insulated [Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

Yes No] Locked [Yes No] Electrically Grounded [Yes No] Stabilized

[Yes No] Clean Inside [Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: _____ PM₁₀ Head Clean Schedule: _____

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors must be within 4 meters of each other and at least 2 meters apart for flow rates greater than 200 liters/min or at least 1 meter apart for samplers having flow rates less than 200 liters/min to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: Freel's Bend O3 Initials: EMH Date: 04/14/2026

PROBE SYSTEM(s): External Not Present

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] **Funnel Material:** [Teflon® / Glass / Stainless Steel

Probe Line(s): [Teflon® / Other: _____] **Probe Fitting(s):** [Teflon® / Other: _____ / Not Present]

Residence Time: 6.04 seconds (20 sec. max) (Refer to chart for maximum line lengths)

Comments: Residence time worksheet completed 2/24/26

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	4.0	Side of Shelter	NA	NA	Urban	Urban

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)

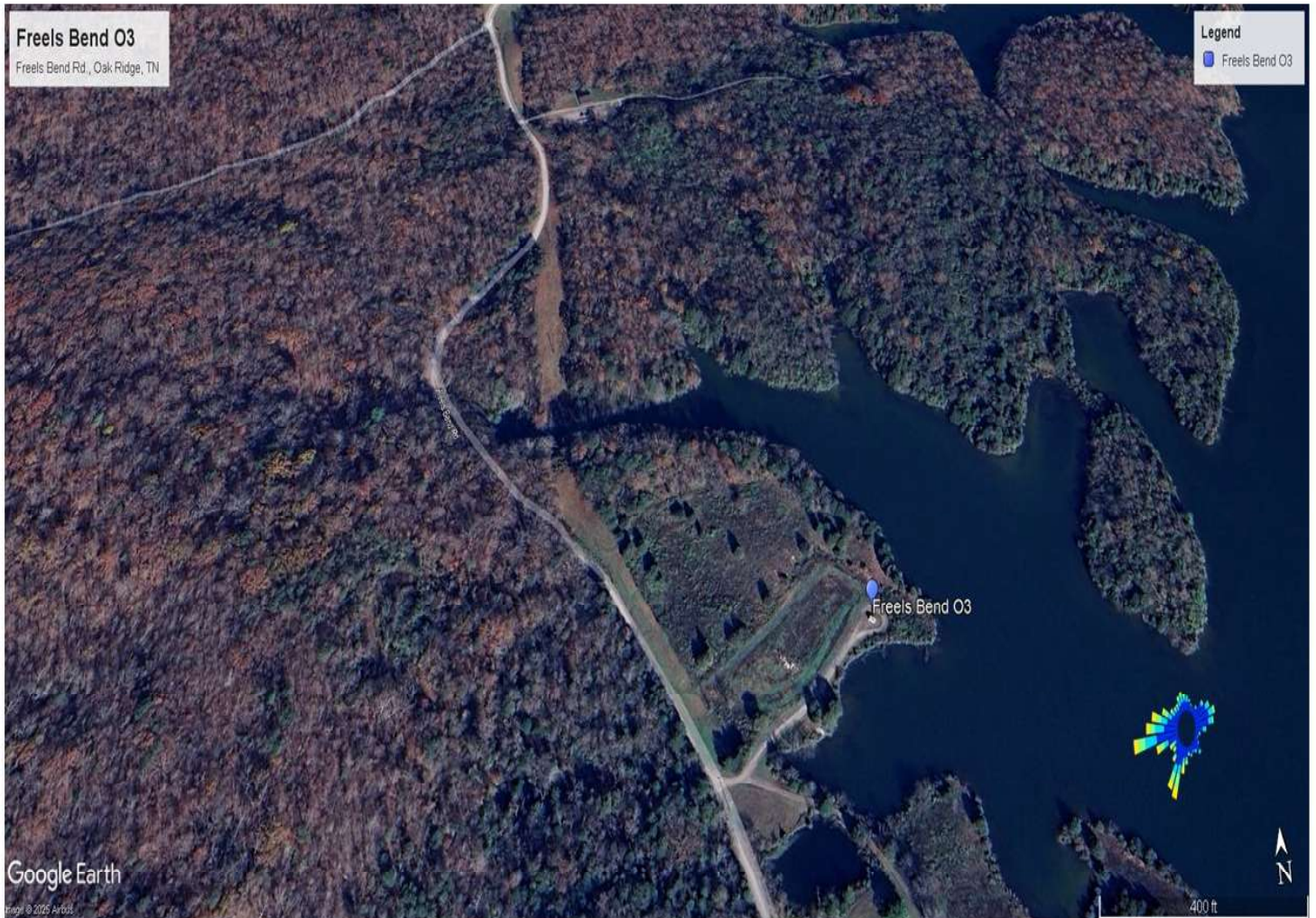
When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Freel's Bend O3

Initials: EMH

Date: 04/14/2026

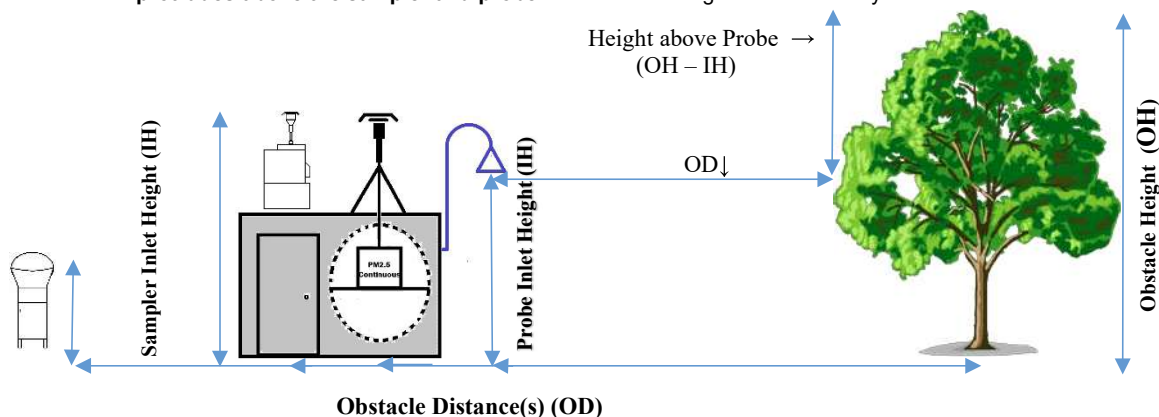
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 11/29/2024

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Tree	7.8	4.0	7.6	44.0	No	221
2	Tree	14.2	4.0	20.4	63.2	No	226
3	Tree	14.6	4.0	21.2	30.4	No	57
4	Trees	14.6	4.0	21.2	32.2	No	47
5	Tree	14.4	4.0	20.8	35.0	No	39
6	Trees	13.0	4.0	18.0	50.0	No	40
7	Tree	7.0	4.0	6.0	44.0	No	1
8	Tree	8.6	4.0	9.2	59.0	No	343
9	Tree	12.0	4.0	16.0	69.0	No	306
10							
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20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Freel's Bend O3 Initials: EMH Date: 04/14/2026

TREE DRIPLINE(s): 30.4 meters (nearest inlet to dripline) No Trees Present
32.0 meters (nearest inlet to dripline) Not Present
35.0 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **dripline must be greater than 10 meters from inlet/probe.**

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

Comments: None _____

Additional Information:

The closest tree is greater than 20 meters from the O3 probe; therefore there are
no tree dripline issues.

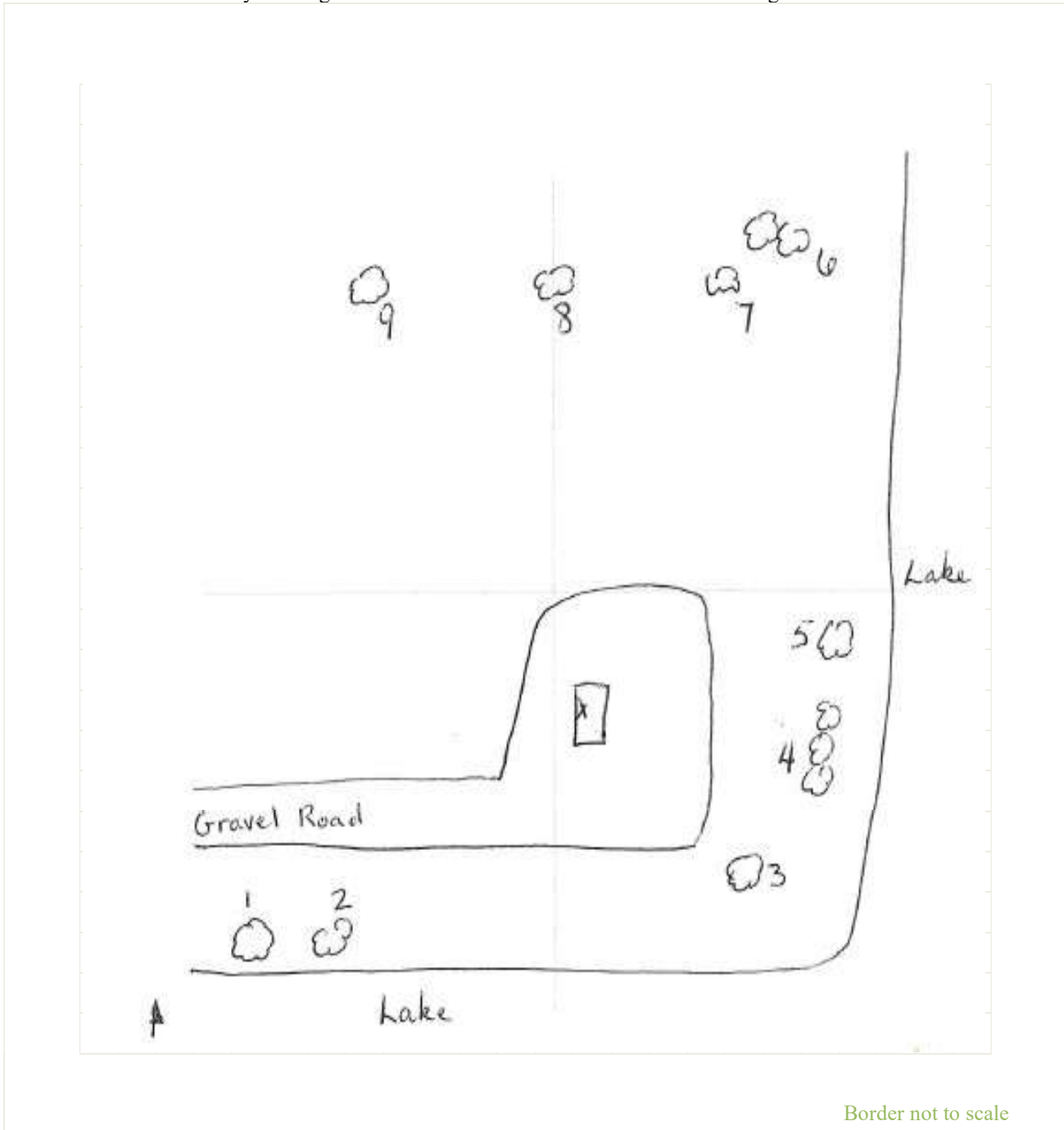
Site Name: **Freel's Bend O3**

Initials: **EMH**

Date: **04/14/2026**

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: > 270 ° Estimated Degrees of Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: Freel's Bend O3 Initials: EMH Date: 04/14/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 04/14/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 04/14/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 04/14/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 04/14/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 04/14/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 04/14/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 04/14/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 04/14/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 04/14/26 Photographer: EMH Description: Site



Photo: 010 Date: 04/14/26 Photographer: EMH Description: Probe



Photo: 011 Date: 04/14/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O ₃	--	2-15	2-15	2-15	2-15
SO ₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

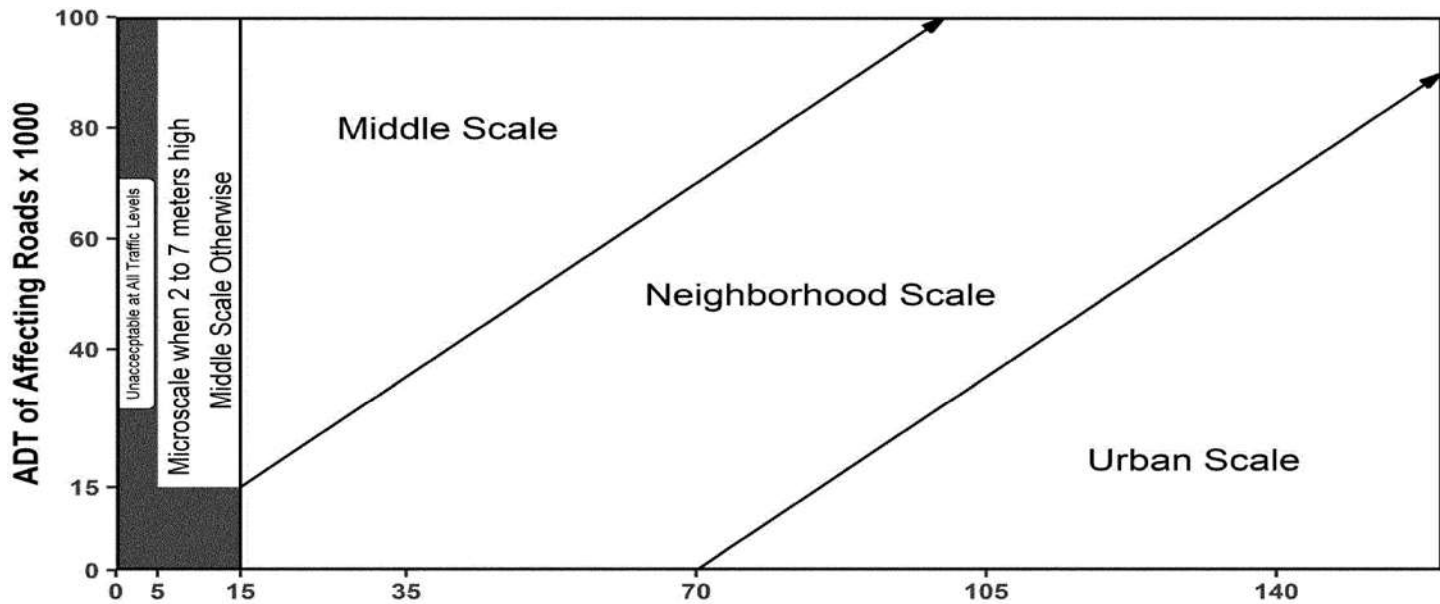


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

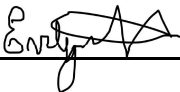
**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 04/14/2026 **Location:** Maryville, TN
AQS Number: 47-009-0011
Site Name: Maryville PM **Pollutants:** PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin .  . EMH . Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Site Name: Maryville PM Initials: EMH Date: 04/14/2026

Site meets EPA siting criteria: Yes No

If no, explain:

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
Sequoyah Avenue	85.0 m	S	Local Street	NA	NA
Brown School Road	606.0 m	NE	Local Street	4992	2025
Genesis Street	607.0 m	SW	Local Street	1514	2025
Cheltenham Street	563.0 m	NW	Local Street	540	2025

Electrical

Utility Company: Maryville Electric Department Meter Number: 63109

Additional Comments:

1. Arrival and departure times are Eastern time.

MONITORING SITE EVALUATION FORM

Site Name: Maryville PM Initials: EMH Date: 04/14/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 3:30 pm Departure Time: 4:15 pm Primary Operator: Stephen Thompson

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside Date: _____

[Yes No] Police Report Filed

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: Platform serviceable, need replacing

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic / Hardcopy / Both

Logbooks at site:

[Yes No] Electronic / Hardcopy / Both

Comments: Hard copy logbook on site; last entry 4/2/24

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
PM2.5	Met One	BAM 1022	C20215

Comments: _____

Site Name: Maryville PM Initials: EMH Date: 04/14/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93610225021016	Modem	Main

OUTDOOR SAMPLERS

Not Present

Yes No] **Locked** [Yes No] **Electrically Grounded** [Yes No] **Stabilized** [Yes No] **Clean Inside**

Yes No] **Head/Separator Clean**

Operator / Log: VSCC/WINS Clean Schedule: 1/30 days PM₁₀ Head Clean Schedule: 1/30 days

Comments: _____

COLLOCATED SAMPLERS:

Not Present

(39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
PM2.5	2.6	Ground	NA	NA	Neighborhood	Neighborhood

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂) & (2 meters for PM, Pb)

When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Maryville PM

Initials: EMH

Date: 04/14/2026

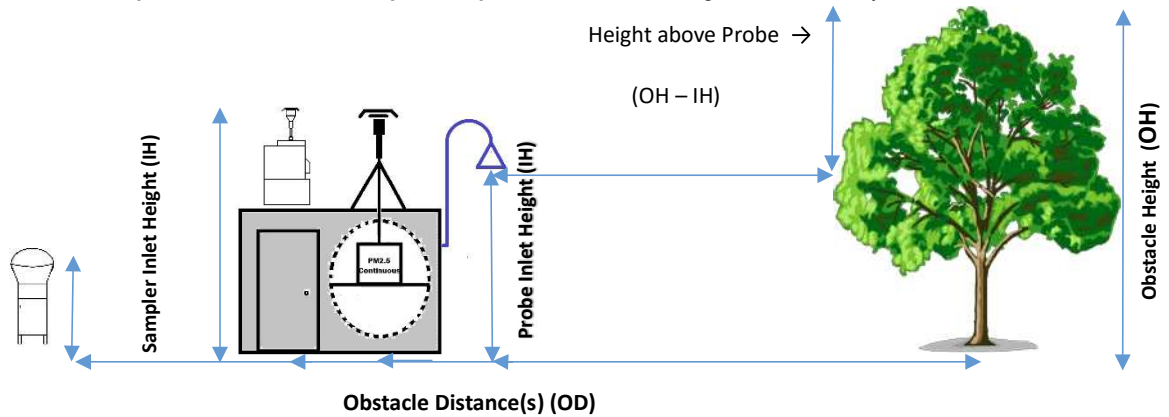
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 02/28/2025

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Tree	3.6	2.6	2.0	11.0	No	310
2	Building	4.2	2.6	3.2	27.2	No	322
3	Building	6.2	2.6	7.2	56.0	No	332
4	Water tower	27.0	2.6	48.8	35.0	Yes	40
5	Shrub	3.2	2.6	1.2	24.0	No	247
6	Shrub	4.2	2.6	3.2	25.0	No	226
7	Shrub	4.0	2.6	2.8	20.0	No	173
8	Tree	10.4	2.6	15.6	26.2	No	144
9	Tree	20.2	2.6	35.2	53.2	No	129
10	Trees	8.6	2.6	12.0	54.0	No	121
11							
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16							
17							
18							
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20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the **SITE DRAWING** (next page)

Site Name: Maryville PM Initials: EMH Date: 04/14/2026

TREE DRIPLINE(s): 11.0 meters (nearest inlet to dripline) No Trees Present
20.0 meters (nearest inlet to dripline) Not Present
24.0 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **must be 10 meters** from the dripline when the tree(s) act as an obstruction.

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

Comments: None _____

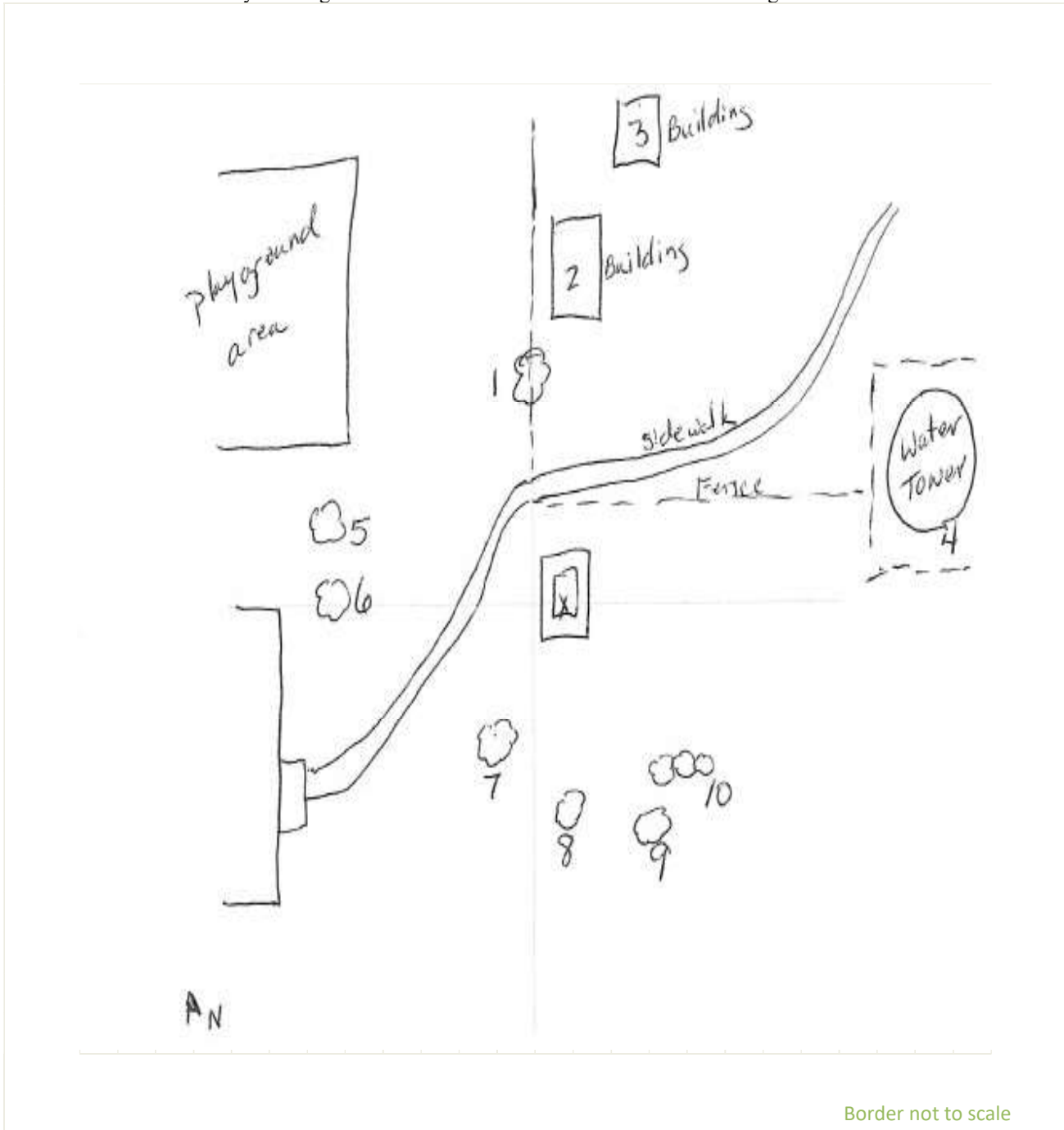
Additional Information:

Object #4(Water tower) is an obstruction but falls within a 90 degree quadrant and there is greater than 270 degrees of unrestricted airflow around the PM inlet.

Object #1 (Tree) is not considered an obstruction and the dripline is 11.0 meters away from the PM inlet; therefore there are no tree dripline issues.

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: >270 ° Estimated Degrees of Clearance

Must have unrestricted airflow **270 degrees** around the probe or sampler; **180 degrees** if the probe is on the **side of a building** or a wall.

PHOTO LOG: Site Name: Maryville PM Initials: EMH Date: 04/14/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 04/14/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 04/14/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 04/14/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 04/14/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 04/14/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 04/14/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 04/14/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 04/14/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 04/14/26 Photographer: EMH Description: Site



Photo: 010 Date: 04/14/26 Photographer: EMH Description: Monitor



Photo: 011 Date: 04/14/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O₃	--	2-15	2-15	2-15	2-15
SO₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

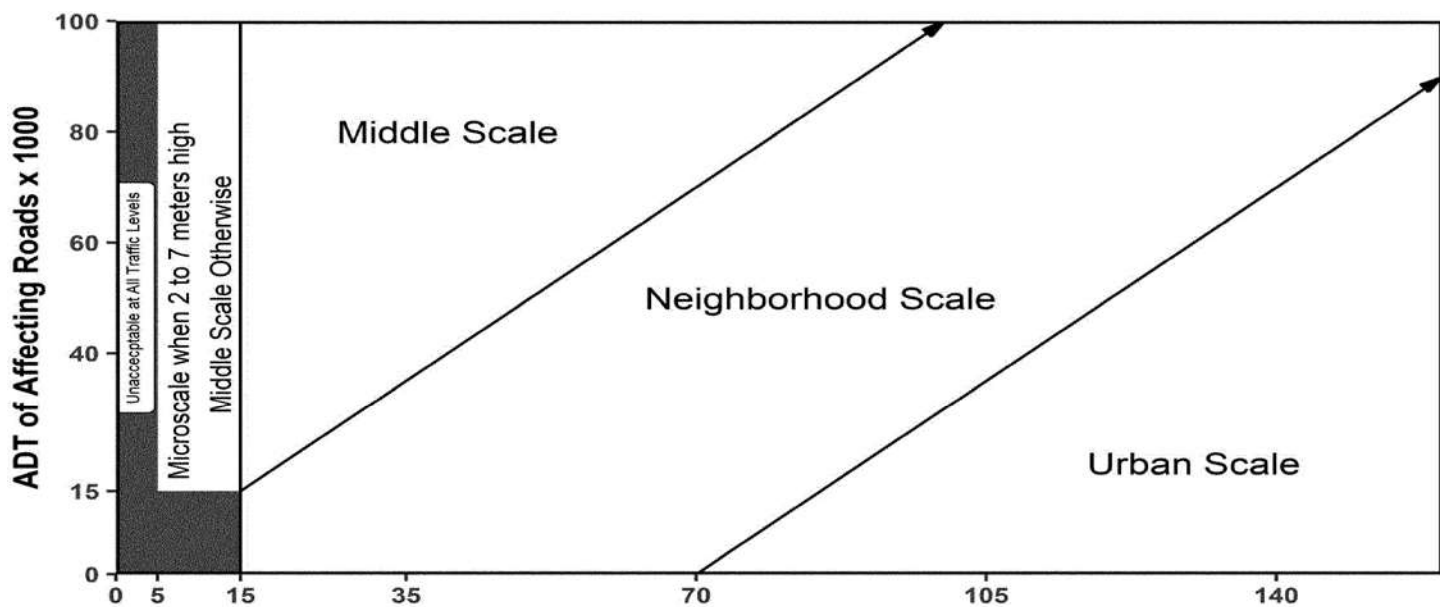


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.


**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 01/13/2026 **Location:** Dyersburg, TN
AQS Number: 47-045-0004
Site Name: Dyersburg PM **Pollutants:** PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin .  . EMH . Site Specialist

2: _____

MONITORING SITE EVALUATION FORM

Site Name: Dyersburg PM Initials: EMH Date: 01/13/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 11:30 am Departure Time: 12:30 pm Primary Operator: Brad Garrett

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside Date: _____

[Yes No] Police Report Filed

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic / Hardcopy / Both

Logbooks at site:

[Yes No] Electronic / Hardcopy / Both

Comments: Hard copy logbook on site; last entry 3/28/24

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
PM2.5	Met One	BAM 1022	D18442

Comments: _____

Site Name: Dyersburg PM Initials: EMH Date: 01/13/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R91110167021009	Modem	Main

OUTDOOR SAMPLERS

Not Present

Yes No] **Locked** [Yes No] **Electrically Grounded** [Yes No] **Stabilized** [Yes No] **Clean Inside**

Yes No] **Head/Separator Clean**

Operator / Log: VSCC/WINS Clean Schedule: 1/30 PM₁₀ Head Clean Schedule: 1/30

Comments: _____

COLLOCATED SAMPLERS: Not Present

(39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
PM2.5	2.5	Ground	NA	NA	Neighborhood	Neighborhood

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)

When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Dyersburg PM

Initials: EMH

Date: 01/13/2026

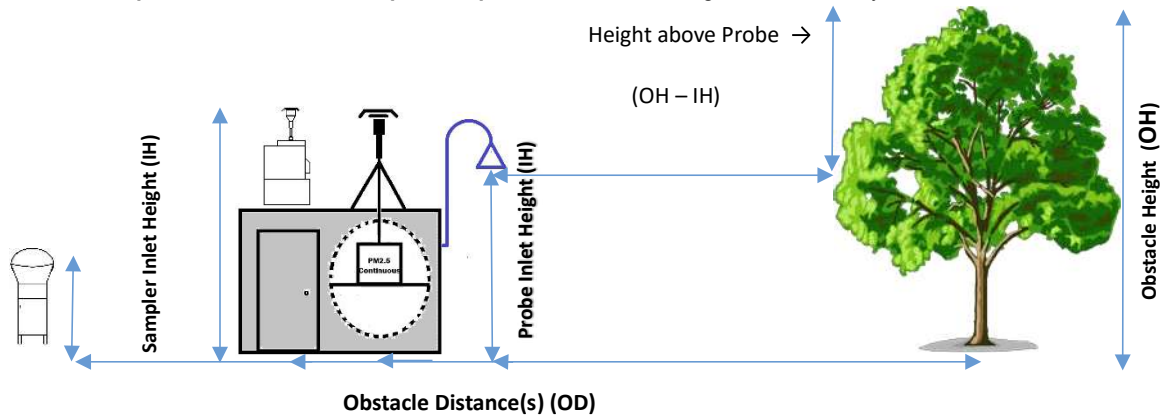
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 04/18/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

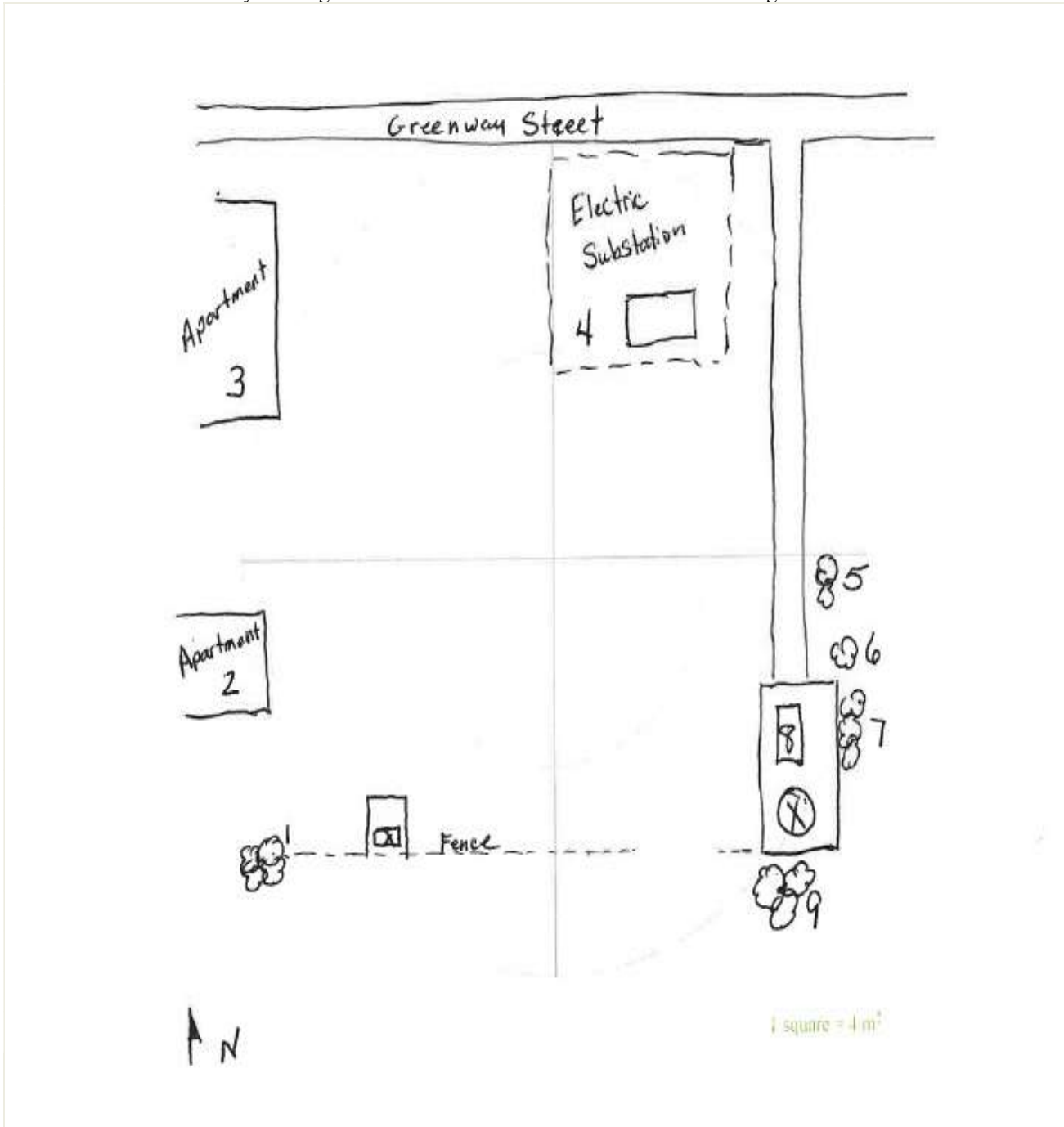
OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Shrubs	2.8	2.5	0.6	14.0	No	289
2	Apartment	5.2	2.5	5.4	22.0	No	327
3	Apartment	5.2	2.5	5.4	33.2	No	357
4	Electric substation	2.4	2.5	NA	90.0	No	32
5	Trees	12.5	2.5	20.0	47.0	No	56
6	Tree	14.2	2.5	23.4	46.0	No	64
7	Trees	14.6	2.5	24.2	40.0	No	71
8	Building	3.0	2.5	1.0	28.4	No	38
9	Trees	11.6	2.5	18.2	22.8	No	89
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: > 270°. Estimated Degrees of Clearance

Must have unrestricted airflow **270 degrees** around the probe or sampler; **180 degrees** if the probe is on the **side of a building** or a wall.

PHOTO LOG: Site Name: Dyersburg PM Initials: EMH Date: 01/13/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 01/13/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 01/13/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 01/13/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 01/13/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 01/13/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 01/13/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 01/13/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 01/13/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 01/13/26 Photographer: EMH Description: Site



Photo: 010 Date: 01/13/26 Photographer: EMH Description: Monitor



Photo: 011 Date: 01/13/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
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TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O₃	--	2-15	2-15	2-15	2-15
SO₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

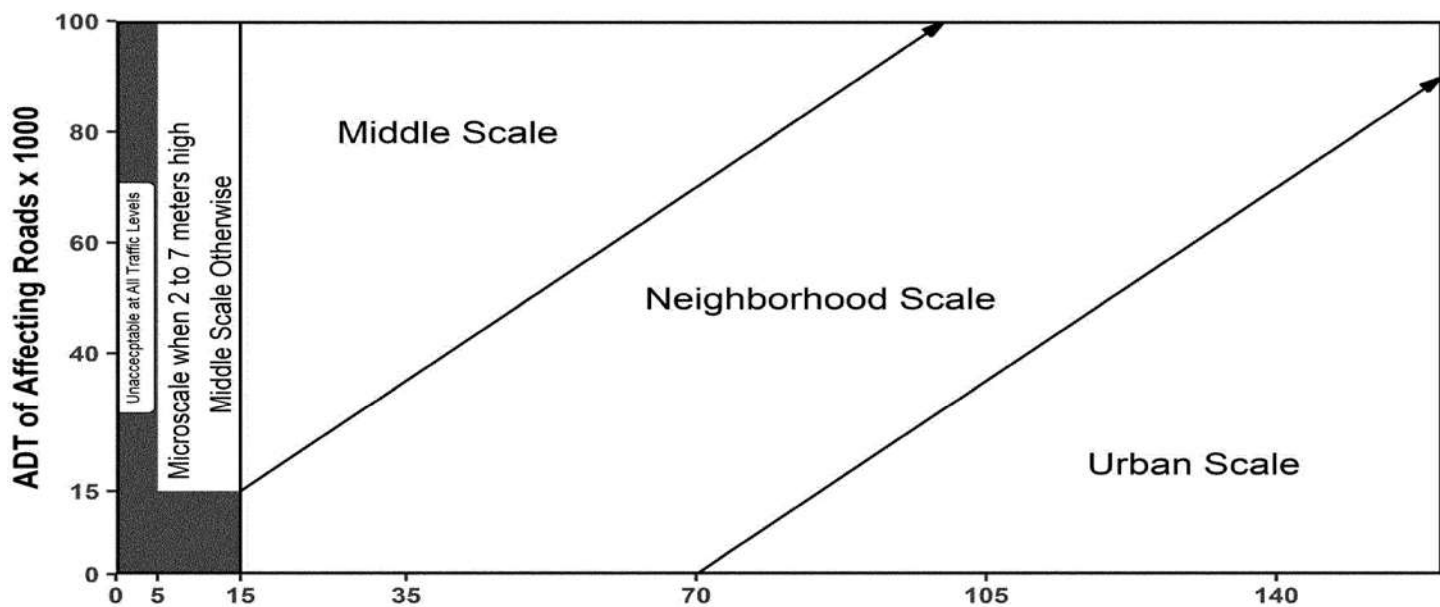


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
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1.8	248.6	159.1	110.5
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2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

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Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

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Exterior Samplers – roof or ground.

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Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

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Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



Air Monitoring Site Evaluations

TDEC APC

Date: 04/15/2026 **Location:** New Market, Tennessee
AQS Number: 47-089-0002
Site Name: New Market O3 **Pollutants:** O3

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

MONITORING SITE EVALUATION FORM (MSEF)

Site Name: New Market O3 Initials: EMH Date: 04/15/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 9:25 am Departure Time: 10:10 am Primary Operator: Erin Sturgill

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut
[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____
[Yes No] Police Report Filed

Comments: _____

SHELTER – Not Present

Interior
Arrival Temperature: 23.8 °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat
[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: Fire extinguisher (good condition)

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]
Height of Roof: 3.0 meters Roofing Material: Steel w/ Duro-last single ply membrane

[Yes No] Needs Maintenance (specify) _____

[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing

Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:
[Yes No] Electronic/ Hardcopy/ Both

Comments: Hard copy logbook on site; last entry 3/27/24

Site Name: New Market O3 Initials: EMH Date: 04/15/2026

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
O3	Teledyne	T400	7268

CALIBRATOR(s): Not Present [Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date
Teledyne	T703	647	2/10/26	7/10/26

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Yes No] Calibrations (Not Required) [Yes No] Precision Checks (Required) [Yes No] Audits (Required)

Comments: _____

CYLINDER GAS STANDARDS: Not Present

VENDOR: _____ (PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number

Comments: _____

Site Name: New Market O3 Initials: EMH Date: 04/15/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93610246021016	Modem	Main
Agilaire	8872	513	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

Yes No] Temperature Sensor [Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 SN # 1338

Yes No] Needs Service Last Service Date: 02/17/2026 Condition: Good

Comments: _____

Probe Line(s): [Replaced / Cleaned] – Frequency: 1/year Last Service Date: 02/17/2026

[Yes No] Clean [Yes No] Heated [Yes No] Insulated [Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

Yes No] Locked [Yes No] Electrically Grounded [Yes No] Stabilized

[Yes No] Clean Inside [Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: _____ PM₁₀ Head Clean Schedule: _____

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: New Market O3 Initials: EMH Date: 04/15/2026

PROBE SYSTEM(s): External Not Present

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] **Funnel Material:** [Teflon® / Glass / Stainless Steel

Probe Line(s): [Teflon® / Other: _____] **Probe Fitting(s):** [Teflon® / Other: _____ / Not Present]

Residence Time: 5.72 seconds (20 sec. max) (Refer to chart for maximum line lengths)

Comments: Residence time worksheet completed 2/18/26

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	4.0	Side of Shelter	NA	NA	Neighborhood	Neighborhood

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)

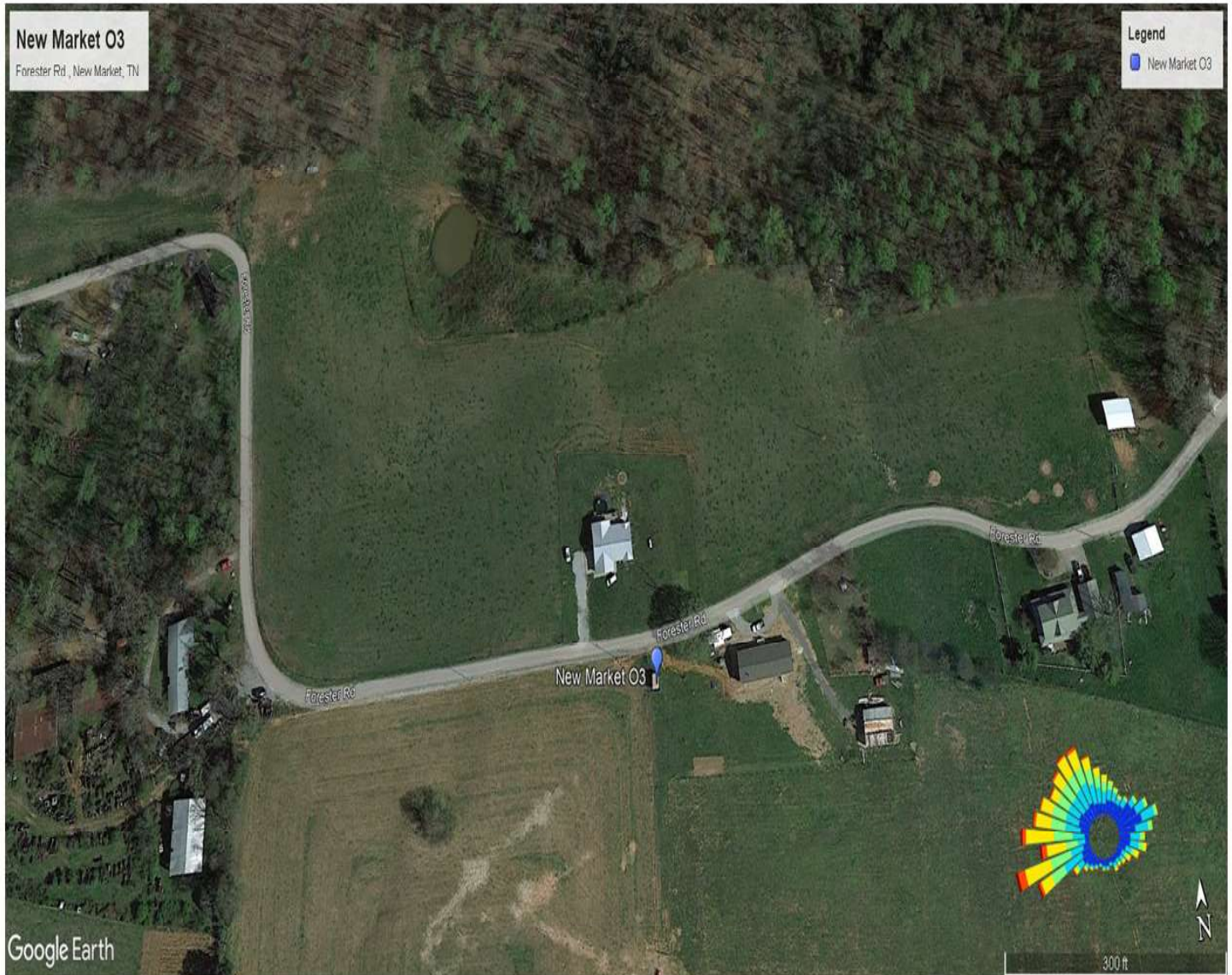
When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: New Market O3

Initials: EMH

Date: 04/15/2026

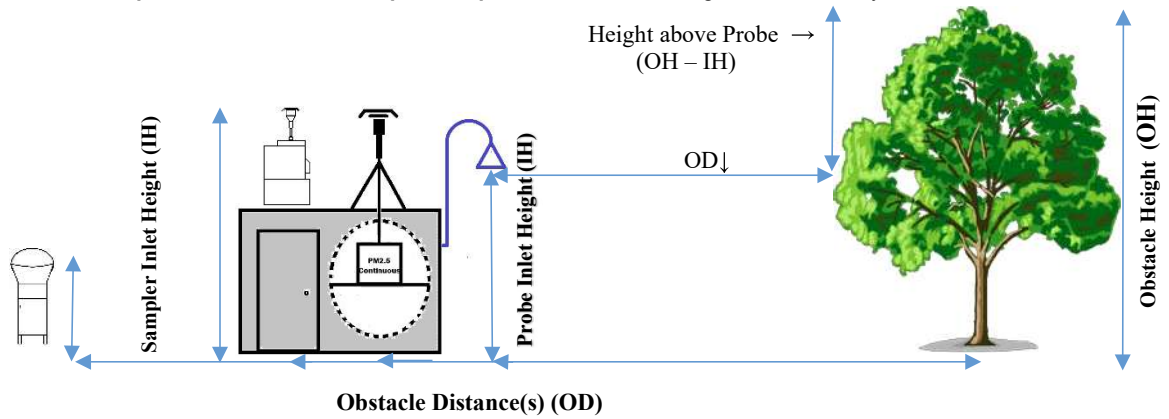
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 04/03/2021

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Blue house	4.4	4.0	0.8	36.0	No	358
2	Tree	14.0	4	20.0	22.2	No	67
3	Green house	6.0	4.0	4.0	38.6	No	88
4	Trees	11.6	4.0	15.2	134.0	No	218
5	Trees	12.2	4.0	16.4	102.0	No	270
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: New Market O3 Initials: EMH Date: 04/15/2026

TREE DRIPLINE(s): 22.4 meters (nearest inlet to dripline) No Trees Present
102.0 meters (nearest inlet to dripline) Not Present
134.0 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **dripline must be greater than 10 meters from inlet/probe.**

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

Comments: None _____

Additional Information:

The closest tree is greater than 20 meters away from the O3 probe; therefore there
are no tree dripline issues.

Site Name: New Market O3

Initials: EMH

Date: 04/15/2026

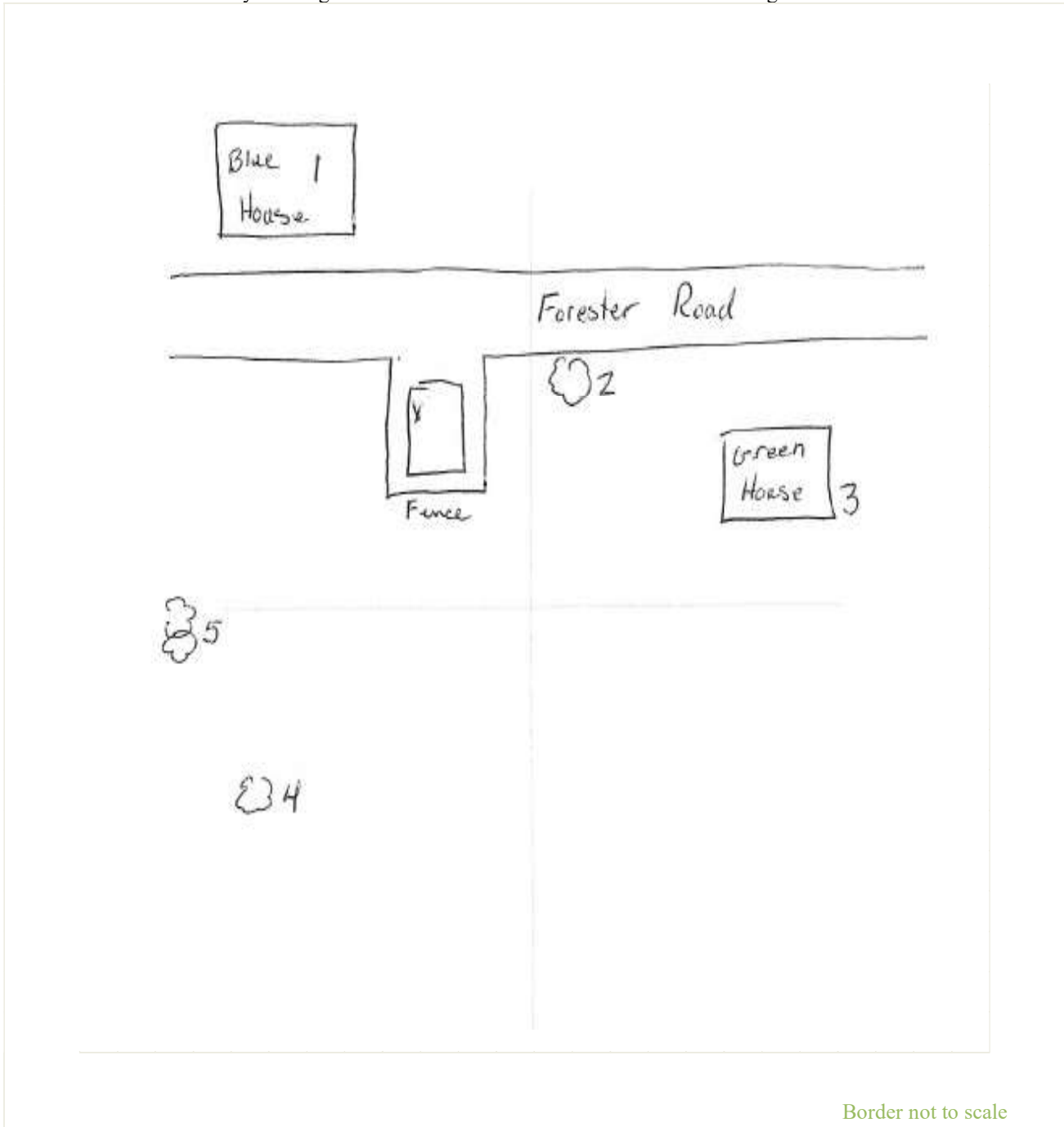
SITE DRAWING - Please Indicate: (relevant distance / height measurements)

Direction NORTH
Primary Wind Dir
Security Issues
Sloping Areas

Monitoring Shelter
Probe Position(s)
Exterior Samplers
Met Tower
Security Fencing

Nearby Trees/Shrubs
Roadways
Buildings
Walls
Other Obstructions

Possible Sources
Paved / Unpaved Areas
Nearby Construction
Flues, Vents, Boilers
Meat Cooking



UNRESTRICTED AIR FLOW: > 270 ° Estimated Degrees of Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: New Market O3 Initials: EMH Date: 04/15/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 04/15/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 04/15/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 04/15/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 04/15/26 Photographer: EMH Description: Southeast Direction



Photo: 005 Date: 04/15/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 04/15/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 04/15/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 04/15/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 04/15/26 Photographer: EMH Description: Site



Photo: 010 Date: 04/15/26 Photographer: EMH Description: O3 Probe



Photo: 011 Date: 04/15/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O ₃	--	2-15	2-15	2-15	2-15
SO ₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

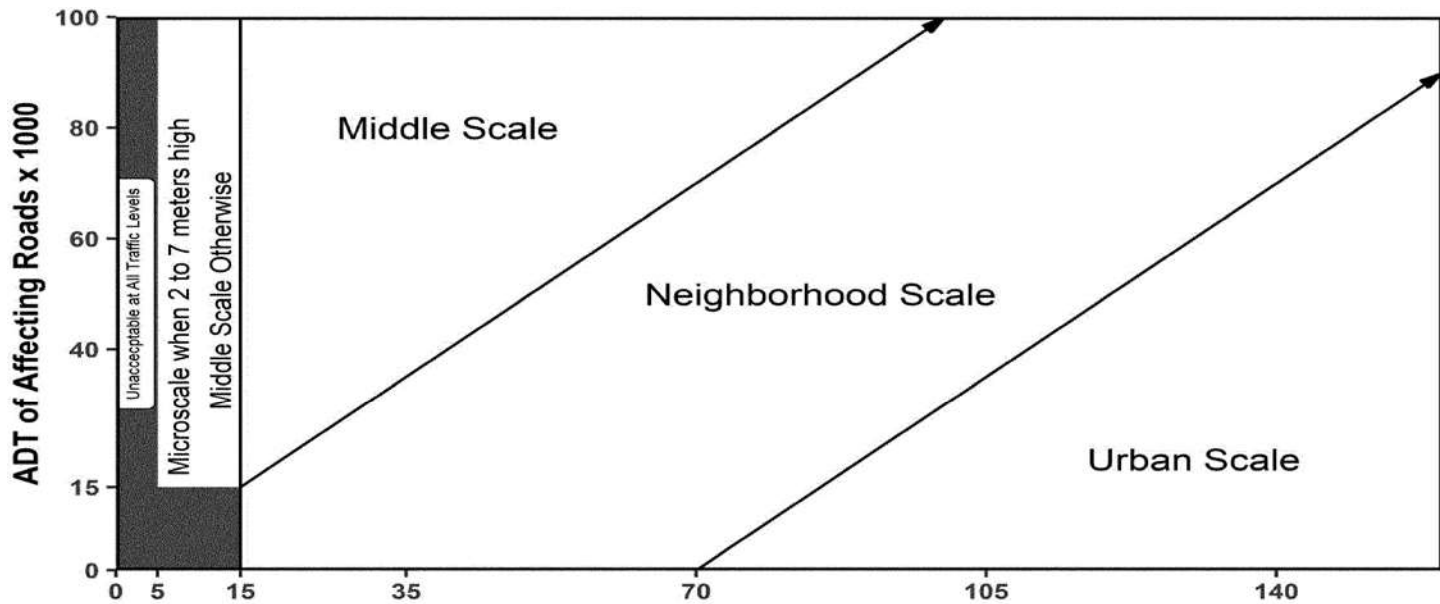


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 04/09/2026 **Location:** Loretto, TN
AQS Number: 47-099-0003
Site Name: Loretto PM **Pollutants:** PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Site Name: Loretto PM Initials: EMH Date: 04/09/2026

Site meets EPA siting criteria: Yes No

If no, explain:

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
Busby Road	286.2 m	S	Local Street	1676	2025

Electrical

Utility Company: NA Meter Number: NA

Additional Comments:

1. Arrival and departure times are Central time.
 2. Electricity is supplied by the Loretto waste water treatment plant.
 3. Site is located within the fenced - area of the wastewater treatment plant.
 4. Site has a Purple Air sense and weather station.
-
-
-
-
-
-
-
-
-
-

MONITORING SITE EVALUATION FORM

Site Name: Loretto PM Initials: EMH Date: 04/09/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 10:50 am Departure Time: 11:35 pm Primary Operator: Hattie Benet

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside Date: _____

[Yes No] Police Report Filed

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic / Hardcopy / Both

Logbooks at site:

[Yes No] Electronic / Hardcopy / Both

Comments: Hard copy logbook on site: last entry 6/29/24

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
PM2.5	Met One	BAM 1022	C20239

Comments: _____

Site Name: Loretto PM Initials: EMH Date: 04/09/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R0033042601B118	Modem	Main

OUTDOOR SAMPLERS

Not Present

Yes No] **Locked** [Yes No] **Electrically Grounded** [Yes No] **Stabilized** [Yes No] **Clean Inside**

Yes No] **Head/Separator Clean**

Operator / Log: VSCC/WINS Clean Schedule: 1/30 days PM₁₀ Head Clean Schedule: 1/30 days

Comments: _____

COLLOCATED SAMPLERS: Not Present

(39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
PM2.5	2.6	Ground	NA	NA	Regional	Regional

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂) & (2 meters for PM, Pb)

When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Loretto PM

Initials: EMH

Date: 04/09/2026

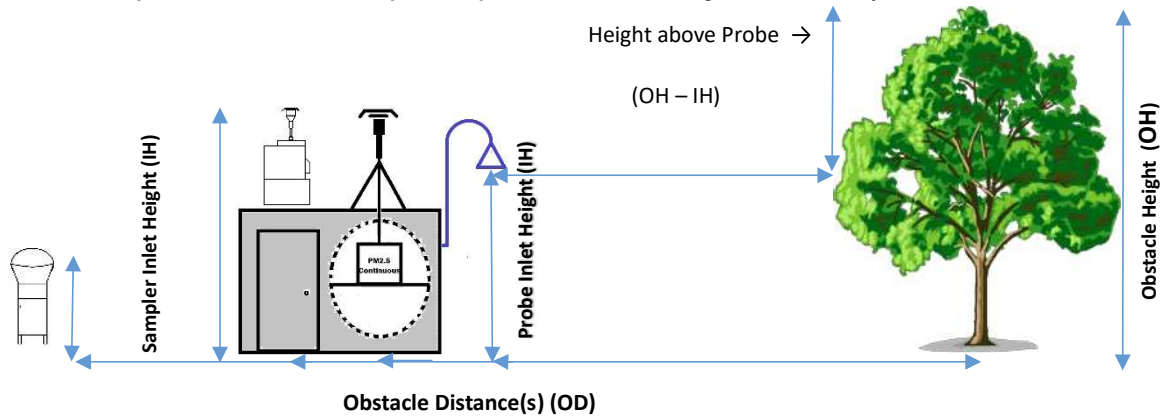
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 11/29/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq 2*(OH-IH)$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Building	4.5	2.6	3.8	19.4	No	342
2	Trees	28.0	2.6	50.8	62.0	No	22
3	Trees	19.0	2.6	32.8	65.0	No	61
4	Tree	7.5	2.6	9.8	34.0	No	67
5	Tree	12.8	2.6	20.4	67.0	No	76
6	Trees	17.0	2.6	28.8	40.0	No	168
7	Tree	14.8	2.6	24.4	45.0	No	197
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Loretto PM Initials: EMH Date: 04/09/2026

TREE DRIPLINE(s): 34.0 meters (nearest inlet to dripline) **No Trees Present**
40.0 meters (nearest inlet to dripline) Not Present
45.0 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **must be 10 meters** from the dripline when the tree(s) act as an obstruction.

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

Comments: None _____

Additional Information:

The closest tree is greater than 20 meters from the PM inlet; therefore there are no tree dripline issues.

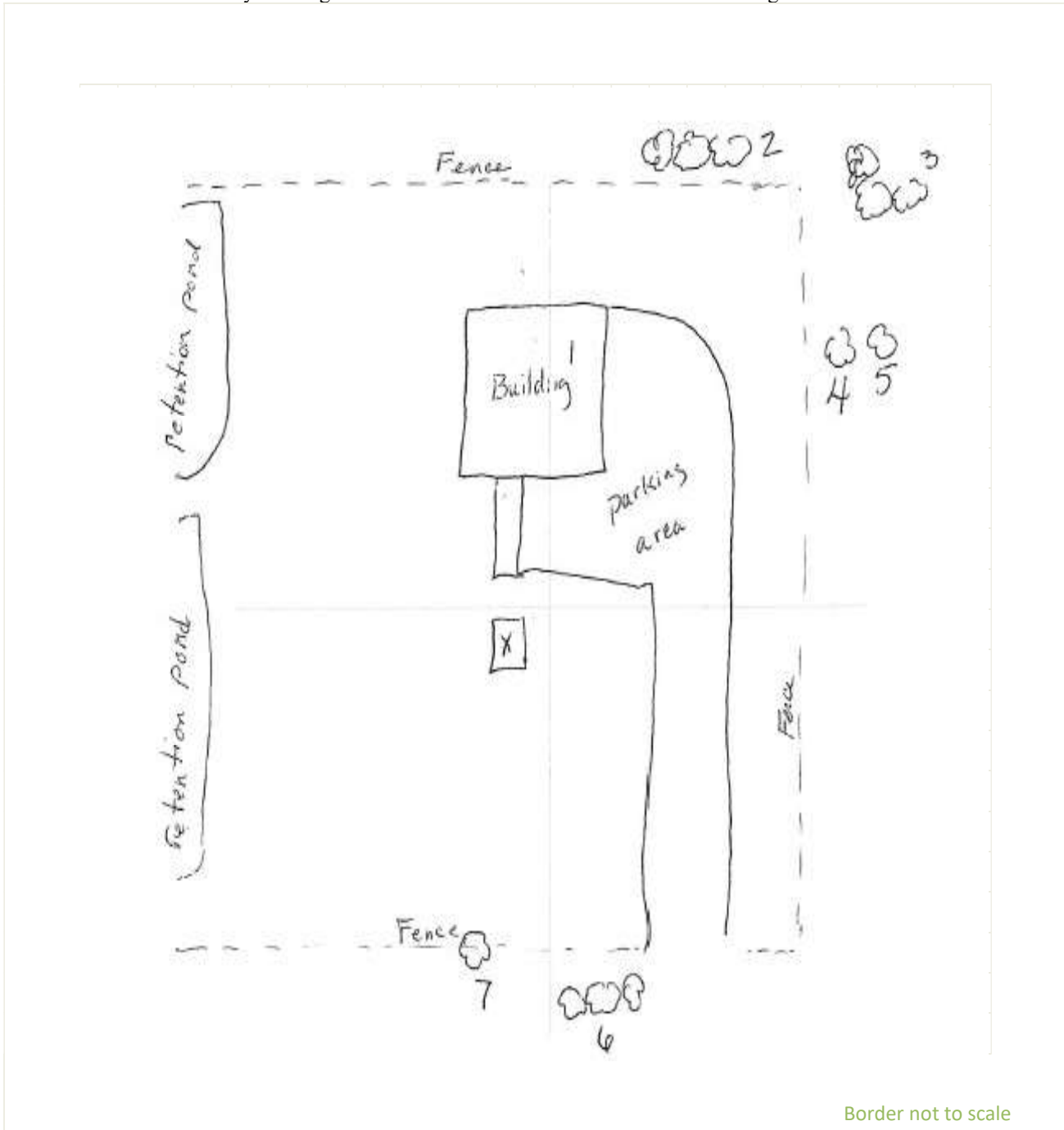
Site Name: Loretto PM

Initials: EMH

Date: 04/09/2026

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: >270 ° Estimated Degrees of Clearance

Must have unrestricted airflow **270 degrees** around the probe or sampler; **180 degrees** if the probe is on the **side of a building** or a wall.

PHOTO LOG: Site Name: Loretto PM Initials: EMH Date: 04/09/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 04/09/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 04/09/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 04/09/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 04/09/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 04/09/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 04/09/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 04/09/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 04/09/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 04/09/26 Photographer: EMH Description: Site



Photo: 010 Date: 04/09/26 Photographer: EMH Description: Monitor



Photo: 011 Date: _____ Photographer: _____ Description: _____

Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O₃	--	2-15	2-15	2-15	2-15
SO₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

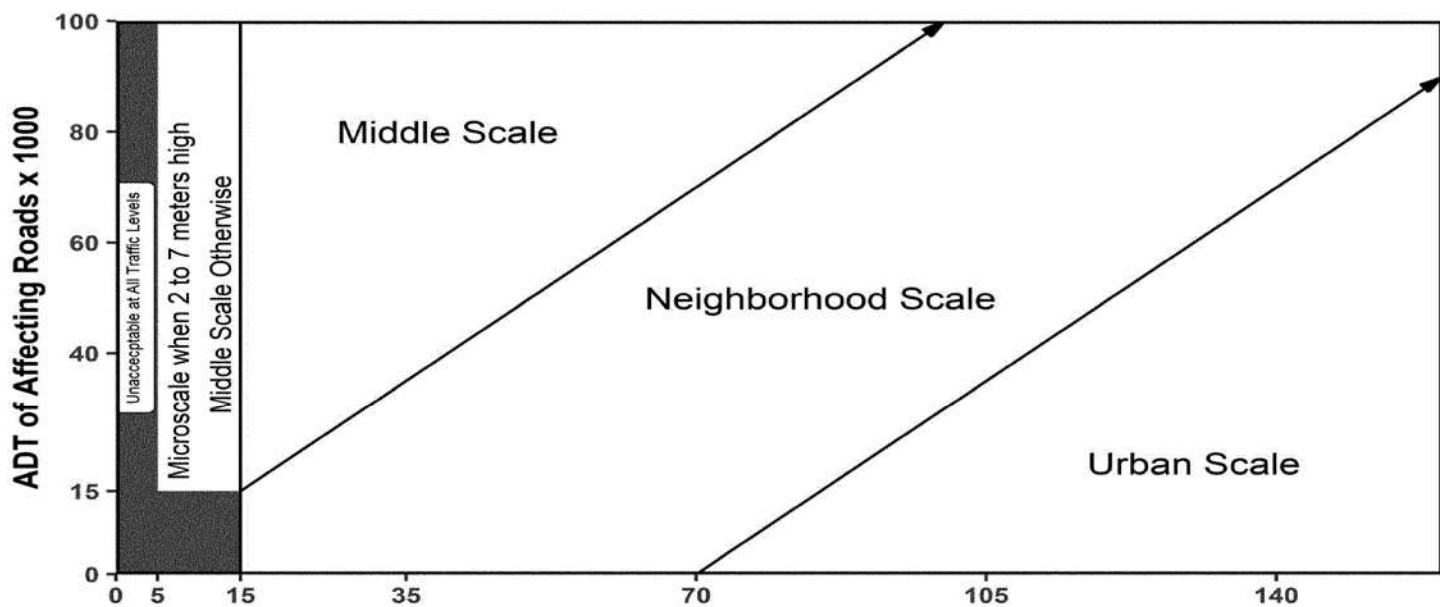


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.


**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 02/25/2026 **Location:** Loudon, Tennessee
AQS Number: 47-105-0109
Site Name: Loudon O3/PM **Pollutants:** O3, PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Local Site Name: Loudon O3/PM Initials: EMH Date: 02/25/2026

Site meets EPA siting criteria: Yes No

If no, explain:

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
Freel's Bend Road	109.0 m	W	Major Hwy	9631	2024
Roberts Road	176.0 m	S	Local Street	NA	NA

Electrical

Utility Company: Loudon Utilities Meter Number: 36726580

Additional Comments:

1. Arrival and departure times are Eastern time.
 2. Justin Long is the operator of both Ozone and PM monitors.
 3. Shelter temperature was 72 degrees F.
 4. The distance between O3 probe and BAM (1) inlet is 4.5 meters and the distance between the O3 probe and BAM (2) is 3.8 meters.
 5. A weather station, 2 Purple Air PM sensors and one Clarity O3 node are located on site.
-
-
-
-
-
-
-
-

MONITORING SITE EVALUATION FORM (MSEF)

Site Name: Loudon O3/PM Initials: EMH Date: 02/25/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 12:45 pm Departure Time: 1:45 pm Primary Operator: Justin Long

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____

[Yes No] Police Report Filed

Comments: _____

SHELTER – Not Present

Interior

Arrival Temperature: 23.4 °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat

[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: Fire extinguisher good

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]

Height of Roof: 3.0 meters Roofing Material: Steel with Duro-last single ply membrane

[Yes No] Needs Maintenance (specify) _____

[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing

Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: Platforms are serviceable.

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:

[Yes No] Electronic/ Hardcopy/ Both

Comments: Hardcopy logbooks for O3 and PM monitors located on site; Last entry in all logbooks 4/2/24

Site Name: Loudon O3/PM Initials: EMH Date: 02/25/2026

MONITOR(s): Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
O3	Teledyne	T400	7697
PM2.5 (1)	Met One	BAM 1022	W12880
PM2.5 (2)	Met One	BAM 1022	E15615

CALIBRATOR(s): Not Present [Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date
Teledyne	T703	646	2/9/26	7/9/26

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Yes No] Calibrations (Not Required) [Yes No] Precision Checks (Required) [Yes No] Audits (Required)

Comments: _____

CYLINDER GAS STANDARDS: Not Present

VENDOR: _____ (PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number

Comments: _____

Site Name: Loudon O3/PM Initials: EMH Date: 02/25/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93610095011016	Modem	Main
Agilaire	8872	517	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

[Yes No] Temperature Sensor [Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 SS # 1341

[Yes No] Needs Service Last Service Date: 02/17/2026 Condition: Good

Comments: _____

Probe Line(s): [Replaced / Cleaned] – Frequency: 1/year Last Service Date: 02/17/2026

[Yes No] Clean [Yes No] Heated [Yes No] Insulated [Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

[Yes No] Locked [Yes No] Electrically Grounded [Yes No] Stabilized

[Yes No] Clean Inside [Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: 1/30 days PM₁₀ Head Clean Schedule: 1/30 days

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)
PM2.5 (1)	Lo	1.9
PM2.5 (2)	Lo	1.9

*Collocated monitors must be within 4 meters of each other and at least 2 meters apart for flow rates greater than 200 liters/min or at least 1 meter apart for samplers having flow rates less than 200 liters/min to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: Loudon O3/PM Initials: EMH Date: 02/25/2026

PROBE SYSTEM(s): External **Not Present**

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] **Funnel Material:** [Teflon® / Glass / Stainless Steel]

Probe Line(s): [Teflon® / Other: _____] **Probe Fitting(s):** [Teflon® / Other: _____ / Not Present]

Residence Time: 6.43 (20 sec. max) (Refer to chart for maximum line lengths)

Comments: Worksheet done 2/17/26

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	4.5	Side of Shelter	NA	NA	Neighborhood	Neighborhood
PM2.5 (1)	2.6	Ground	1.9	NA	Neighborhood	Neighborhood
PM2.5 (2)	2.6	Ground	1.9	NA	Neighborhood	Neighborhood

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)

When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Loudon O3/PM

Initials: EMH

Date: 02/25/2026

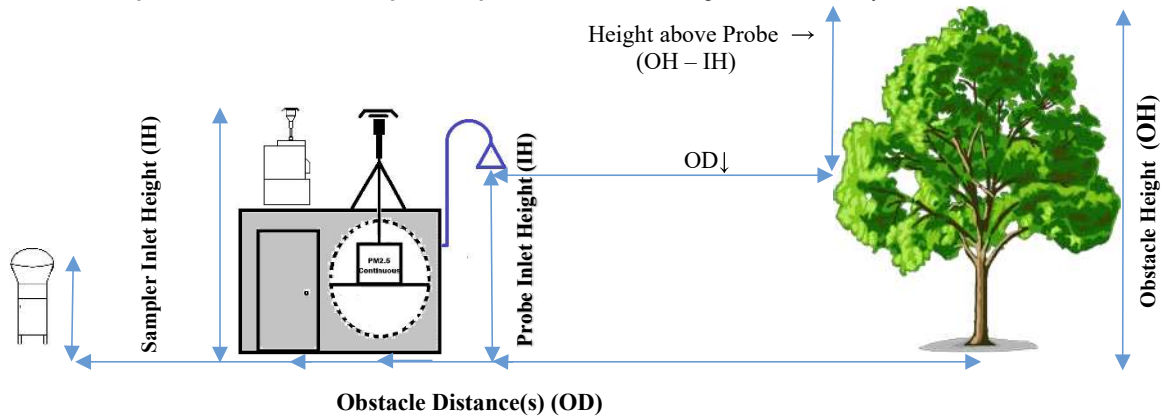
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 05/18/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	School	5.0	4.5	1.0	101.8	No	87
2	Tree	15.8	2.6	26.4	74.4	No	117
3	Trees	18.0	2.6	30.8	48.0	No	264
4	Trees	17.8	2.6	30.4	50.0	No	309
5							
6							
7							
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12							
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16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Loudon O3/PM Initials: EMH Date: 02/25/2026

TREE DRIPLINE(s): 48.0 meters (nearest inlet to dripline) No Trees Present
50.0 meters (nearest inlet to dripline) Not Present
74.4 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **dripline must be greater than 10 meters from inlet/probe.**

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

Comments: None _____

Additional Information:

The nearest tree is greater than 20 meters from the probe/inlets; therefore there

are no tree dripline issues.

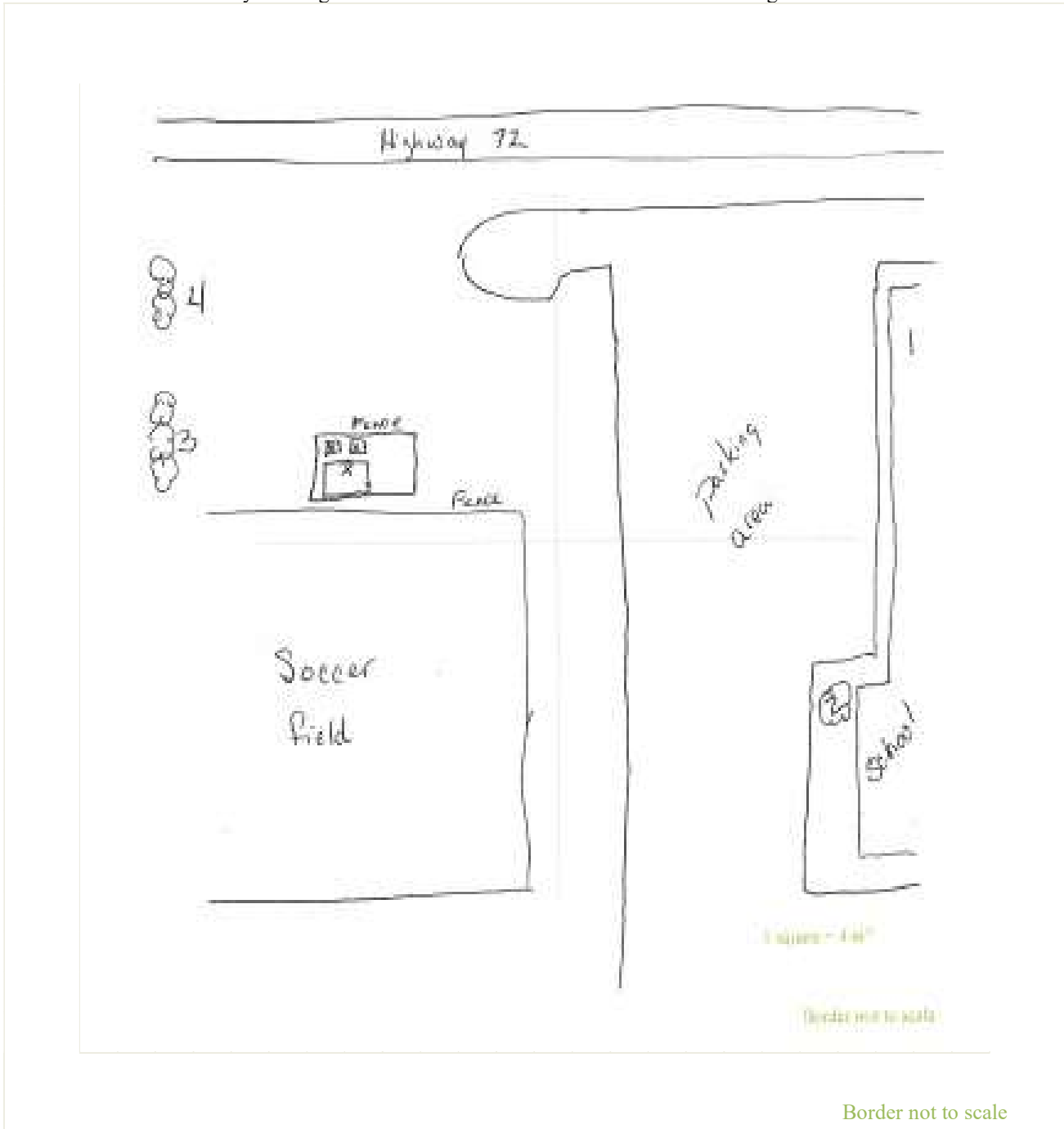
The distance for Object #1 was measured from the O3 probe.

The distance for Object #2 was measured from the BAM 2 inlet.

The distances for Objects #3 and #4 were measured from the BAM 1 inlet.

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: > 270 ° Estimated Degrees of Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: Loudon O3/PM Initials: EMH Date: 02/25/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: 001 Date: 02/25/26 Photographer: EMH Description: North Directional



Photo: 002 Date: 02/25/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 02/25/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 02/25/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 02/25/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 02/25/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 02/25/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 02/25/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 02/25/26 Photographer: EMH Description: Site



Photo: 010 Date: 02/25/26 Photographer: EMH Description: Shelter with probe



Photo: 011 Date: 02/25/26 Photographer: EMH Description: PM monitors



Photo: 012 Date: 02/25/26 Photographer: EMH Description: Electric meter



40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
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TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
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SO ₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

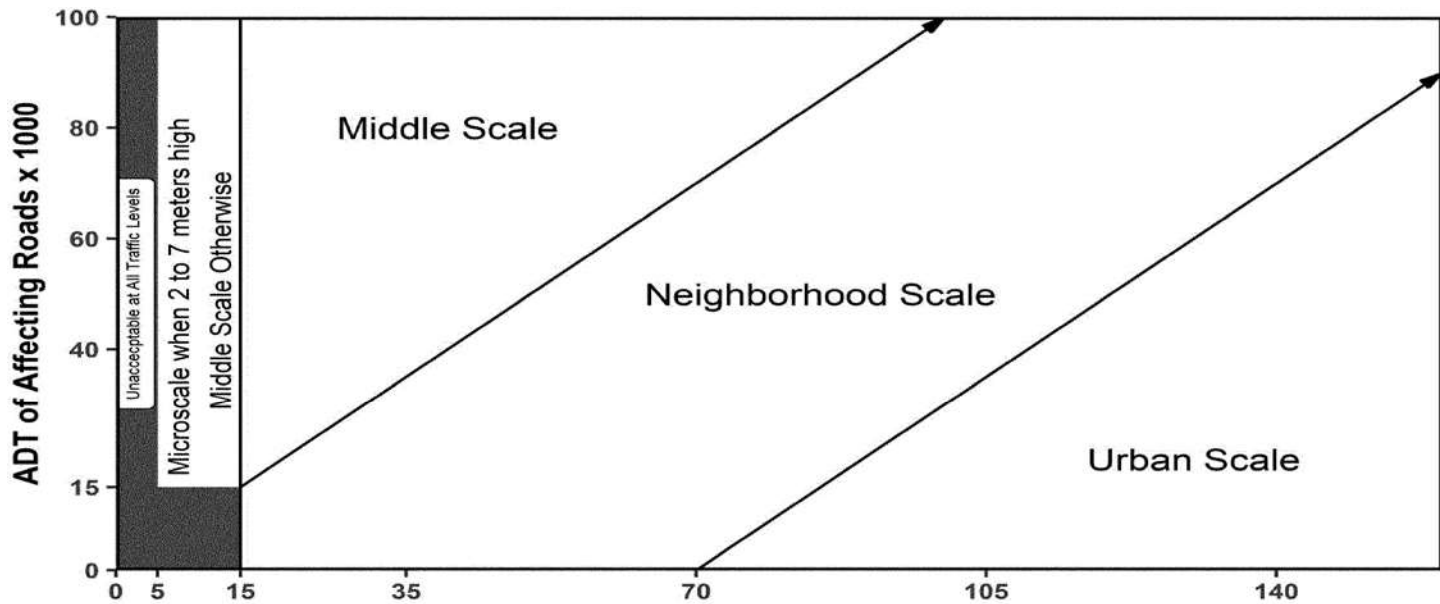


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
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Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
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0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
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SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

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For a Commercial System: give the make and model
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Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

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Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

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Primary Operator: the sites main operator, include parameters responsible for

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Networks: check all that apply, indicates type / purpose of monitoring conducted at site

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Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

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Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

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Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.


**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 02/05/2026 **Location:** Athens, TN
AQS Number: 47-107-1002
Site Name: Athens PM **Pollutants:** PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin .  . EMH . Site Specialist

2: _____

MONITORING SITE EVALUATION FORM

Site Name: Athens PM Initials: EMH Date: 02/05/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y/ N] Completed

Arrival Time: 1:00 pm Departure Time: 1:45 pm Primary Operator: Stephanie Dyer

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside Date: _____

[Yes No] Police Report Filed

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No]Needs Maintenance

Comments: Platform to be replaced (Current platform 51" x 48")

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:

[Yes No] Electronic/ Hardcopy/ Both

Comments: Hardcopy logbook on site; last entry 4/1/24

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
PM2.5	Met One	BAM 1022	E15613

Comments: _____

Site Name: Athens PM Initials: EMH Date: 02/05/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93140235011014	Modem	Main

OUTDOOR SAMPLERS

Not Present

Yes No] **Locked** [Yes No] **Electrically Grounded** [Yes No] **Stabilized** [Yes No] **Clean Inside**

Yes No] **Head/Separator Clean**

Operator / Log: VSCC/WINS Clean Schedule: 1/30 days PM₁₀ Head Clean Schedule: 1/30 days

Comments: _____

COLLOCATED SAMPLERS: Not Present

(39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
PM2.5	2.6	Ground	NA	NA	Neighborhood	Neighborhood

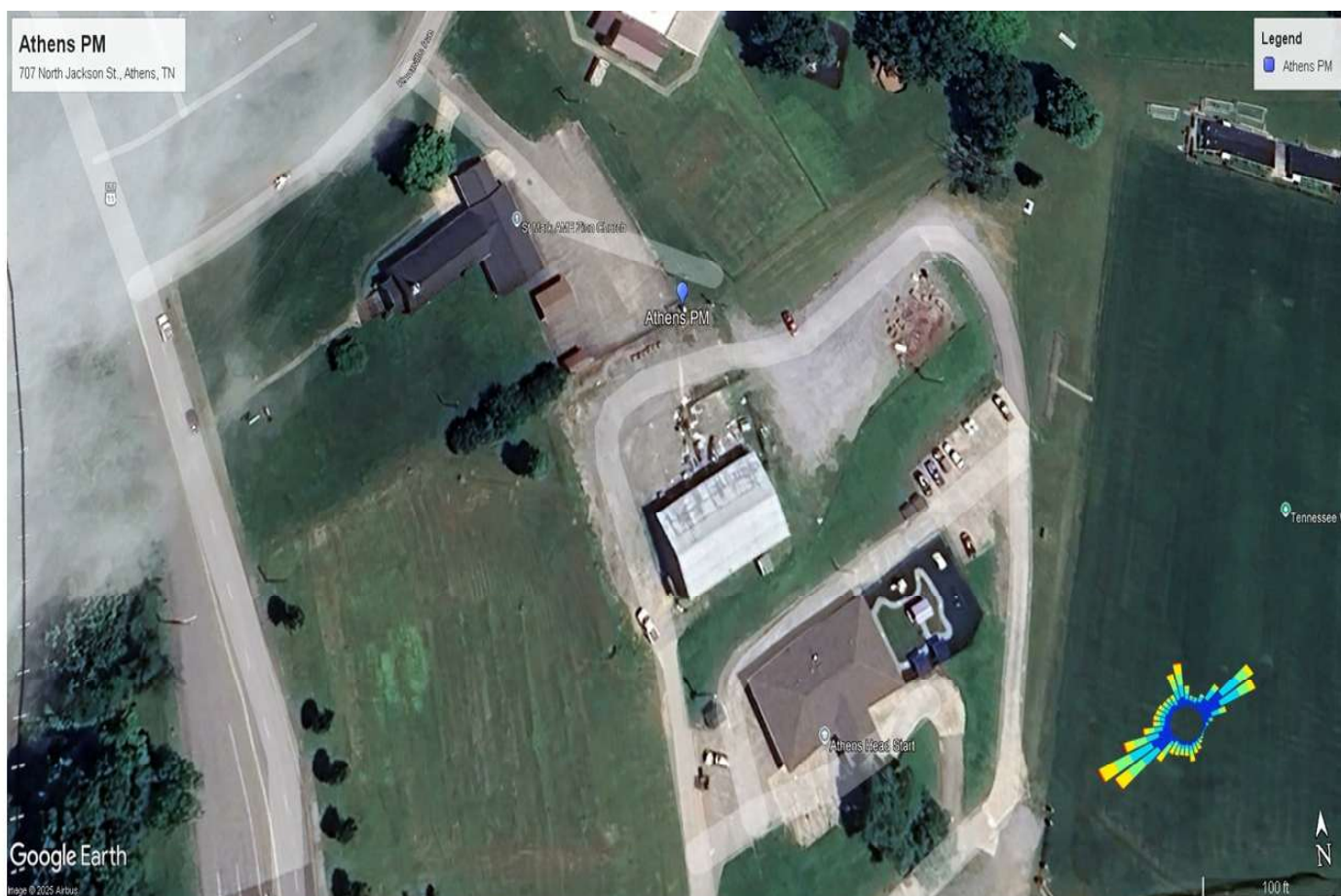
FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)
 When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Athens PM

Initials: EMH

Date: 02/05/2026

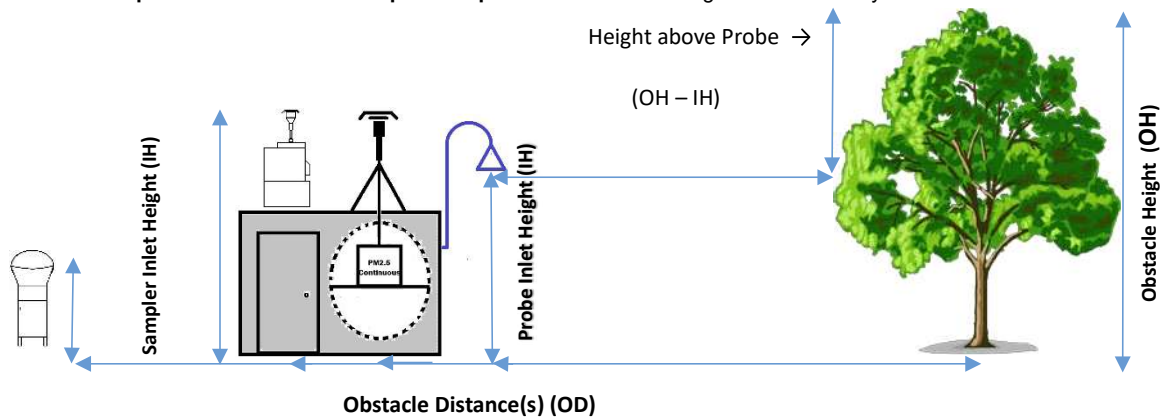
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 05/18/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq 2*(OH-IH)$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	YMCA building	9.0	2.6	12.8	52.6	No	1
2	Tree	12.0	2.6	18.8	66.0	No	51
3	Blue building	6.4	2.6	7.6	30.0	No	171
4	Shed	3.4	2.6	1.6	22.8	No	284
5	Carport	3.6	2.6	2.0	25.0	No	344
6	Tree	17.4	2.6	29.6	71.0	No	332
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

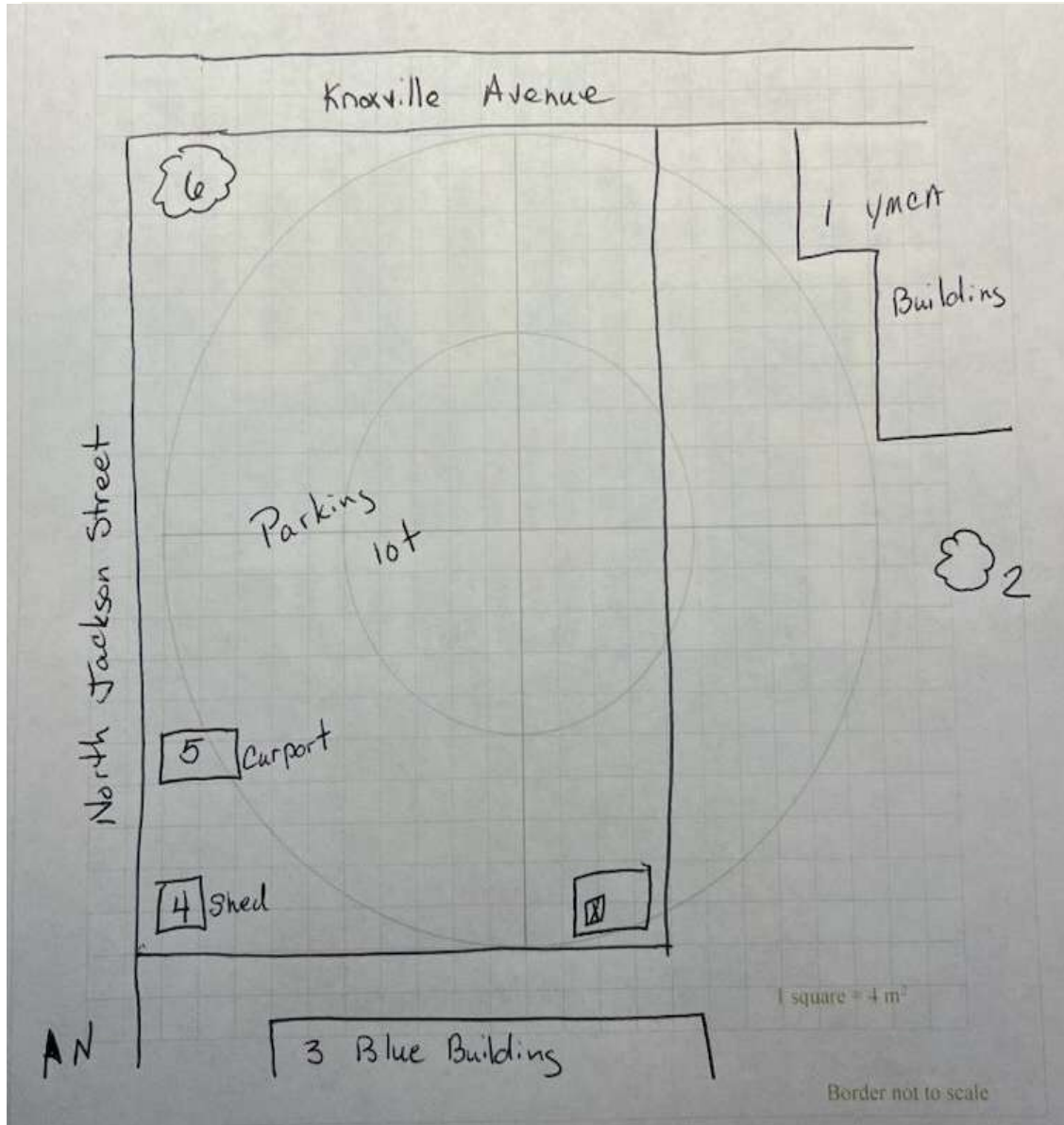
Site Name: Athens PM

Initials: EMH

Date: 02/05/2026

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



Border not to scale

UNRESTRICTED AIR FLOW: > 270 ° Estimated Degrees of Clearance

Must have continuous unrestricted airflow **270 degrees** around the probe or sampler; **180 degrees** if the probe is on the **side of a building** or a wall.

PHOTO LOG: Site Name: Athens PM Initials: EMH Date: 02/05/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 02/05/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 02/05/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 02/05/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 02/05/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 02/05/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 02/05/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 02/05/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 02/05/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 02/05/26 Photographer: EMH Description: Site



Photo: 010 Date: 02/05/26 Photographer: EMH Description: Monitor



Photo: 011 Date: 02/05/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O₃	--	2-15	2-15	2-15	2-15
SO₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

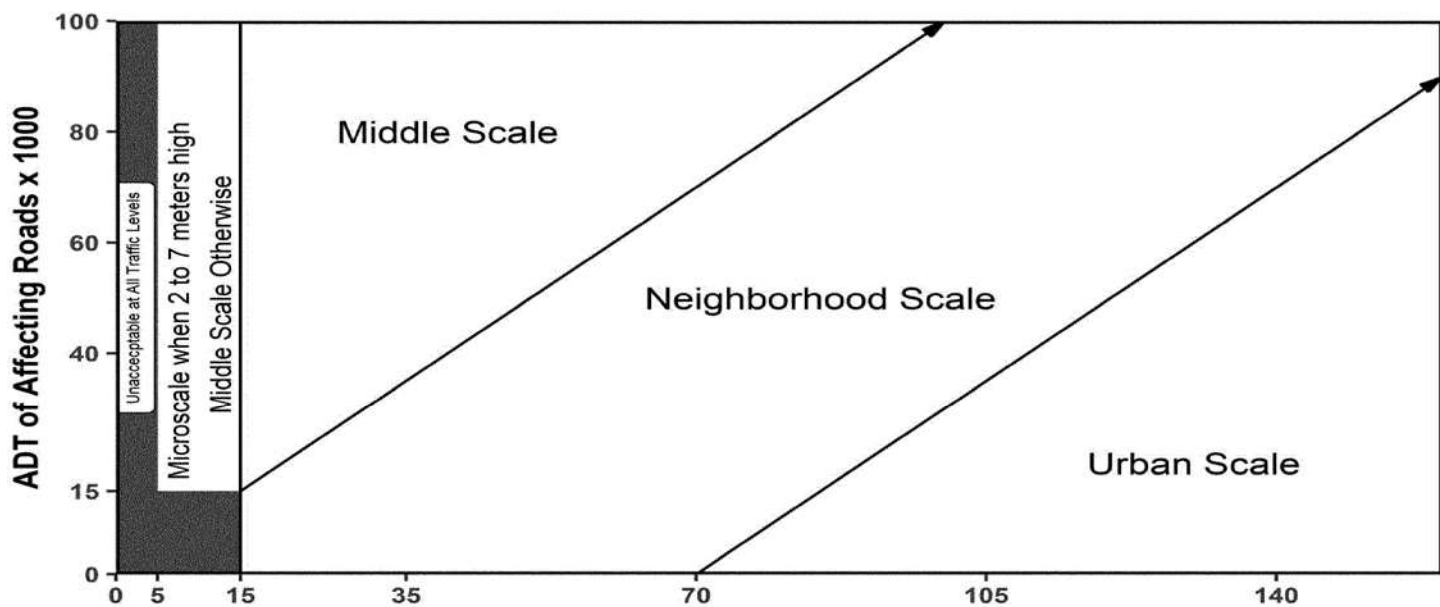


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.


**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 10/16/2025 **Location:** Jackson, TN
AQS Number: 47-113-0010
Site Name: Jackson PM **Pollutants:** PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

MONITORING SITE EVALUATION FORM

Site Name: Jackson PM Initials: EMH Date: 10/16/2025

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y/ N] Completed

Arrival Time: 10:35 am Departure Time: 11:15 am Primary Operator: David Norville

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside Date: _____

[Yes No] Police Report Filed

Comments: Fence is caged area.

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No]Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:

[Yes No] Electronic/ Hardcopy/ Both

Comments: Hard copy logbook present on site; last entry 3/28/24

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
PM2.5	Met One	BAM 1022	C20241

Comments: _____

Site Name: Jackson PM Initials: EMH Date: 10/16/2025

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93330040021016	Modem	Main

OUTDOOR SAMPLERS

Not Present

Yes No] **Locked** [Yes No] **Electrically Grounded** [Yes No] **Stabilized** [Yes No] **Clean Inside**

Yes No] **Head/Separator Clean**

Operator / Log: VSCC/WINS Clean Schedule: 1/30 days PM₁₀ Head Clean Schedule: 1/30 days

Comments: _____

COLLOCATED SAMPLERS:

Not Present

(39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
PM2.5	2.6	Ground	NA	NA	Neighborhood	Neighborhood

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂) & (2 meters for PM, Pb)

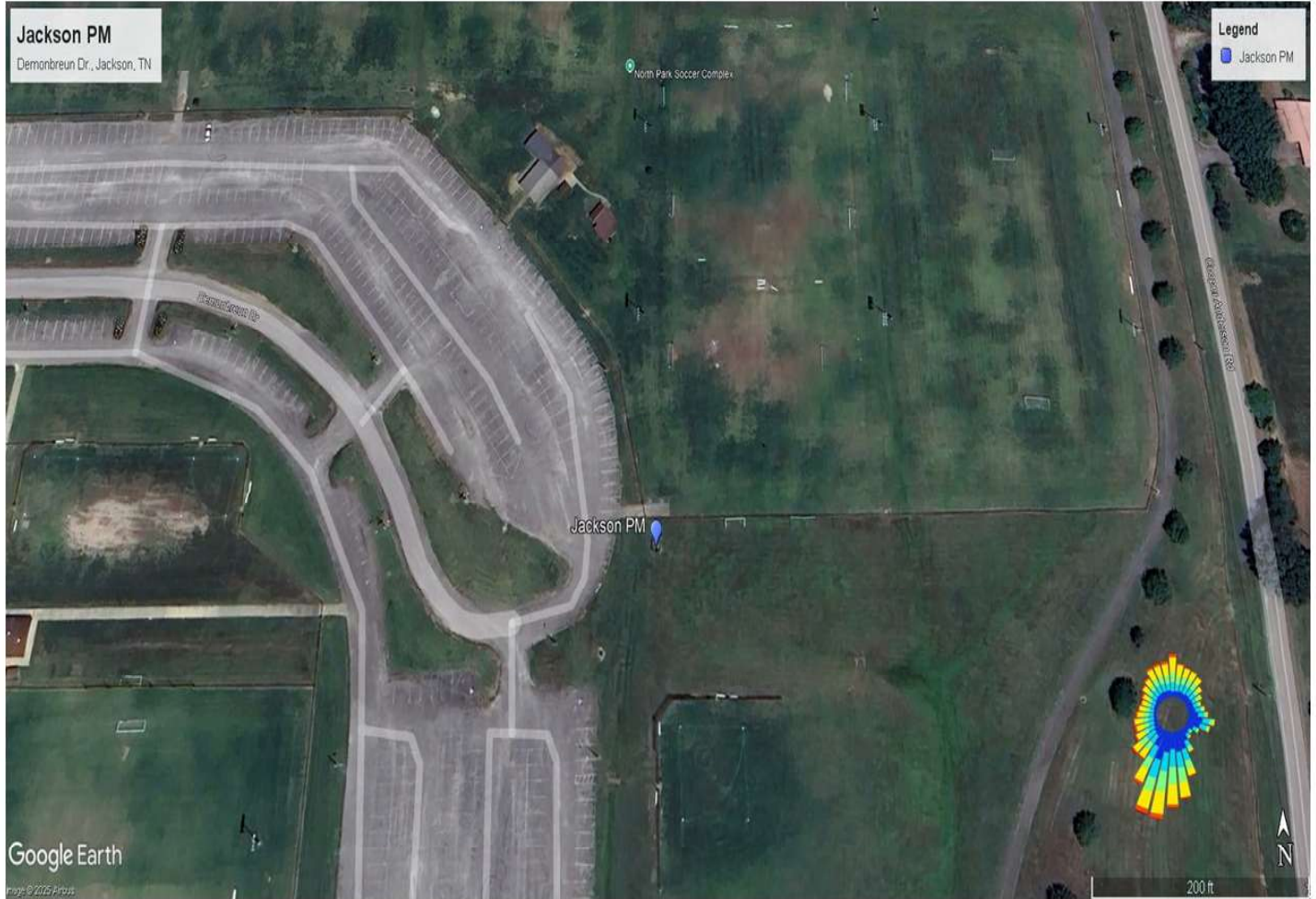
When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Jackson PM

Initials: EMH

Date: 10/16/2025

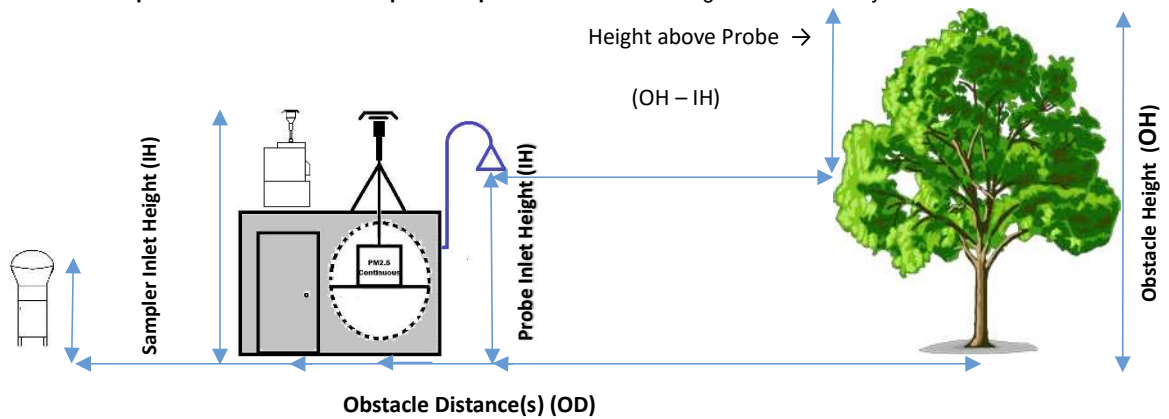
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 05/05/2025

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq 2*(OH-IH)$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Building	4.2	2.6	3.2	96.0	No	341
2	Building	2.8	2.6	0.4	93.0	No	345
3	Building	2.8	2.6	0.4	78.0	No	352
4	Tree	9.8	2.6	14.4	157.0	No	121
5	Tree	12.0	2.6	18.8	150.0	No	128
6							
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18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

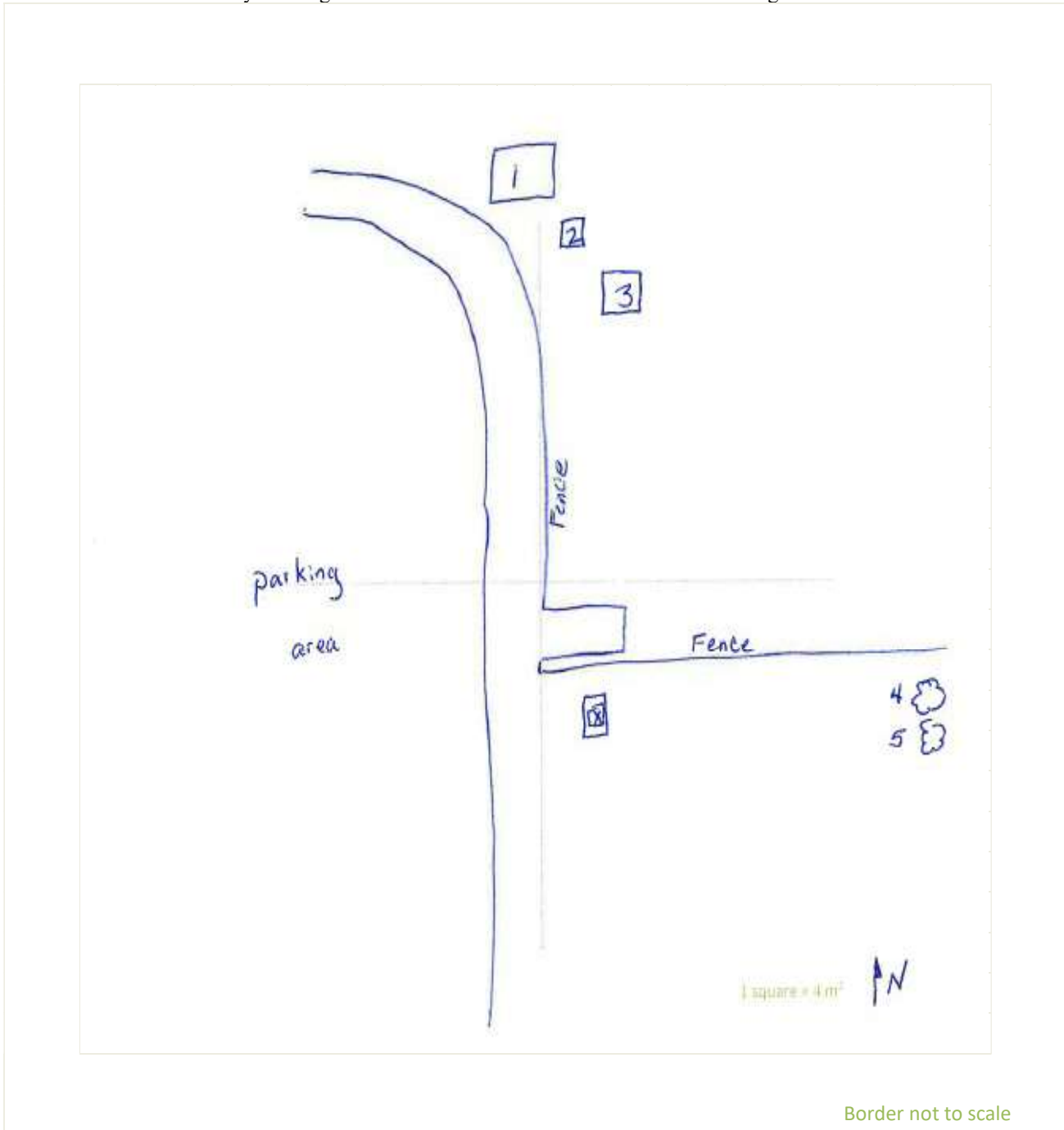
Site Name: **Jackson PM**

Initials: **EMH**

Date: **10/16/2025**

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



Border not to scale

UNRESTRICTED AIR FLOW: > 270° Estimated Degrees of Clearance

Must have unrestricted airflow **270 degrees** around the probe or sampler; **180 degrees** if the probe is on the **side of a building** or a wall.

PHOTO LOG: Site Name: Jackson PM Initials: EMH Date: 10/16/2025

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 10/16/25 Photographer: EMH Description: North Directional



Photo: **002** Date: 10/16/25 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 10/16/25 Photographer: EMH Description: East Directional



Photo: 004 Date: 10/16/25 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 10/16/25 Photographer: EMH Description: South Directional



Photo: 006 Date: 10/16/25 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 10/16/25 Photographer: EMH Description: West Directional



Photo: 008 Date: 10/16/25 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 10/16/25 Photographer: EMH Description: Site

Photo: 010 Date: 10/16/25 Photographer: EMH Description: Monitor

Photo: 011 Date: _____ Photographer: _____ Description: _____

Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O₃	--	2-15	2-15	2-15	2-15
SO₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15



Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

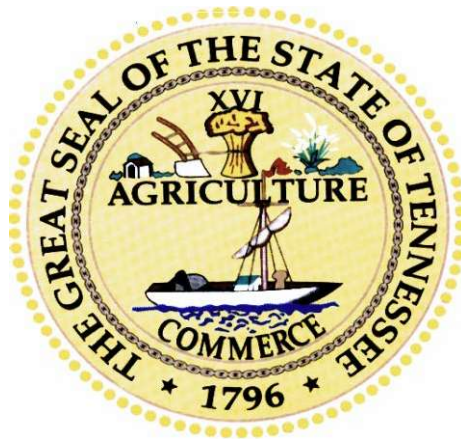
QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 04/02/2026 **Location:** Columbia, TN
AQS Number: 47-119-2007
Site Name: Columbia PM **Pollutants:** PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin .  . EMH . Site Specialist

2: _____

MONITORING SITE EVALUATION FORM

Site Name: Columbia PM Initials: EMH Date: 04/02/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 12:20 pm Departure Time: 1:00 pm Primary Operator: Hattie Benet

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside Date: _____

[Yes No] Police Report Filed

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic / Hardcopy / Both

Logbooks at site:

[Yes No] Electronic / Hardcopy / Both

Comments: Hard copy logbook on site; last entry 4/2/24

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
PM2.5	Met One	BAM 1022	C19066

Comments: _____

Site Name: Columbia PM Initials: EMH Date: 04/02/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93330095011016	Modem	Main

OUTDOOR SAMPLERS

Not Present

Yes No] **Locked** [Yes No] **Electrically Grounded** [Yes No] **Stabilized** [Yes No] **Clean Inside**

Yes No] **Head/Separator Clean**

Operator / Log: VSCC/WINS Clean Schedule: 1/30 days PM₁₀ Head Clean Schedule: 1/30 days

Comments: _____

COLLOCATED SAMPLERS: Not Present

(39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
PM2.5	2.6	Ground	NA	NA	Neighborhood	Neighborhood

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂) & (2 meters for PM, Pb)
 When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Columbia PM

Initials: EMH

Date: 04/02/2026

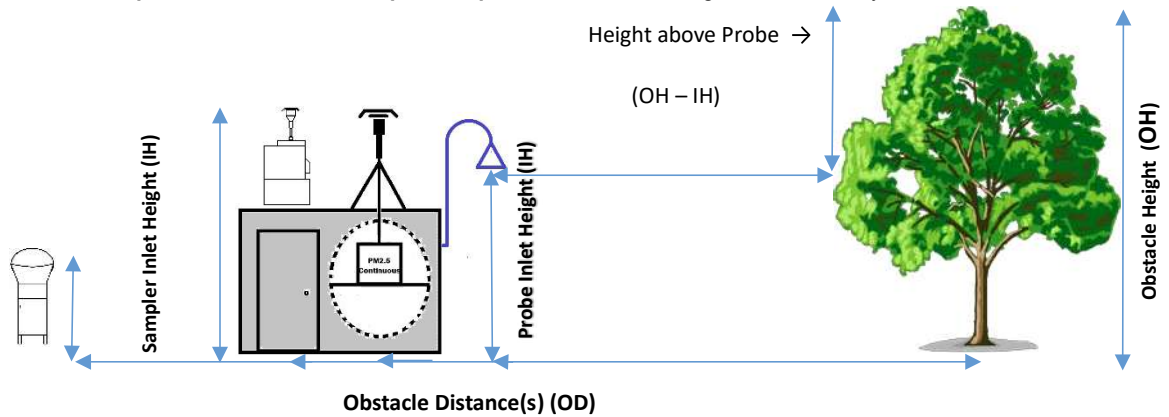
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 11/22/2024

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq 2*(OH-IH)$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Trees	5.4	2.6	5.6	15.0	No	72
2	Tree	6.8	2.6	8.4	14.0	No	94
3	Trees	8.0	2.6	10.8	13.5	No	116
4	Trees	8.5	2.6	11.8	14.0	No	143
5	Building	5.2	2.6	5.2	47.8	No	257
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Columbia PM Initials: EMH Date: 04/02/2026

TREE DRIPLINE(s): 11.8 meters (nearest inlet to dripline) No Trees Present
12.0 meters (nearest inlet to dripline) Not Present
13.0 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **must be 10 meters** from the dripline when the tree(s) act as an obstruction.

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

Comments: None _____

Additional Information:

Tree drip line for Object #1 is 14.0 meters from inlet.

Tree drip line for Object #2 is 13.0 meters from inlet.

Tree drip line for Object #3 is 12.0 meters from inlet.

Tree drip line for Object #4 is 11.8 meters from inlet.

None of the trees are obstructions and drip lines are greater than 10 meters from the PM inlet.

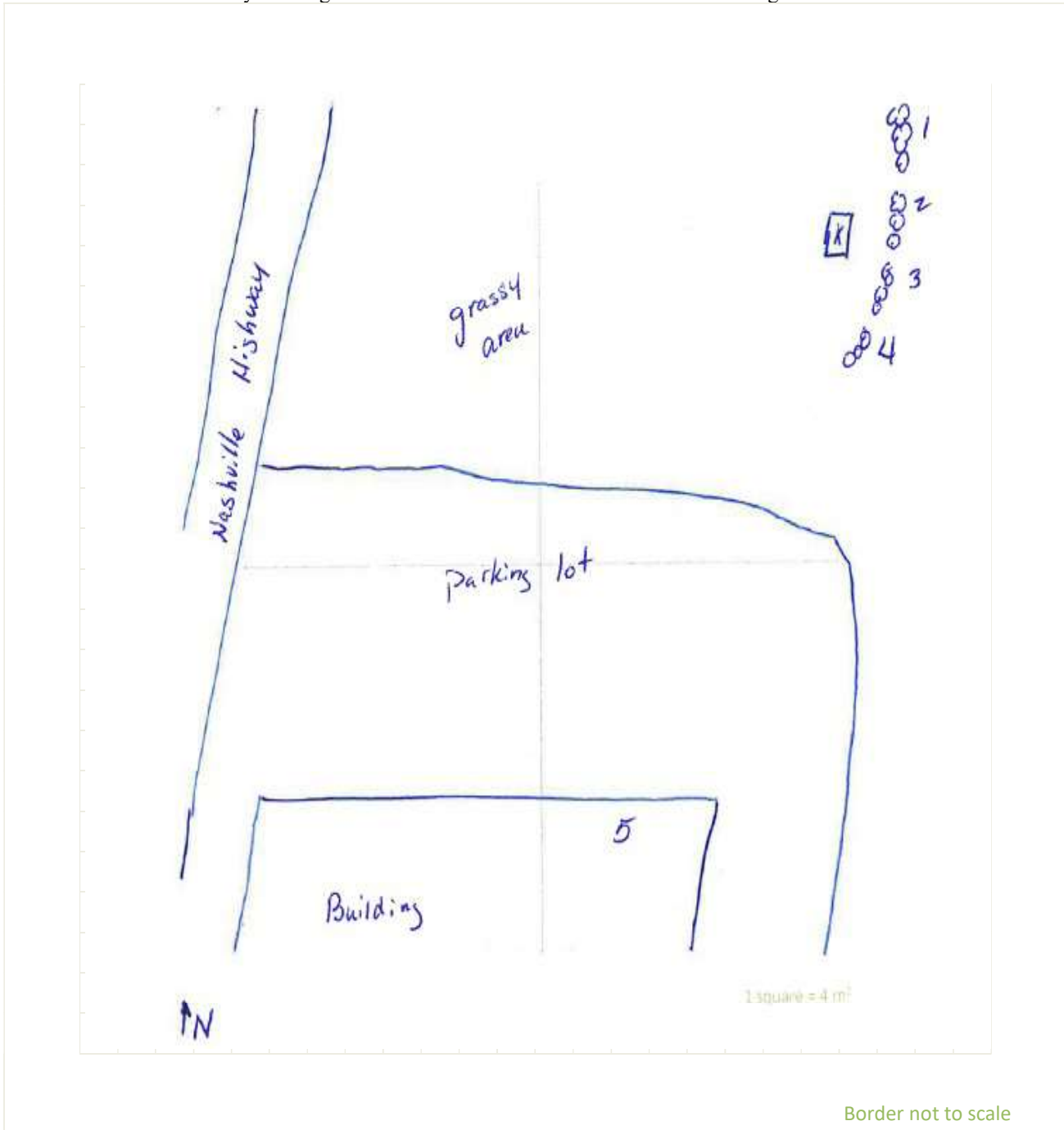
Site Name: Columbia PM

Initials: EMH

Date: 04/02/2026

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: > 270°. Estimated Degrees of Clearance

Must have unrestricted airflow **270 degrees** around the probe or sampler; **180 degrees** if the probe is on the **side of a building** or a wall.

PHOTO LOG: Site Name: Columbia PM Initials: EMH Date: 04/02/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 04/02/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 04/02/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 04/02/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 04/02/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 04/02/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 04/02/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 04/02/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 04/02/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 04/02/26 Photographer: EMH Description: Site



Photo: 010 Date: 04/02/26 Photographer: EMH Description: Monitor



Photo: 011 Date: 04/02/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O₃	--	2-15	2-15	2-15	2-15
SO₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

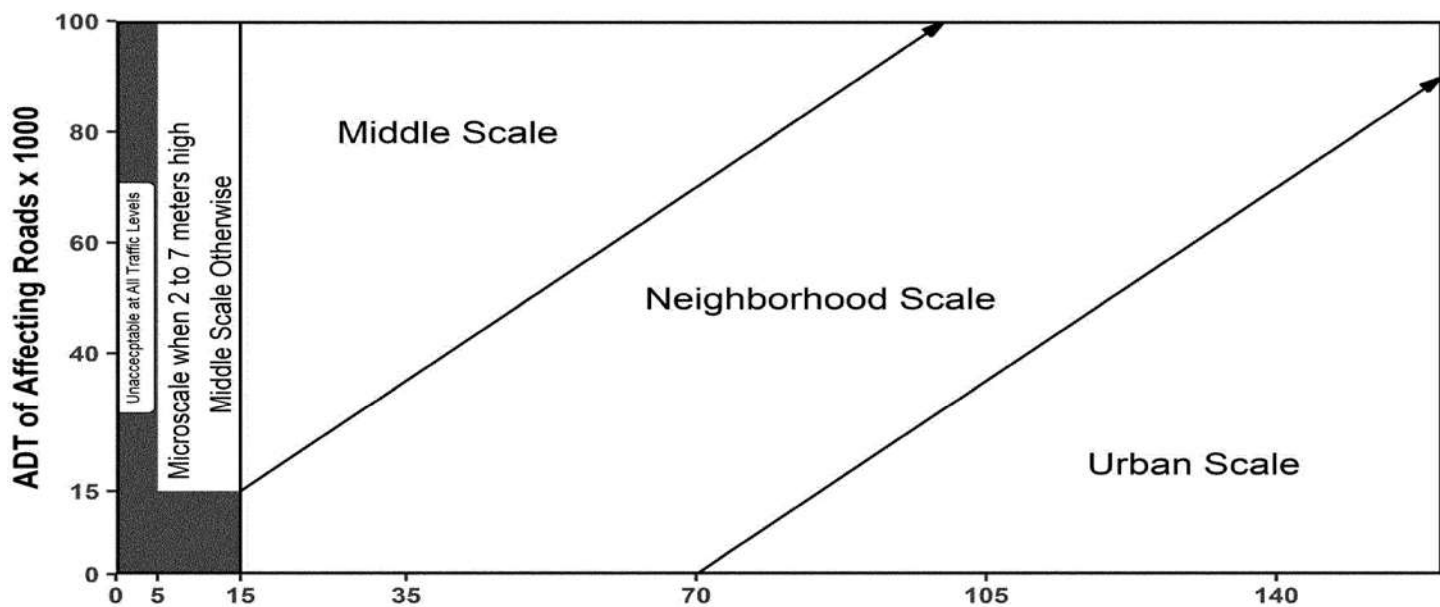


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 04/08/2026 **Location:** Clarksville, TN
AQS Number: 47-125-2001
Site Name: Clarksville PM **Pollutants:** PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

MONITORING SITE EVALUATION FORM

Site Name: Clarksville PM Initials: EMH Date: 04/08/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 10.05 am Departure Time: 10:35 am Primary Operator: John Helton

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside Date: _____

[Yes No] Police Report Filed

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic / Hardcopy / Both

Logbooks at site:

[Yes No] Electronic / Hardcopy / Both

Comments: Hard copy logbook; last entry 7/21/25

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
PM2.5	Met One	BAM 1022	C19066

Comments: _____

Site Name: Clarksville PM Initials: EMH Date: 04/08/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93610254021016	Modem	Main

OUTDOOR SAMPLERS

Not Present

Yes No] **Locked** [Yes No] **Electrically Grounded** [Yes No] **Stabilized** [Yes No] **Clean Inside**

[Yes No] **Head/Separator Clean**

Operator / Log: VSCC/WINS Clean Schedule: 1/30 days PM₁₀ Head Clean Schedule: 1/30 days

Comments: _____

COLLOCATED SAMPLERS: Not Present

(39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
PM2.5	2.6	Ground	NA	NA	Neighborhood	Neighborhood

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂) & (2 meters for PM, Pb)

When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Clarksville PM

Initials: EMH

Date: 04/08/2026

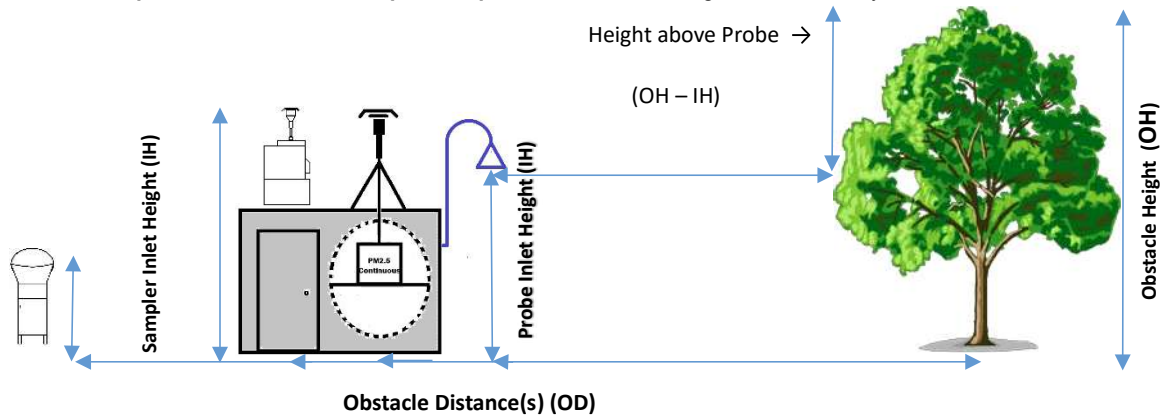
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 07/11/2025

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	School	14.6	2.6	24.0	148.2	No	218
2	Trees	20.5	2.6	35.8	128.0	No	1
3	Trees	21.0	2.6	36.8	116.0	No	32
4	Apartment	6.4	2.6	7.6	64.6	No	65
5	Apartment	6.0	2.6	6.8	64.6	No	82
6	Trees	16.2	2.6	27.2	60.0	No	117
7	Trees	16.8	2.6	28.4	50.0	No	189
8	Trees	18.4	2.6	31.6	47.0	No	229
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Clarksville PM Initials: EMH Date: 04/08/2026

TREE DRIPLINE(s): 47.0 meters (nearest inlet to dripline) **No Trees Present**
50.0 meters (nearest inlet to dripline) Not Present
60.0 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **must be 10 meters** from the dripline when the tree(s) act as an obstruction.

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

Comments: None _____

Additional Information:

The closest tree to the PM inlet is greater than 20 meters; therefore there are no tree dripline issues.

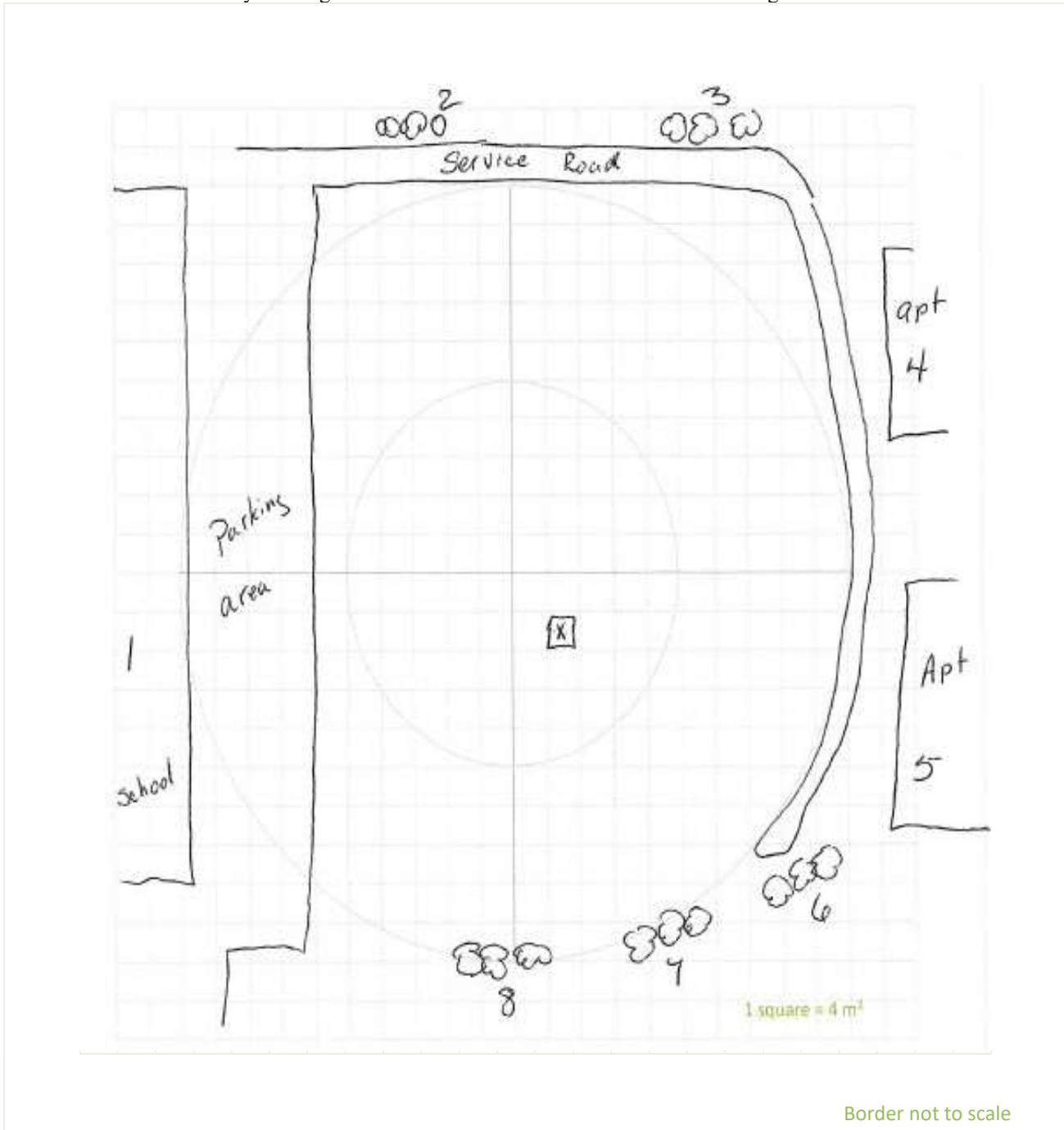
Site Name: **Clarksville PM**

Initials: **EMH**

Date: **04/08/2026**

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: >270 ° Estimated Degrees of Clearance

Must have unrestricted airflow **270 degrees** around the probe or sampler; **180 degrees** if the probe is on the **side of a building** or a wall.

PHOTO LOG: Site Name: Clarksville PM Initials: EMH Date: 04/08/2026

Camera [APC / Personal – Owner: _____] Make/Model: I phone

Photo: **001** Date: 04/08/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 04/08/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 04/08/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 04/08/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 04/08/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 04/08/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 04/08/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 04/08/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 04/08/26 Photographer: EMH Description: Site



Photo: 010 Date: 04/08/26 Photographer: EMH Description: Monitor



Photo: 011 Date: 04/08/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O₃	--	2-15	2-15	2-15	2-15
SO₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

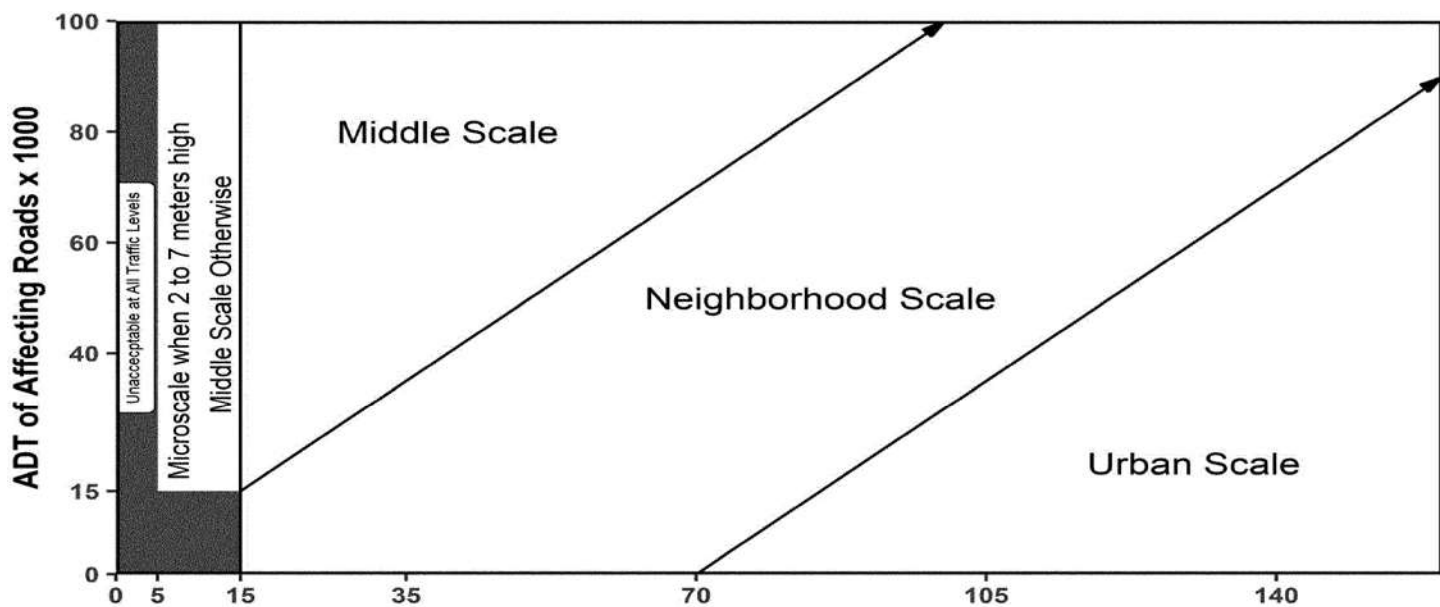


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.


**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 03/25/2026 **Location:** Cookeville, TN
AQS Number: 47-141-0006
Site Name: Cookeville PM (Cane Creek) **Pollutants:** PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin .  . EMH . Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Site Name: Cookeville PM (Cane Creek) Initials: EMH Date: 03/25/2026

Site meets EPA siting criteria: Yes No

If no, explain:

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
West Jackson Street	245.5 meters	N	Local Street	9942	2025

Electrical

Utility Company: Clarksville Utility District Meter Number: 52071

Additional Comments:

1. Arrival and departure times are Central time.
 2. Jason Stephens and Justin Brown were installing new BAM at new site, while the site evaluation was conducted.
-
-
-
-
-
-
-
-
-
-

MONITORING SITE EVALUATION FORM

Site Name: Cookeville PM (Cane Creek) Initials: EMH Date: 03/25/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y/ N] Completed

Arrival Time: 12:45 pm Departure Time: 1:30 pm Primary Operator: Justin Brown

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside Date: _____

[Yes No] Police Report Filed

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No]Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:

[Yes No] Electronic/ Hardcopy/ Both

Comments: Hard copy logbook on site.

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
PM2.5	Met One	BAM 1022	C19052

Comments: _____

Site Name: Cookeville PM (Cane Creek) Initials: EMH Date: 03/25/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R91110007021009	Modem	Main

OUTDOOR SAMPLERS

Not Present

Yes No] **Locked** [Yes No] **Electrically Grounded** [Yes No] **Stabilized** [Yes No] **Clean Inside**

Yes No] **Head/Separator Clean**

Operator / Log: VSCC/WINS Clean Schedule: 1/30 days PM₁₀ Head Clean Schedule: 1/30 days

Comments: _____

COLLOCATED SAMPLERS:

Not Present

(39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
PM2.5	2.7	Ground	NA	NA	Neighborhood	Neighborhood

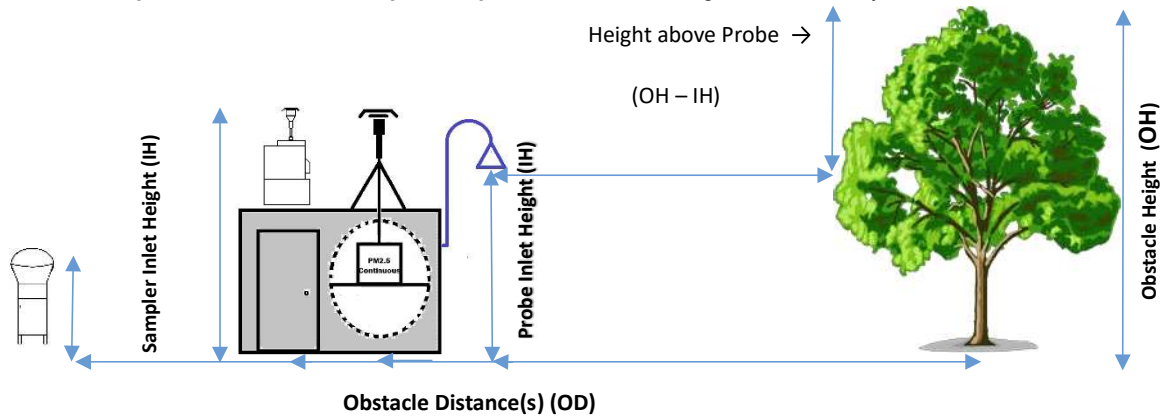
FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂) & (2 meters for PM, Pb)

When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Aerial Photo with Wind Rose



OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq 2*(OH-IH)$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	School	4.0	2.7	2.6	63.0	No	307
2	Trees	23.4	2.7	41.4	75.0	No	234
3	Trees	31.0	2.7	56.6	100.0	No	193
4	Trees	23.0	2.7	40.6	82.0	No	175
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Cookeville PM (Cane Creek) Initials: EMH Date: 03/25/2026

TREE DRIPLINE(s): 75.0 meters (nearest inlet to dripline) **No Trees Present**
82.0 meters (nearest inlet to dripline) Not Present
100.0 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **must be 10 meters** from the dripline when the tree(s) act as an obstruction.

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

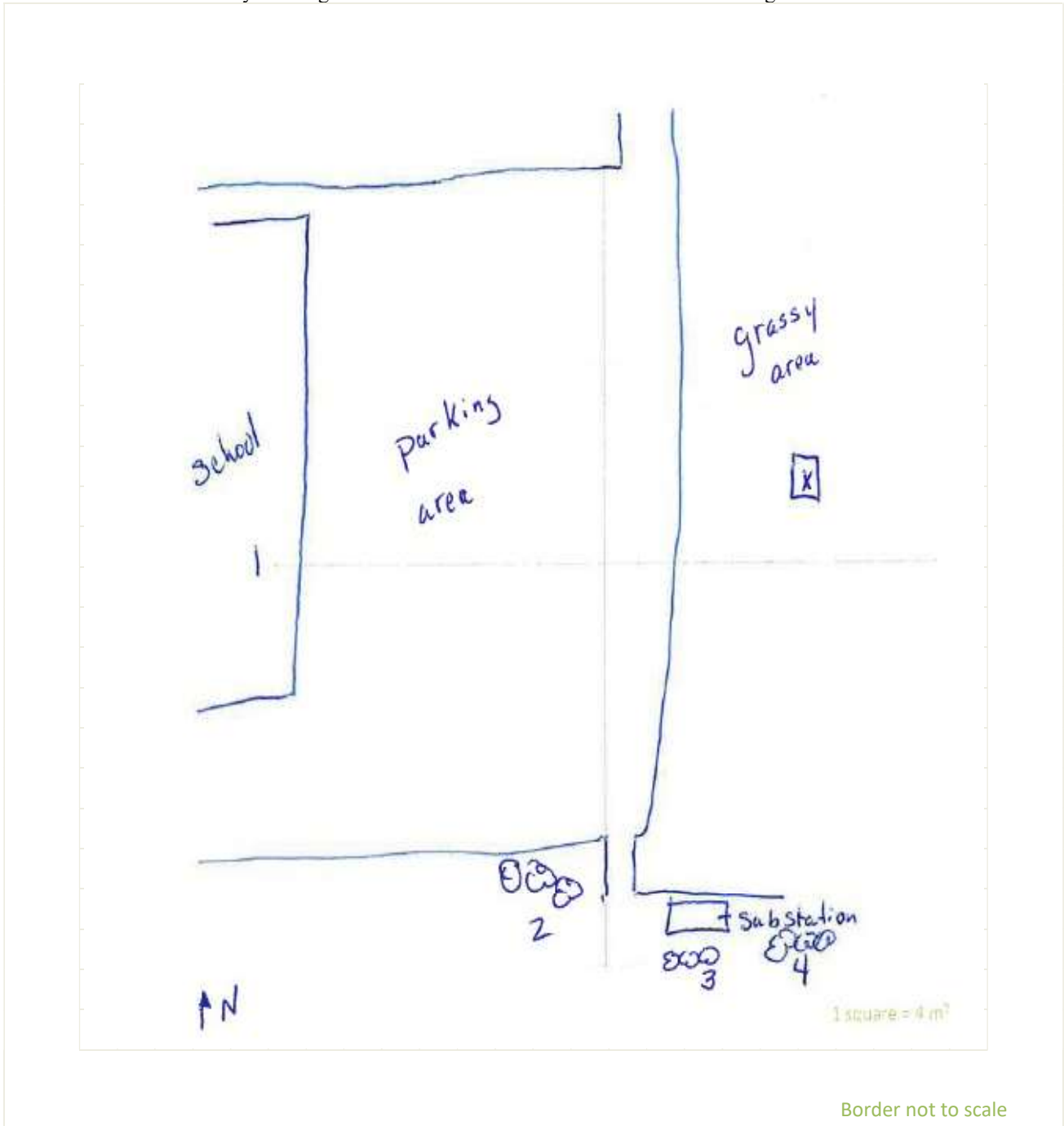
Comments: None _____

Additional Information:

The closest tree is > 20 meters from the PM inlet; therefore there are no tree
dripline issues.

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: >270 ° Estimated Degrees of Clearance

Must have continuous unrestricted airflow **270 degrees** around the probe or sampler; **180 degrees** if the probe is on the **side of a building** or a wall.

PHOTO LOG: Site Name: Cookeville PM (Cane Creek) Initials: EMH Date: 03/25/2026

Camera [APC / Personal – Owner: _____] Make/Model: IPhone

Photo: **001** Date: 03/25/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 03/25/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 03/25/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 03/25/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 03/25/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 03/25/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 03/25/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 03/25/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 03/25/26 Photographer: EMH Description: Site



Photo: 010 Date: 03/25/26 Photographer: EMH Description: Monitor



Photo: 011 Date: 03/25/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O₃	--	2-15	2-15	2-15	2-15
SO₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

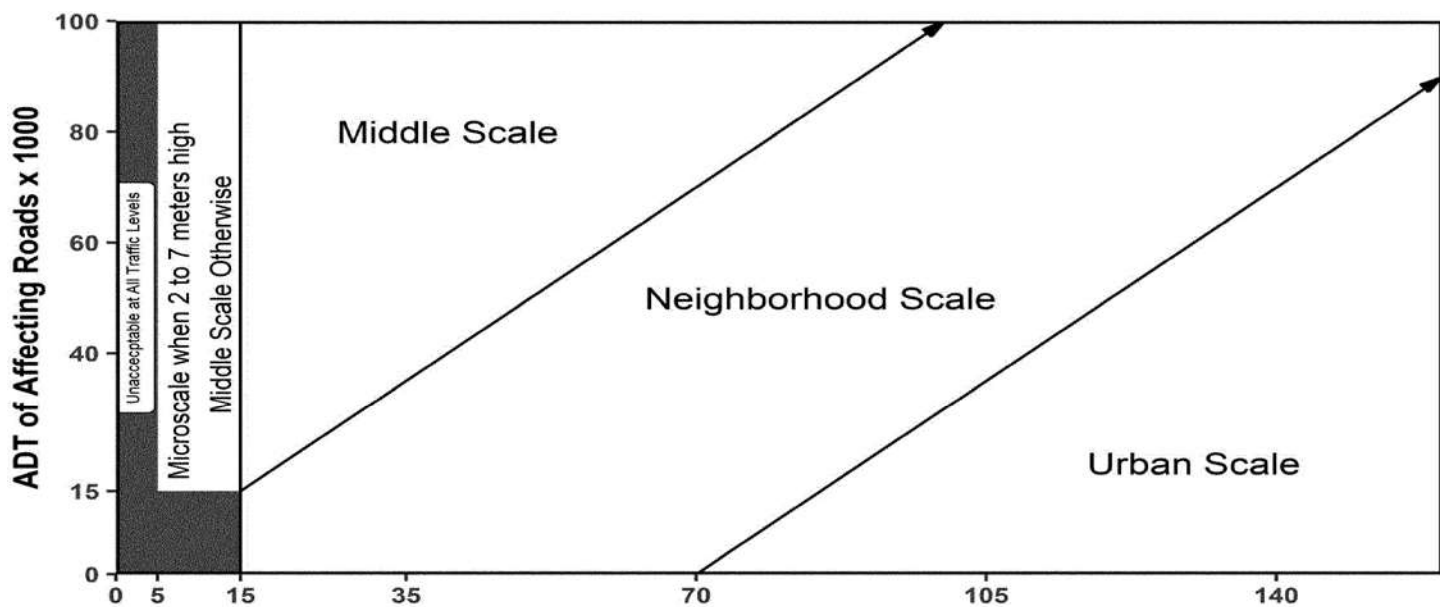


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
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1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.


**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 01/08/2026 **Location:** Harriman, TN
AQS Number: 47-145-0004
Site Name: Harriman PM **Pollutants:** PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Site Name: Harriman PM Initials: EMH Date: 01/08/2026

Site meets EPA siting criteria: Yes No

If no, explain:

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
Emory Drive	78.8 m	NE	Local Street	1487	2024
Clinton Street	75.6 m	S	Local Street	NA	NA
South Roane Street	121.0 m	NW	Local Street	11470	2024
Georgia Avenue	223.0 m	SW	Local Street	797	2024

Electrical

Utility Company: Harriman Utility Board Meter Number: 30530

Additional Comments:

1. Arrival and departure times are Eastern standard time.
 2. Purple Air sensor present at site.
 3. A plume of smoke noted SE of site during calibration/site evaluation.
-
-
-
-
-
-
-
-
-
-
-

MONITORING SITE EVALUATION FORM

Site Name: Harriman PM Initials: EMH Date: 01/08/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y/ N] Completed

Arrival Time: 12:00 pm Departure Time: 1:00 pm Primary Operator: Stephen Thompson

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside Date: _____

[Yes No] Police Report Filed

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No]Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:

[Yes No] Electronic/ Hardcopy/ Both

Comments: Hard copy logbook on site; last entry 4/2/24

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
PM2.5	Met One	BAM 1022	C20218

Comments: _____

Site Name: Harriman PM Initials: EMH Date: 01/08/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R9110046011009	Modem	Main

OUTDOOR SAMPLERS

Not Present

Yes No] **Locked** [Yes No] **Electrically Grounded** [Yes No] **Stabilized** [Yes No] **Clean Inside**

[Yes No] **Head/Separator Clean**

Operator / Log: VSCC/WINS Clean Schedule: 1/30 PM₁₀ Head Clean Schedule: 1/30

Comments: _____

COLLOCATED SAMPLERS: Not Present

(39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
PM2.5	2.6	Ground	NA	NA	Urban	Urban

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂) & (2 meters for PM, Pb)
 When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Harriman PM

Initials: EMH

Date: 01/08/2026

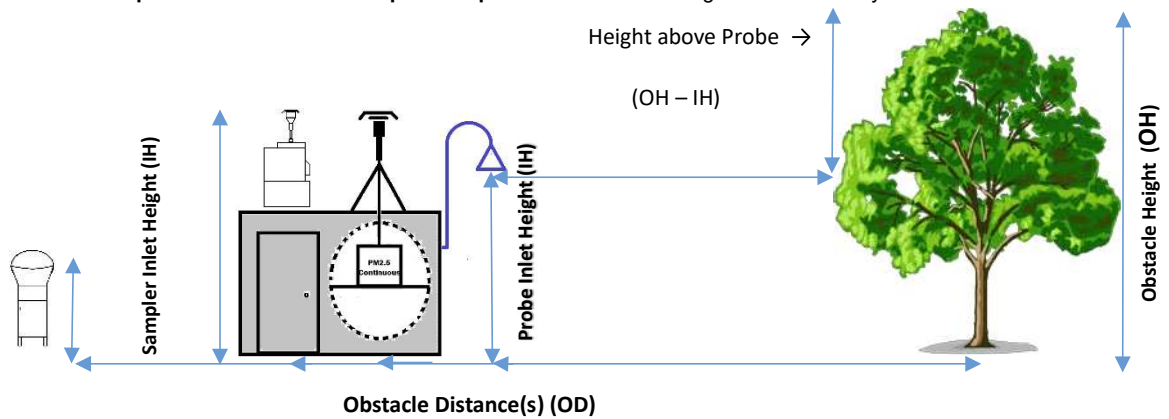
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 02/28/2025

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Building	6.8	2.6	8.4	110.0	No	17
2	Church	8.4	2.6	11.6	57.0	No	48
3	Tree	10.0	2.6	14.8	46.0	No	59
4	Tree	11.8	2.6	18.4	52.0	No	80
5	Tree	15.8	2.6	26.4	52.0	No	130
6	Trees	17.5	2.6	29.8	72.0	No	145
7	Tree	26.4	2.6	47.6	82.0	No	166
8	School	7.2	2.6	9.2	38.0	No	293
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the **SITE DRAWING** (next page)

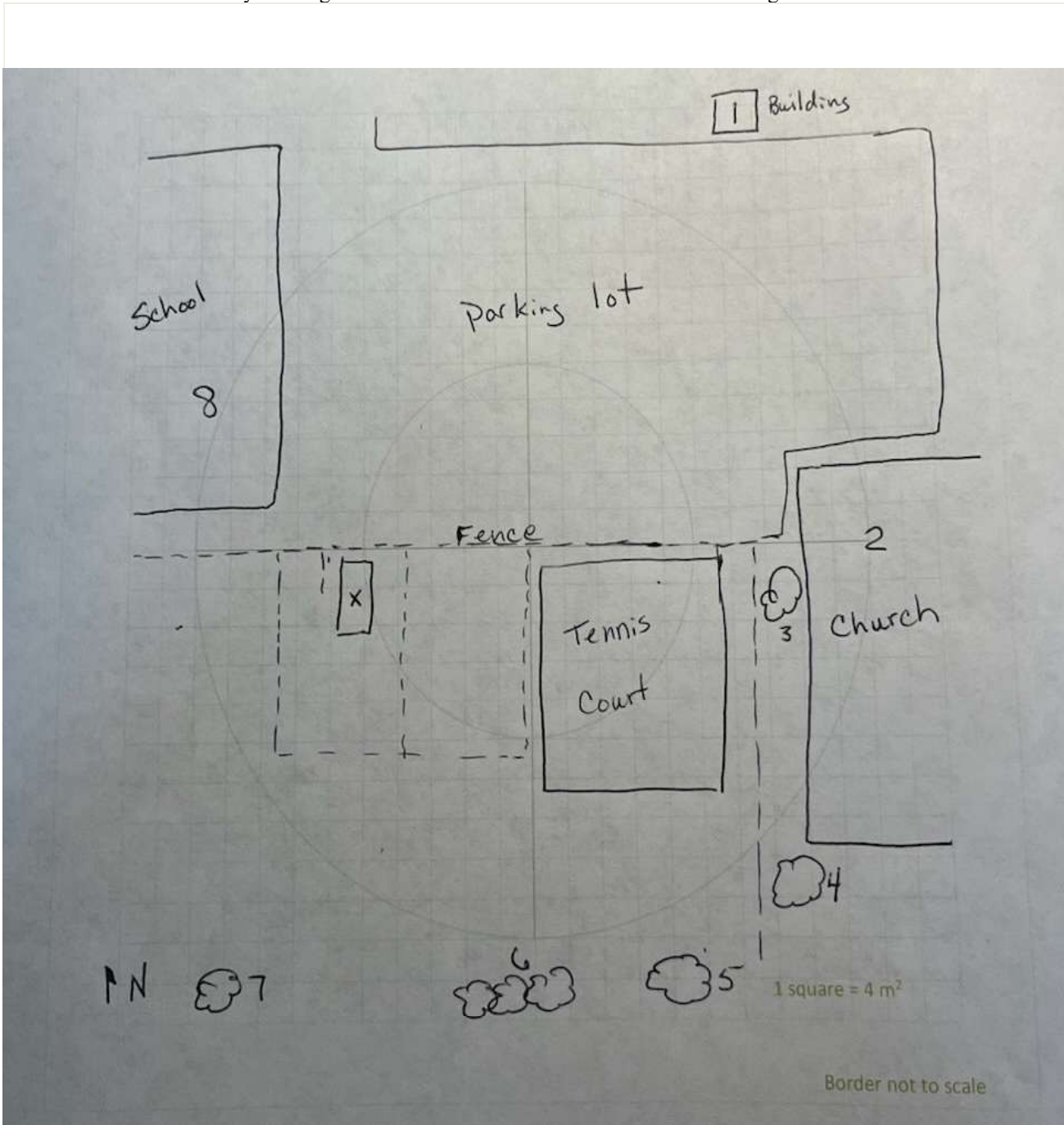
Site Name: **Harriman PM**

Initials: **EMH**

Date: **01/08/2026**

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: > 270°. Estimated Degrees of Clearance

Must have unrestricted airflow **270 degrees** around the probe or sampler; **180 degrees** if the probe is on the **side of a building** or a wall.

PHOTO LOG: Site Name: Harriman PM Initials: EMH Date: 01/08/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 01/08/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 01/08/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 01/08/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 01/08/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 01/08/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 01/08/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 01/08/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 01/08/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 01/08/26 Photographer: EMH Description: Site



Photo: 010 Date: 01/08/26 Photographer: EMH Description: Monitor



Photo: 011 Date: 01/08/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O₃	--	2-15	2-15	2-15	2-15
SO₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

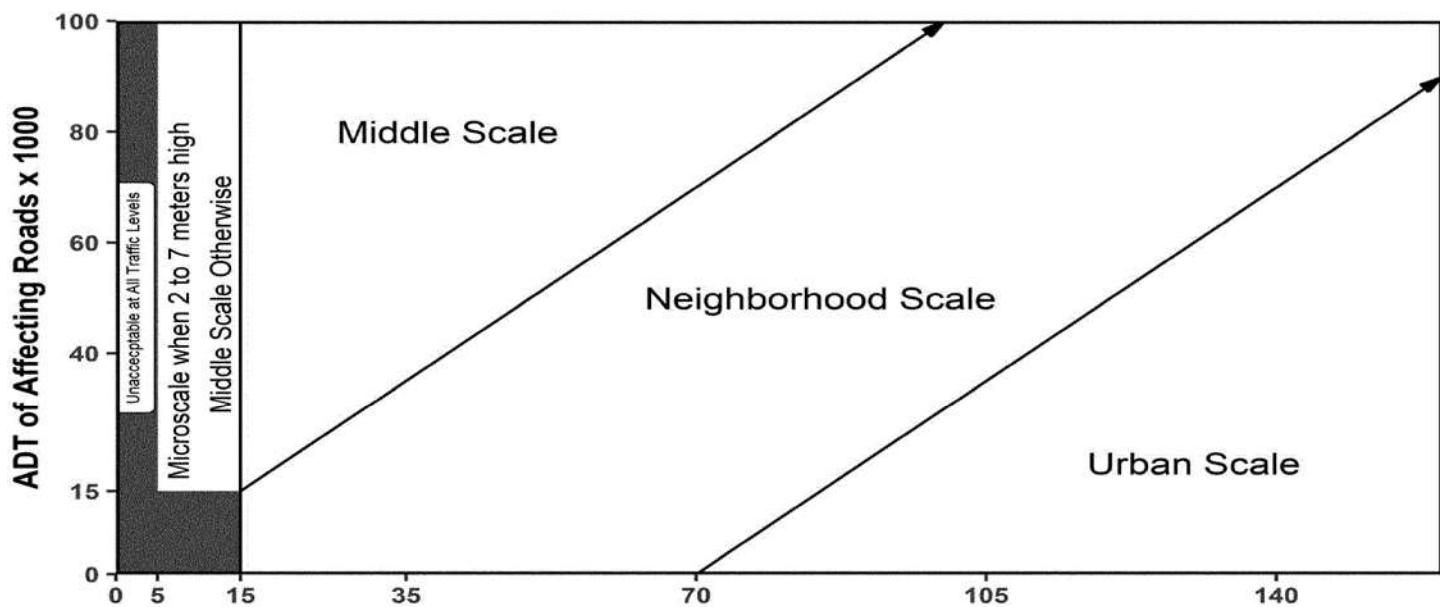


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 04/16/2026 **Location:** Kingsport, TN
AQS Number: 47-163-1007
Site Name: Kingsport PM **Pollutants:** PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

MONITORING SITE EVALUATION FORM

Site Name: Kingsport PM Initials: EMH Date: 04/16/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y/ N] Completed

Arrival Time: 10:25 am Departure Time: 12:00 pm Primary Operator: Daniel Bowers

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside Date: _____

[Yes No] Police Report Filed

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No]Needs Maintenance

Comments: Several boards need replacing.

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:

[Yes No] Electronic/ Hardcopy/ Both

Comments: Hard copy logbook on site; last entry 3/14/24

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
PM2.5	Met One	BAM 1022	C20238

Comments: _____

Site Name: Kingsport PM Initials: EMH Date: 04/16/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R9333002311016	Modem	Main

OUTDOOR SAMPLERS

Not Present

Yes No] **Locked** [Yes No] **Electrically Grounded** [Yes No] **Stabilized** [Yes No] **Clean Inside**

Yes No] **Head/Separator Clean**

Operator / Log: VSCC/WINS Clean Schedule: 1/ 30 days PM₁₀ Head Clean Schedule: 1 / 30 days

Comments: _____

COLLOCATED SAMPLERS: Not Present

(39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
PM2.5	2.7	Ground	NA	NA	Urban	Urban

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂) & (2 meters for PM, Pb)
 When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Kingsport PM

Initials: EMH

Date: 04/16/2026

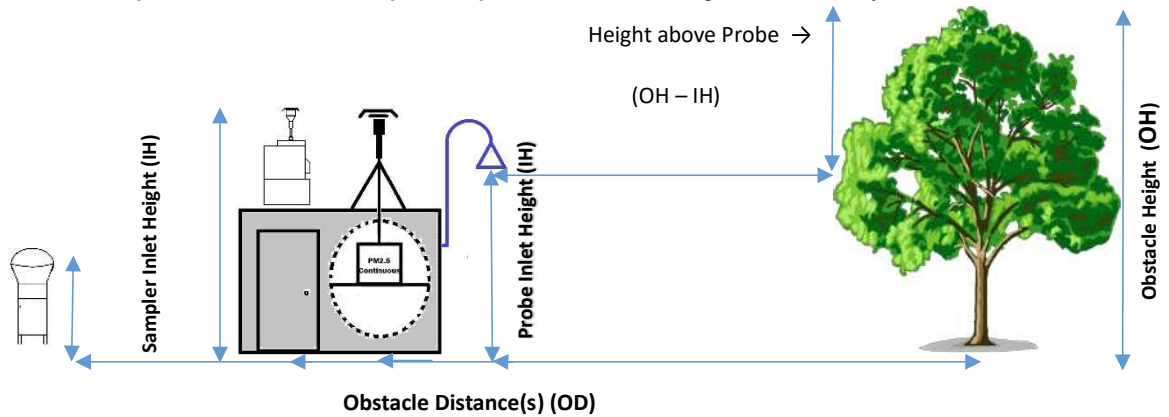
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 05/04/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Shrubs	1.8	2.7	NA	10.8	No	13
2	Shrubs	12.5	2.7	NA	10.8	No	12
3	Tree	10.6	2.7	15.8	30.8	No	36
4	Tree	8.2	2.7	11.0	15.0	No	41
5	Tree	4.8	2.7	4.2	18.6	No	61
6	Tree	13.6	2.7	21.8	24.2	No	99
7	Shrubs	5.8	2.7	6.2	16.0	No	243
8	Tree	8.8	2.7	12.2	26.0	No	220
9	Tree	11.0	2.7	16.6	17.6	No	297
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the **SITE DRAWING** (next page)

Site Name: Kingsport PM Initials: EMH Date: 04/16/2026

TREE DRIPLINE(s): 8.4 meters (nearest inlet to dripline) **No Trees Present**
10.8 meters (nearest inlet to dripline) Not Present
11.9 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **must be 10 meters** from the dripline when the tree(s) act as an obstruction.

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

Comments: None _____

Additional Information:

Objects # 1 and 2 (shrubs) were 8.4 and 10.8 meters from the PM inlet and were below the PM inlet height; therefore no tree dripline issues.

Object #9 (Tree) is not considered an obstruction and had a dripline 11.9 meters from PM inlet.

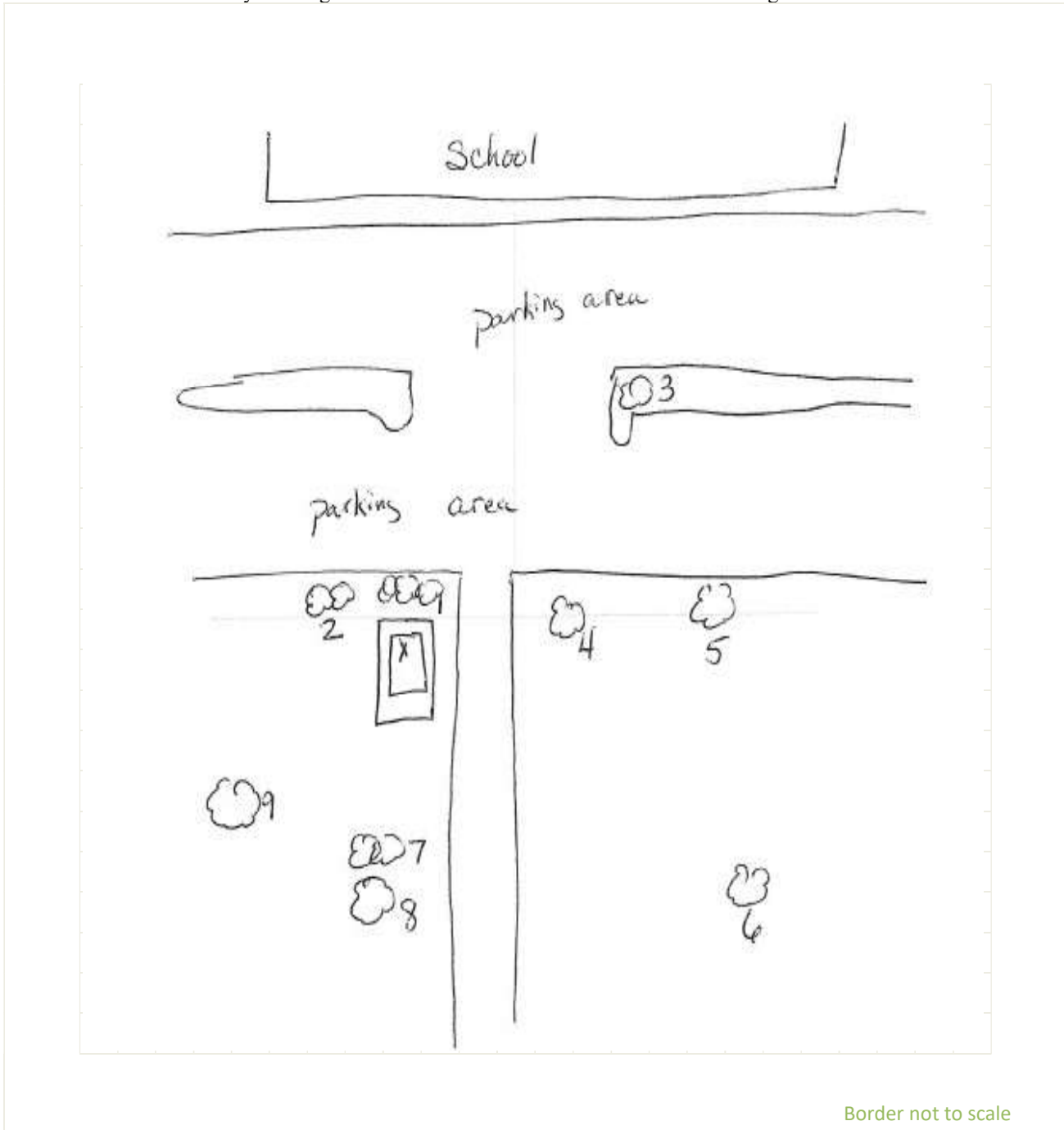
Site Name: **Kingsport PM**

Initials: **EMH**

Date: **04/16/2026**

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



Border not to scale

UNRESTRICTED AIR FLOW: >270 ° Estimated Degrees of Clearance

Must have unrestricted airflow **270 degrees** around the probe or sampler; **180 degrees** if the probe is on the **side of a building** or a wall.

PHOTO LOG: Site Name: Kingsport PM Initials: EMH Date: 04/16/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 04/16/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 04/16/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 04/16/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 04/16/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 04/16/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 04/16/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 04/16/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 04/16/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 04/16/26 Photographer: EMH Description: Site



Photo: 010 Date: 04/16/26 Photographer: EMH Description: Monitor



Photo: 011 Date: 04/16/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O₃	--	2-15	2-15	2-15	2-15
SO₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

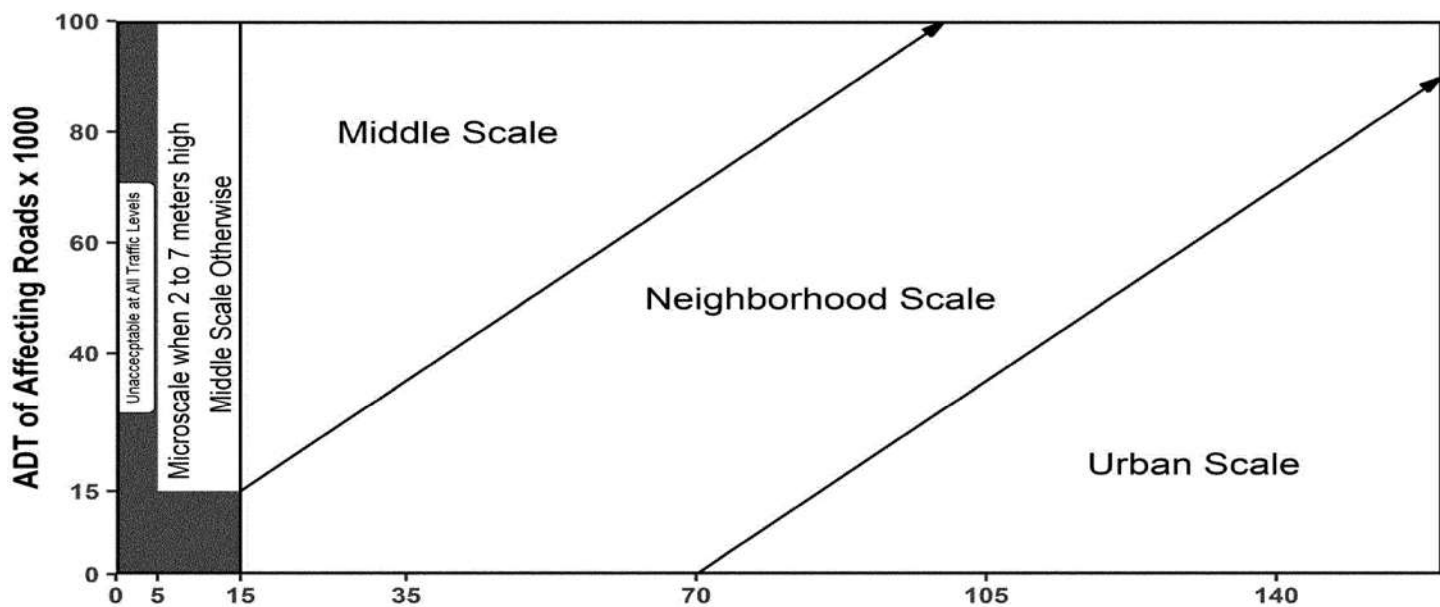


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
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0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

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Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.


**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 04/15/2026 **Location:** Kingsport, Tennessee
AQS Number: 47-163-2002
Site Name: Blountville O3 **Pollutants:** O3

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Local Site Name: Blountville O3 Initials: EMH Date: 04/15/2026

Site meets EPA siting criteria: Yes No

If no, explain:

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
Shawnee Drive	13.0 m	N	Local Street	NA	NA
Hill Road	174.4 m	E	Local Street	NA	NA
Memorial Blvd.	254.5	N	Local Street	6996	2025
Fall Creek Road	847.8	W	Local Street	2375	2025

Electrical

Utility Company: Appalachian Power Corporation Meter Number: 783638139

Additional Comments:

1. Arrival and departure times are Eastern times.
 2. Shelter temperature was 76 degrees F.
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

MONITORING SITE EVALUATION FORM (MSEF)

Site Name: Blountville O3 Initials: EMH Date: 04/15/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 1:45 pm Departure Time: 2:20 pm Primary Operator: Daniel Bowers

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut
[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____
[Yes No] Police Report Filed

Comments: _____

SHELTER – Not Present

Interior
Arrival Temperature: 25.4 °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat
[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: Fire extinguisher (good condition)

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]
Height of Roof: 3.0 meters Roofing Material: Steel w/ Duro-last single ply membrane

[Yes No] Needs Maintenance (specify) _____

[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing

Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:
[Yes No] Electronic/ Hardcopy/ Both

Comments: Hard copy logbook on site; last entry 3/27/24

Site Name: Blountville O3 Initials: EMH Date: 04/15/2026

MONITOR(s): Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
O3	Teledyne	T400	7271

CALIBRATOR(s): Not Present [Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date
Teledyne	T703	643	2/17/26	7/17/26

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Yes No] Calibrations (Not Required) [Yes No] Precision Checks (Required) [Yes No] Audits (Required)

Comments: _____

CYLINDER GAS STANDARDS: Not Present

VENDOR: _____ (PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number

Comments: _____

Site Name: Blountville O3 Initials: EMH Date: 04/15/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93740156011016	Modem	Main
Agilaire	8872	465	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

Yes No] Temperature Sensor [Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 SN# 1344

Yes No] Needs Service Last Service Date: 02/19/2026 Condition: Good

Comments: _____

Probe Line(s): [Replaced / Cleaned] – Frequency: 1/year Last Service Date: 02/19/2026

[Yes No] Clean [Yes No] Heated [Yes No] Insulated [Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

[Yes No] Locked [Yes No] Electrically Grounded [Yes No] Stabilized

[Yes No] Clean Inside [Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: _____ PM₁₀ Head Clean Schedule: _____

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: Blountville O3 Initials: EMH Date: 04/15/2026

PROBE SYSTEM(s): External **Not Present**

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] **Funnel Material:** [Teflon® / Glass / Stainless Steel]

Probe Line(s): [Teflon® / Other: _____] **Probe Fitting(s):** [Teflon® / Other: _____ / Not Present]

Residence Time: 6.16 seconds (20 sec. max) (Refer to chart for maximum line lengths)

Comments: Residence time worksheet completed 2/19/26

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	4.6	Side of Shelter	NA	NA	Neighborhood	Neighborhood

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)
 When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Blountville O3

Initials: EMH

Date: 04/15/2026

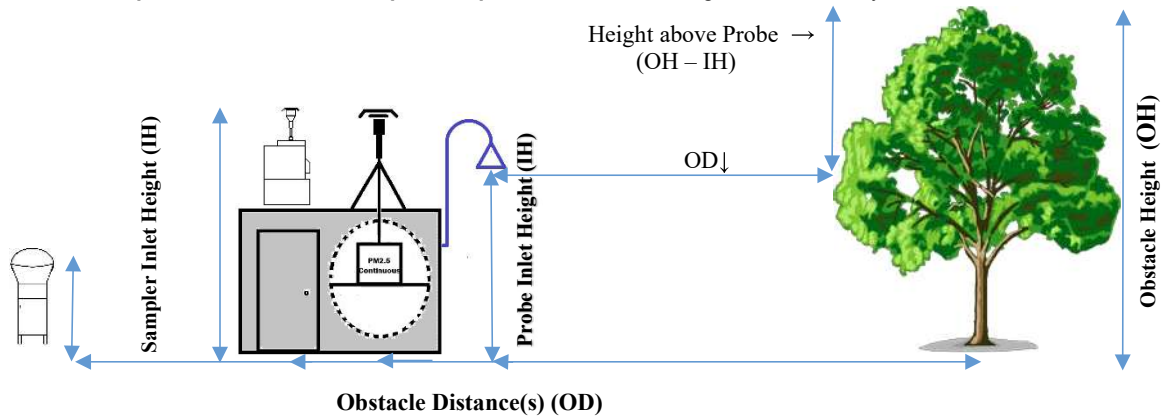
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 05/04/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	House	4.5	4.6	NA	36.0	No	19
2	Trees	18.8	4.6	28.4	36.6	No	91
3	Comm. Center	3.2	4.6	NA	13.2	No	128
4	Trees	18.2	4.6	27.2	43.2	No	294
5	Trees	10.8	4.6	12.4	22.6	No	316
6	Trees	13.8	4.6	18.4	34.0	No	338
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Blountville O3 Initials: EMH Date: 04/15/2026

TREE DRIPLINE(s): 22.6 meters (nearest inlet to dripline) No Trees Present
34.0 meters (nearest inlet to dripline) Not Present
36.6 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **dripline must be greater than 10 meters from inlet/probe.**

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

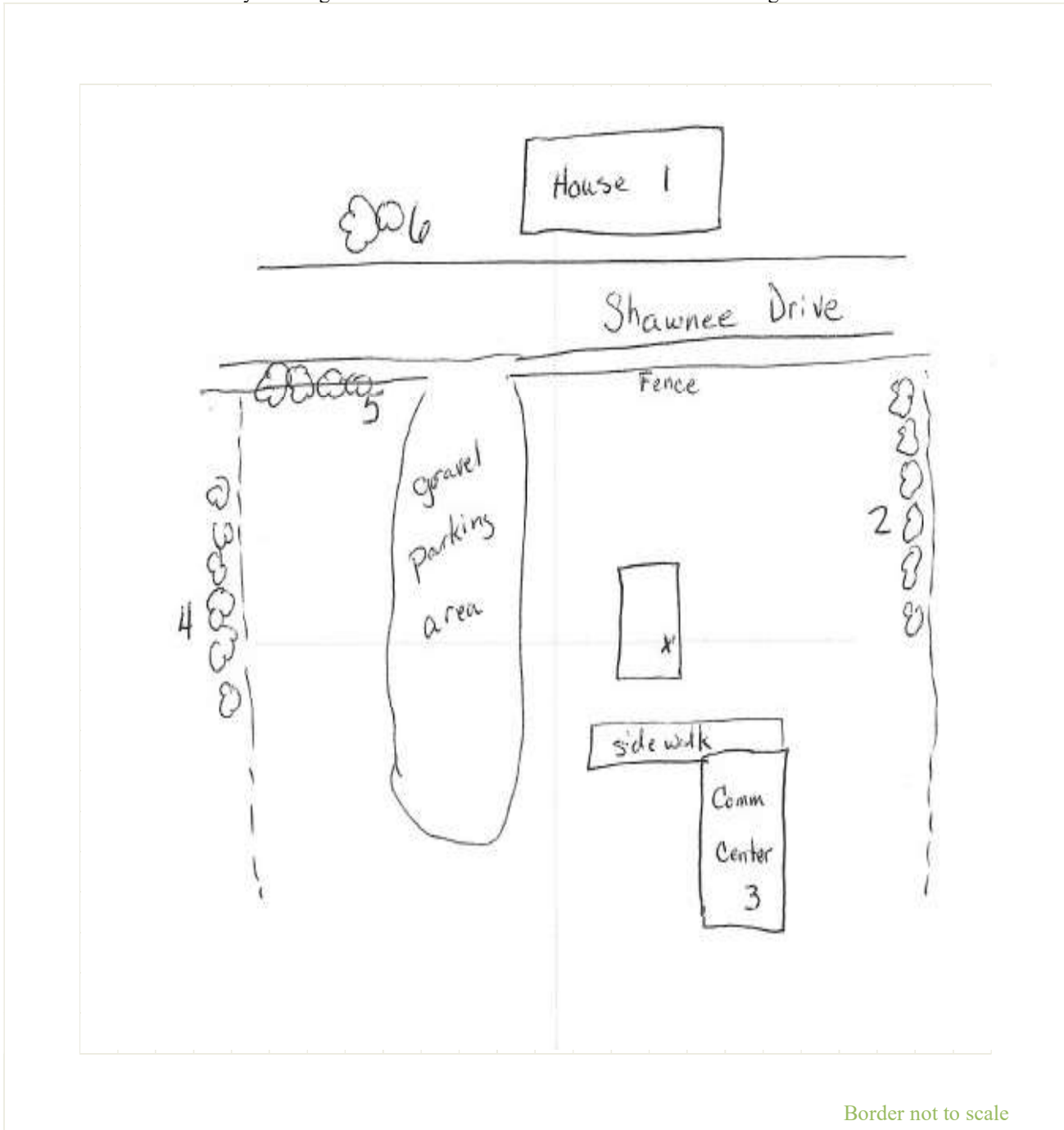
Comments: None _____

Additional Information:

The closest tree is greater than 20 meters from the O3 probe; therefore there are
no tree dripline issues.

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: > 270 ° Estimated Degrees of Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: Blountville O3 Initials: EMH Date: 04/15/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 04/15/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 04/15/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 04/15/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 04/15/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 04/15/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 04/15/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 04/15/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 04/15/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 04/15/26 Photographer: EMH Description: Site



Photo: 010 Date: 04/15/26 Photographer: EMH Description: Probe



Photo: 011 Date: 04/15/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
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≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

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PM, Pb	2-7	2-15	2-15	2-15	2-15

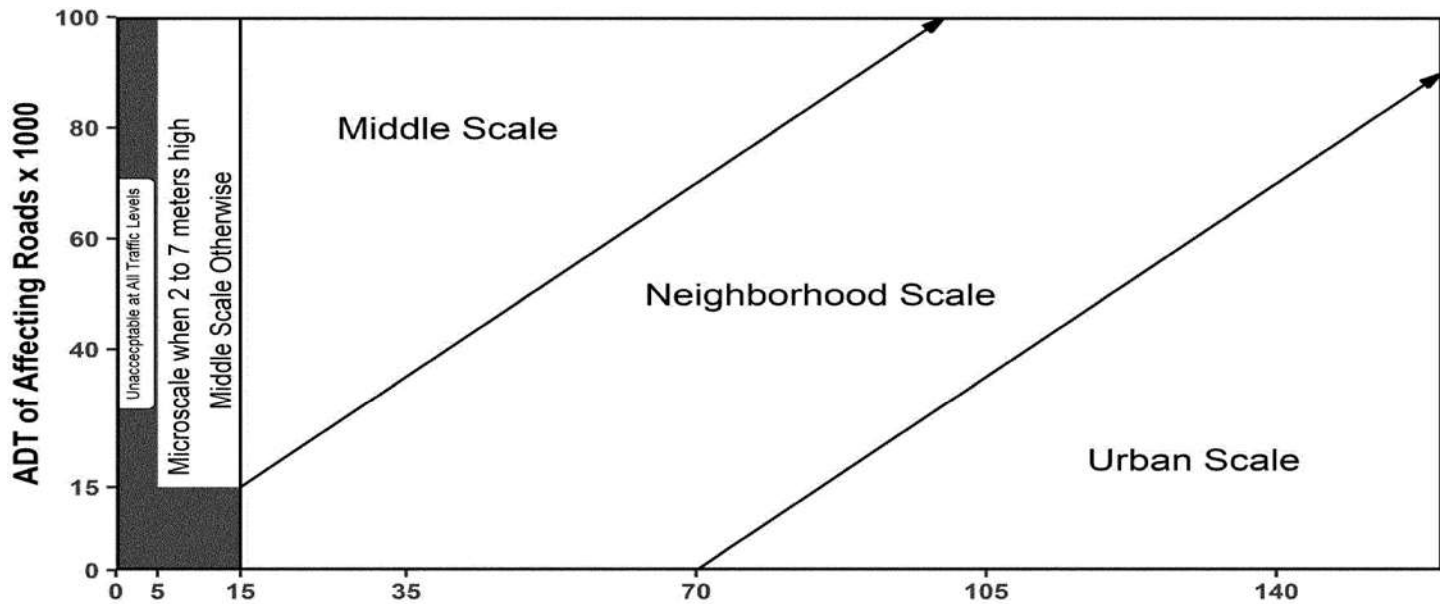


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
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Arrival Time: time auditors arrive at site

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Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

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Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

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Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

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Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 04/15/2026 **Location:** Kingsport, Tennessee
AQS Number: 47-163-2003
Site Name: Kingsport O3 **Pollutants:** O3

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Local Site Name: Kingsport O3 Initials: EMH Date: 04/15/2026

Site meets EPA siting criteria: Yes No

If no, explain:

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
Bloomington Road	240.0 m	N	Local Street	2245	2025
Packing House Road	198.0 m	E	Local Street	NA	NA
Kentron Drive	37.5	SE	Local Street	NA	NA
New Beason Well Road	445.0 m	W	Local Street	5960	2025

Electrical

Utility Company: Appalachian Power Corporation Meter Number: 784207275

Additional Comments:

1. Arrival and departure times are Eastern time.
 2. Shelter temperature was 76 degree F.
-
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MONITORING SITE EVALUATION FORM (MSEF)

Site Name: Kingsport O3 Initials: EMH Date: 04/15/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 3:05 pm Departure Time: 3:45 pm Primary Operator: Daniel Bowwers

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut
[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____
[Yes No] Police Report Filed

Comments: _____

SHELTER – Not Present

Interior
Arrival Temperature: 25.6 °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat
[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: Fire extinguisher (good condition)

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]
Height of Roof: 3.0 meters Roofing Material: Steel w/ Duro-last single ply membrane

[Yes No] Needs Maintenance (specify) _____

[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing

Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:
[Yes No] Electronic/ Hardcopy/ Both

Comments: Hard copy logbook on site; last entry 4/1/24

Site Name: Kingsport O3 Initials: EMH Date: 04/15/2026

MONITOR(s): _____ Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
O3	Teledyne	T400	7270

CALIBRATOR(s): Not Present [Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date
Teledyne	T703	1026	2/10/26	7/10/26

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Yes No] Calibrations [Yes No] Precision Checks [Yes No] Audits
(Not Required) (Required) (Required)

Comments: _____

CYLINDER GAS STANDARDS: Not Present

VENDOR: _____ (PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number

Comments: _____

Site Name: Kingsport O3 Initials: EMH Date: 04/15/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93610116021016	Modem	Main
Agilaire	8872	512	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

Yes No] Temperature Sensor Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 SN# 1348

Yes No] Needs Service Last Service Date: 02/13/2025 Condition: Good

Comments: _____

Probe Line(s): Replaced / Cleaned] – Frequency: 1/year Last Service Date: 02/20/2026

Yes No] Clean Yes No] Heated Yes No] Insulated Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

Yes No] Locked Yes No] Electrically Grounded Yes No] Stabilized

Yes No] Clean Inside Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: _____ PM₁₀ Head Clean Schedule: _____

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: Kingsport O3 Initials: EMH Date: 04/15/2026

PROBE SYSTEM(s): External Not Present

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] **Funnel Material:** [Teflon® / Glass / Stainless Steel]

Probe Line(s): [Teflon® / Other: _____] **Probe Fitting(s):** [Teflon® / Other: _____ / Not Present]

Residence Time: 6.46 seconds (20 sec. max) (Refer to chart for maximum line lengths)

Comments: Residence time worksheet 2/20/26

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	4.2	Side of Shelter	NA	NA	Neighborhood	Neighborhood

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)

When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Kingsport O3

Initials: EMH

Date: 04/15/2026

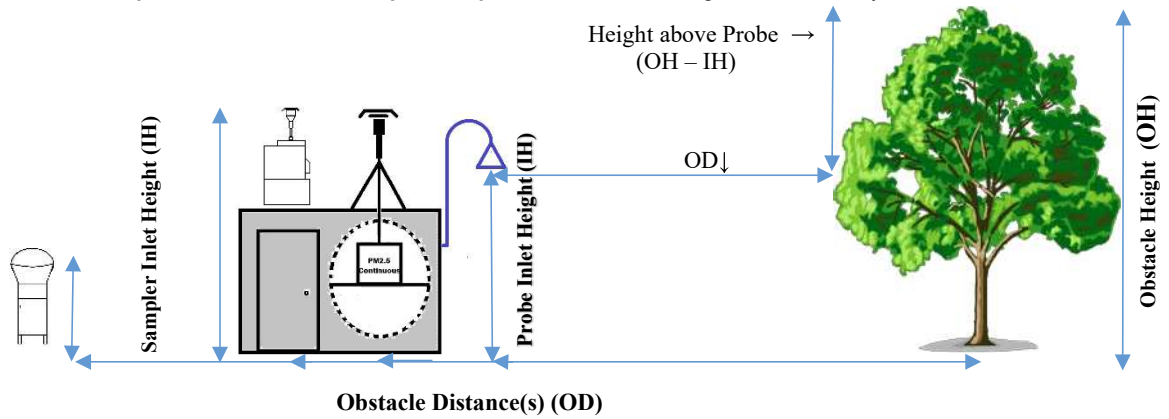
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 05/04/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	School	7.8	4.2	7.2	30.8	No	2
2	Shrubs	7.6	4.2	6.8	13.0	No	162
3	Shrubs	6.0	4.2	3.6	12.0	No	202
4	Trees	8.0	4.2	7.6	16.0	No	271
5	Trees	6.0	4.2	3.6	20.4	No	280
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Kingsport O3 Initials: EMH Date: 04/15/2026

TREE DRIPLINE(s): 12.0 meters (nearest inlet to dripline) No Trees Present
13.0 meters (nearest inlet to dripline) Not Present
16.0 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **dripline must be greater than 10 meters from inlet/probe.**

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

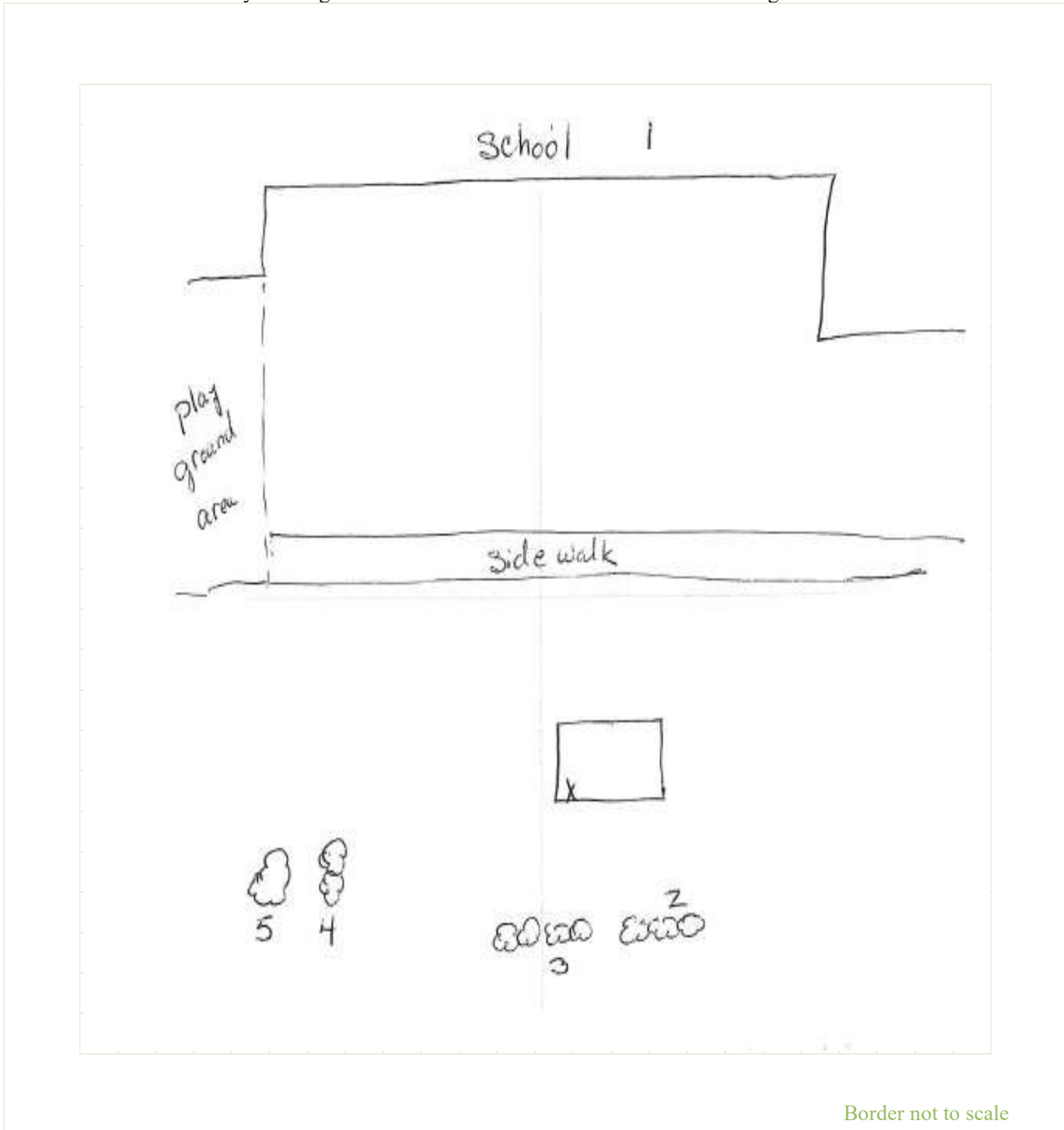
Comments: None _____

Additional Information:

Objects #2, 3 and 4 (shrubs and trees) are not obstructions and the tree dripline is
greater than 10 meters from the probe.

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



Border not to scale

UNRESTRICTED AIR FLOW: > 270 ° Estimated Degrees of Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: Kingsport O3 Initials: EMH Date: 04/15/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 04/15/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 04/15/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 04/15/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 04/15/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 04/15/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 04/15/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 04/15/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 04/15/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 04/15/26 Photographer: EMH Description: Site



Photo: 010 Date: 04/15/26 Photographer: EMH Description: Probe



Photo: 011 Date: 04/15/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O ₃	--	2-15	2-15	2-15	2-15
SO ₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

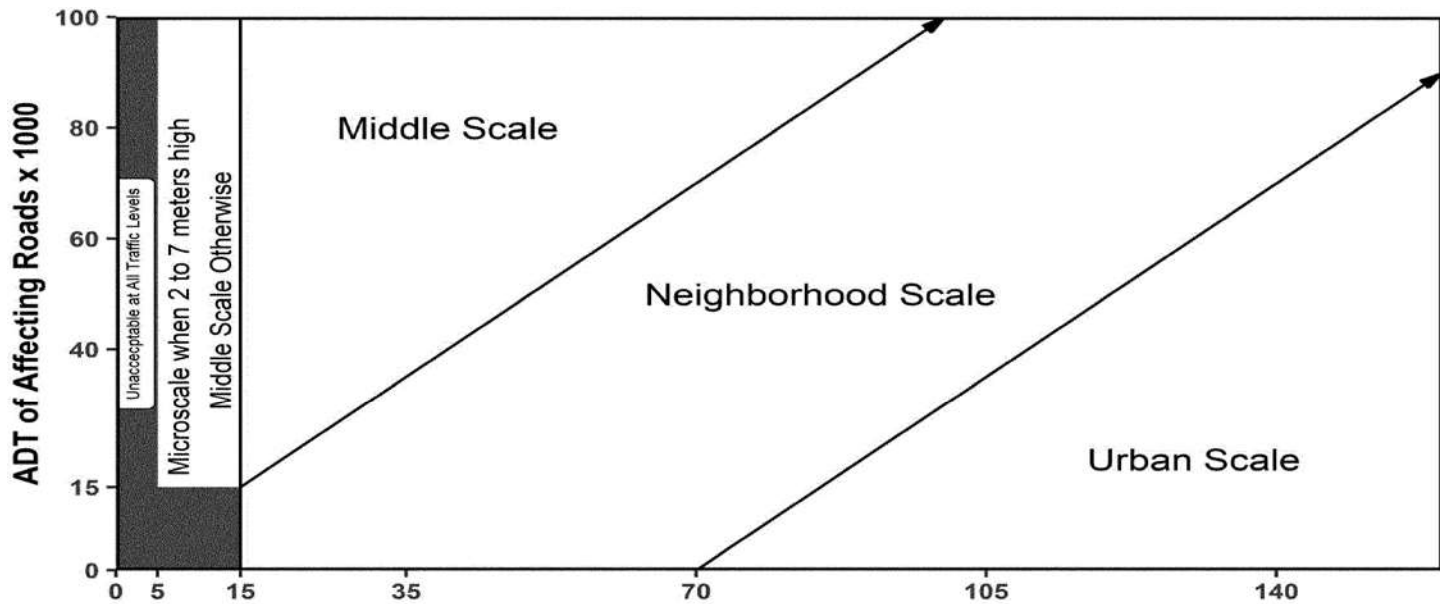


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.


**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 03/05/2026 **Location:** Kingsport, Tennessee
AQS Number: 47-163-6001
Site Name: Eastman RNR SO2 **Pollutants:** SO2

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Local Site Name: Eastman RNR SO2 Initials: EMH Date: 03/05/2026

Site meets EPA siting criteria: Yes No

If no, explain:

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
Wilburn Drive	37.5 m	S	Local Street	NA	NA
East Center Street	91.0 m	E	Local Street	11278	2025
Memorial Blvd	160.8 m	S	Local Street	6376	2025

Electrical

Utility Company: Appalachian Power Corporation Meter Number: 789183326

Additional Comments:

1. Arrival and departure times are Eastern time.
 2. Shelter temperature was 76 degrees F.
 3. Jason Stephens (JMS), EC3 assisted Evelyn Haskin with the site evaluation.
-
-
-
-
-
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-
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-

MONITORING SITE EVALUATION FORM (MSEF)

Site Name: Eastman RNR SO2 Initials: EMH Date: 03/05/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 3:35 pm Departure Time: 4:15 pm Primary Operator: Ron Wilhoit

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____

[Yes No] Police Report Filed

Comments: _____

SHELTER – Not Present

Interior

Arrival Temperature: 25.3 °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat

[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: _____

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]

Height of Roof: 2.4 meters Roofing Material: Steel

[Yes No] Needs Maintenance (specify) _____

[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing

Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:

[Yes No] Electronic/ Hardcopy/ Both

Comments: Hardcopy log book on site; last entry 8/22/24

Site Name: Eastman RNR SO2 Initials: EMH Date: 03/05/2026

MONITOR(s): Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
SO2	Teledyne	T100	7121

CALIBRATOR(s): Not Present [Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date
Teledyne	T700	5808	2/4/26	8/4/26

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Yes No] Calibrations (Not Required) [Yes No] Precision Checks (Required) [Yes No] Audits (Required)

Comments: _____

CYLINDER GAS STANDARDS: Not Present

VENDOR: Linde (PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number
QC	SO2	400	4/19/27	15.1 ppm	EX0015162

Comments: _____

Site Name: Eastman RNR SO2 Initials: EMH Date: 03/05/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93640043021016	Modem	Main
Agilaire	8872	0514	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

Yes No] Temperature Sensor [Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 SN # 557

Yes No] Needs Service Last Service Date: 08/19/2025 Condition: Good

Comments: _____

Probe Line(s): [Replaced / Cleaned] – Frequency: 1/year Last Service Date: 08/19/2025

[Yes No] Clean [Yes No] Heated [Yes No] Insulated [Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

[Yes No] Locked [Yes No] Electrically Grounded [Yes No] Stabilized

[Yes No] Clean Inside [Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: _____ PM₁₀ Head Clean Schedule: _____

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: Eastman RNR SO2 Initials: EMH Date: 03/05/2026

PROBE SYSTEM(s): External Not Present

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] **Funnel Material:** [Teflon® / Glass / Stainless Steel]

Probe Line(s): [Teflon® / Other: _____] **Probe Fitting(s):** [Teflon® / Other: _____ / Not Present]

Residence Time: 7.09 seconds (20 sec. max) (Refer to chart for maximum line lengths)

Comments: Residence worksheet completed 8/19/25

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	3.2	Side of Shelter	NA	NA	Urban	Urban

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)

When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Eastman RNR SO2

Initials: EMH

Date: 03/05/2026

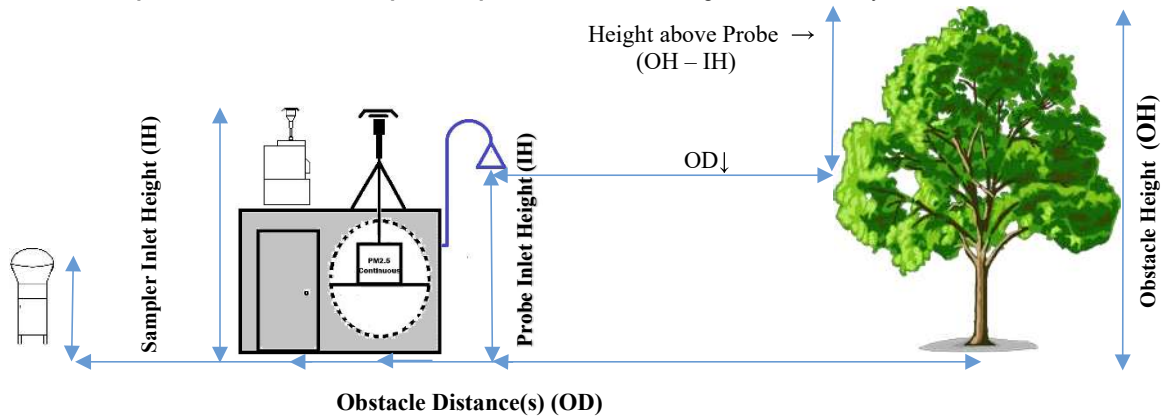
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 05/04/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Condos	4.2	3.2	2.0	24.2	No	350
2	Tree	18.6	3.2	30.8	48.0	No	57
3	Tree	11.8	3.2	17.2	48.2	No	76
4	Grey building	7.4	3.2	8.4	68.0	No	128
5	Brick wall/shed	3.5	3.2	0.6	17.4	No	273
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Eastman RNR SO2 Initials: EMH Date: 03/05/2026

TREE DRIPLINE(s): 48.0 meters (nearest inlet to dripline) No Trees Present
48.2 meters (nearest inlet to dripline) Not Present
 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **dripline must be greater than 10 meters from inlet/probe.**

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

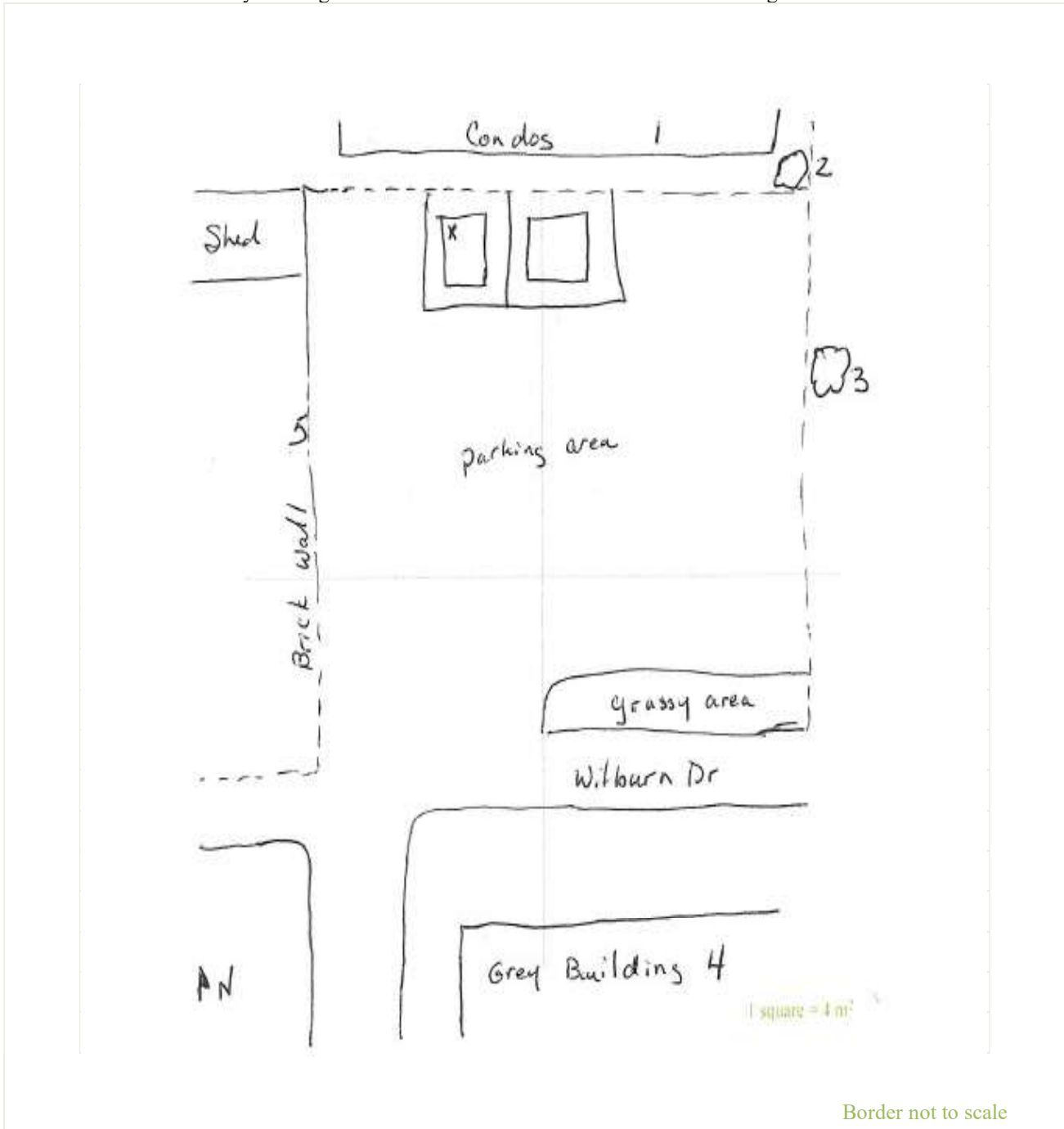
Comments: None _____

Additional Information:

The closest tree is greater than 20 meters; therefore there are no tree dripline issues.

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: >270 ° Estimated Degrees of Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: Eastman RNR SO2 Initials: EMH Date: 03/05/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 03/05/26 Photographer: JMS Description: North Directional



Photo: **002** Date: 03/05/26 Photographer: JMS Description: Northeast Directional



Photo: 003 Date: 03/05/26 Photographer: JMS Description: East Directional



Photo: 004 Date: 03/05/26 Photographer: JMS Description: Southeast Directional



Photo: 005 Date: 03/05/26 Photographer: JMS Description: South Directional



Photo: 006 Date: 03/05/26 Photographer: JMS Description: Southwest Directional



Photo: 007 Date: 03/05/26 Photographer: JMS Description: West Directional



Photo: 008 Date: 03/05/26 Photographer: JMS Description: Northwest Directional



Photo: 009 Date: 03/05/26 Photographer: JMS Description: Site



Photo: 010 Date: 03/05/26 Photographer: JMS Description: Probe



Photo: 011 Date: 03/05/26 Photographer: JMS Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O ₃	--	2-15	2-15	2-15	2-15
SO ₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

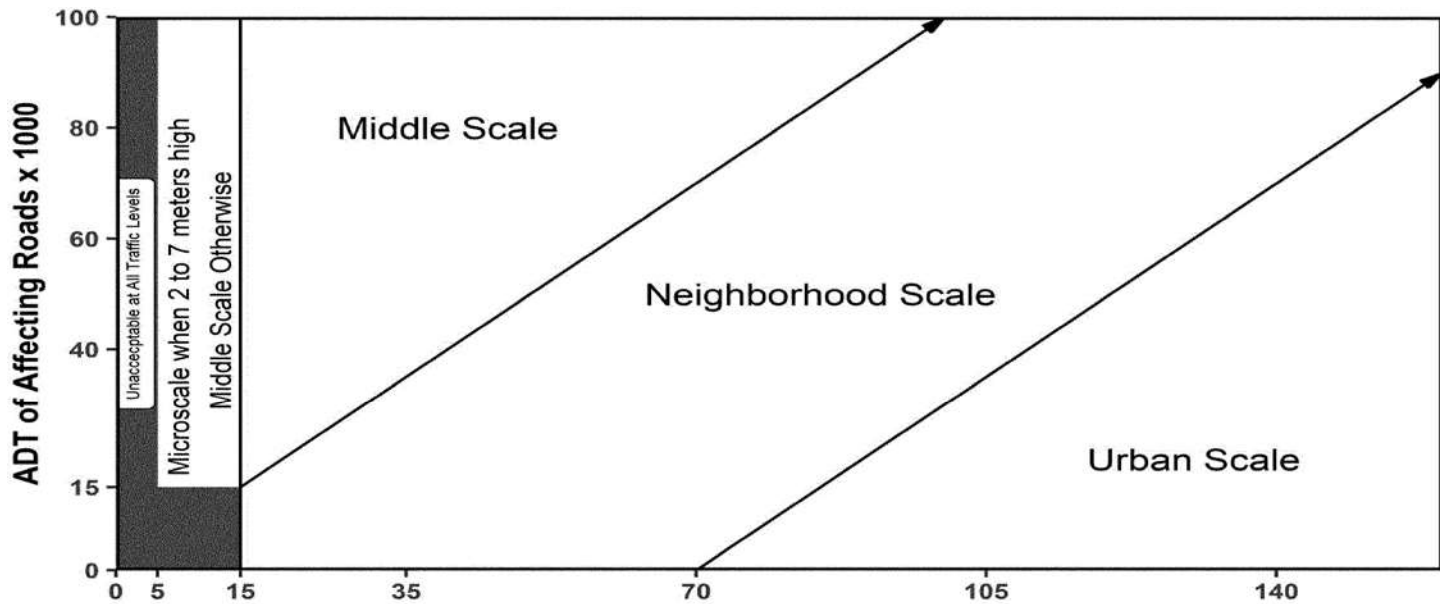


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

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Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 04/16/2026 **Location:** Kingsport, Tennessee
AQS Number: 47-163-6002
Site Name: Eastman Skyland SO2 **Pollutants:** SO2

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

MONITORING SITE EVALUATION FORM (MSEF)

Site Name: Eastman Skyland SO2 Initials: EMH Date: 04/16/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 8:35 am Departure Time: 9:25 am Primary Operator: Ron Wilhiot

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut
[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____
[Yes No] Police Report Filed

Comments: _____

SHELTER – Not Present

Interior
Arrival Temperature: 23.8 °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat
[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: _____

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]
Height of Roof: 2.6 meters Roofing Material: Steel

[Yes No] Needs Maintenance (specify) _____
[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing
Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:
[Yes No] Electronic/ Hardcopy/ Both

Comments: Hard copy logbook on site; last entry 3/27/24

Site Name: Eastman Skyland SO2 Initials: EMH Date: 04/16/2026

MONITOR(s): Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
SO2	Teledyne	T100	4300

CALIBRATOR(s): Not Present [Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date
Teledyne	T700	5807	2/3/26	7/3/26

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Yes No] Calibrations (Not Required) [Yes No] Precision Checks (Required) [Yes No] Audits (Required)

Comments: _____

CYLINDER GAS STANDARDS: Not Present

VENDOR: Linde (PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number
QC	SO2	1450	3/5/28	15.9 ppm	FF7850

Comments: _____

Site Name: Eastman Skyland SO2 Initials: EMH Date: 04/16/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R94120251011015	Modem	Main
Agilaire	8872	532	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

Yes No] Temperature Sensor [Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 SN# 1340

Yes No] Needs Service Last Service Date: 11/12/2024 Condition: Good

Comments: _____

Probe Line(s): [Replaced / Cleaned] – Frequency: 1/ year Last Service Date: 10/08/2025

[Yes No] Clean [Yes No] Heated [Yes No] Insulated [Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

Yes No] Locked [Yes No] Electrically Grounded [Yes No] Stabilized

[Yes No] Clean Inside [Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: _____ PM₁₀ Head Clean Schedule: _____

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: Eastman Skyland SO2 Initials: EMH Date: 04/16/2026

PROBE SYSTEM(s): External Not Present

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] **Funnel Material:** [Teflon® / Glass / Stainless Steel

Probe Line(s): [Teflon® / Other: _____] **Probe Fitting(s):** [Teflon® / Other: _____ / Not Present]

Residence Time: 17.89 seconds (20 sec. max) (Refer to chart for maximum line lengths)

Comments: Residence time worksheet completed 10/8/25

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	12.0	Tower	NA	NA	Urban	Urban

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)

When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Eastman Skyland SO2

Initials: EMH

Date: 04/16/2026

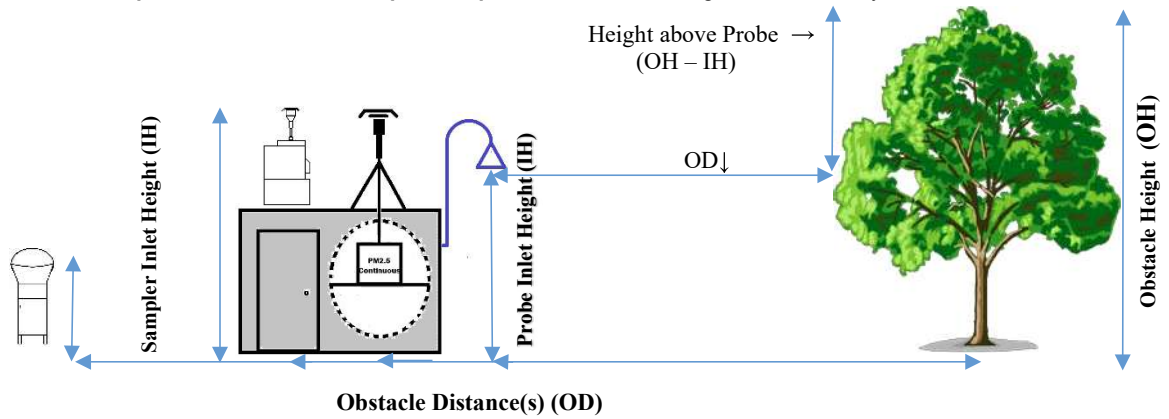
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 05/04/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

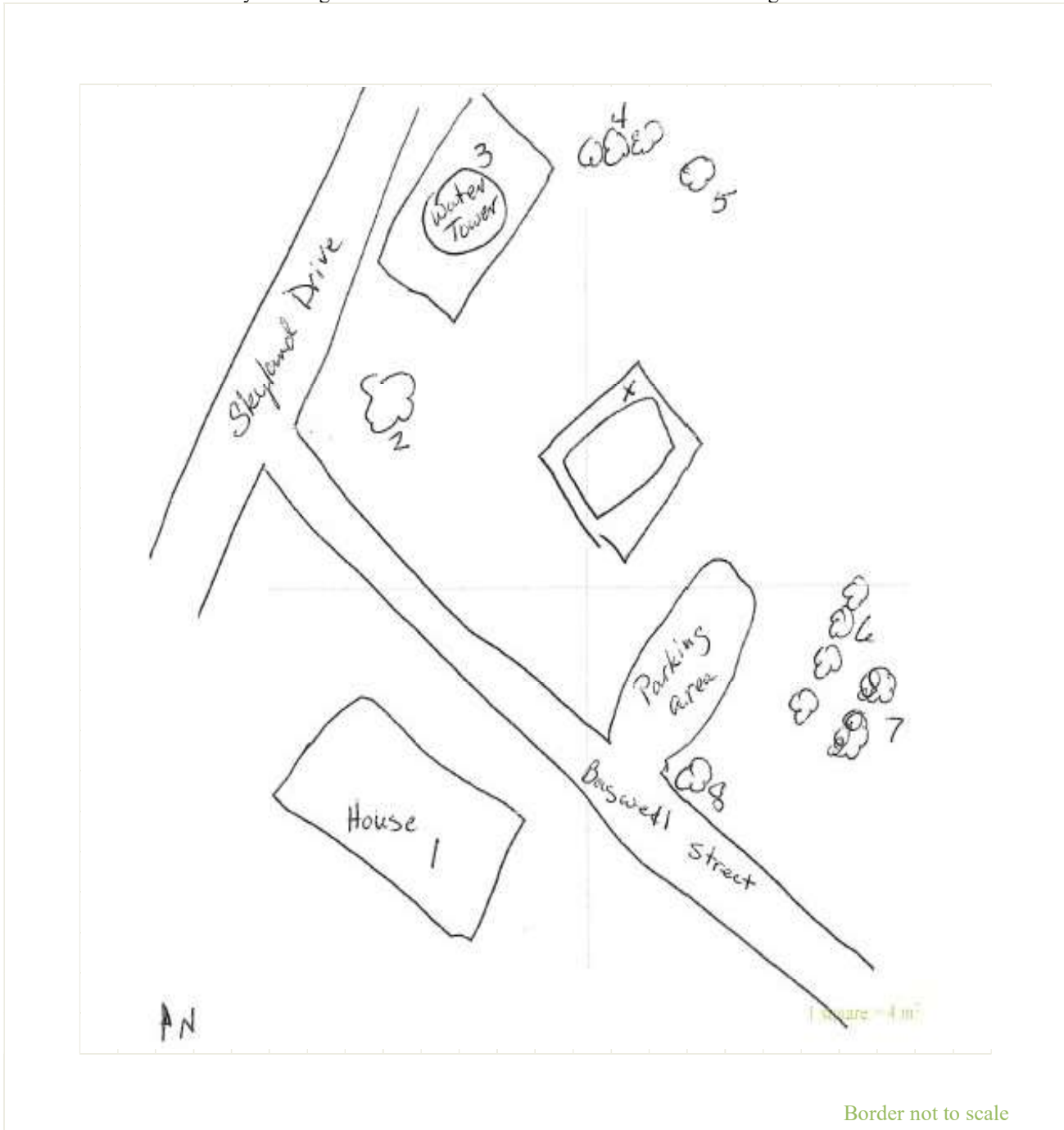
OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	House	4.2	12.0	NA	39.6	No	259
2	Tree	17.6	12.0	11.2	23.6	No	230
3	Water tower	18.0	12.0	12.0	12.2	Yes	335
4	Trees	20.0	12.0	16.0	24.2	No	12
5	Tree	14.3	12.0	4.6	23.6	No	7.4
6	Trees	9.0	12.0	NA	22.0	No	108
7	Trees	20.0	12.0	16.0	32.0	No	114
8	Tree	5.0	12.0	NA	27.0	No	213
9							
10							
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15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: > 270 ° Estimated Degrees of Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: Eastman Skyland SO2 Initials: EMH Date: 04/16/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 04/16/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 04/16/26 Photographer: EMH Description: Northeast Directional



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Photo: 010 Date: 04/16/26 Photographer: EMH Description: Tower



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Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
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40,000	50	60
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TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

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Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
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SO ₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

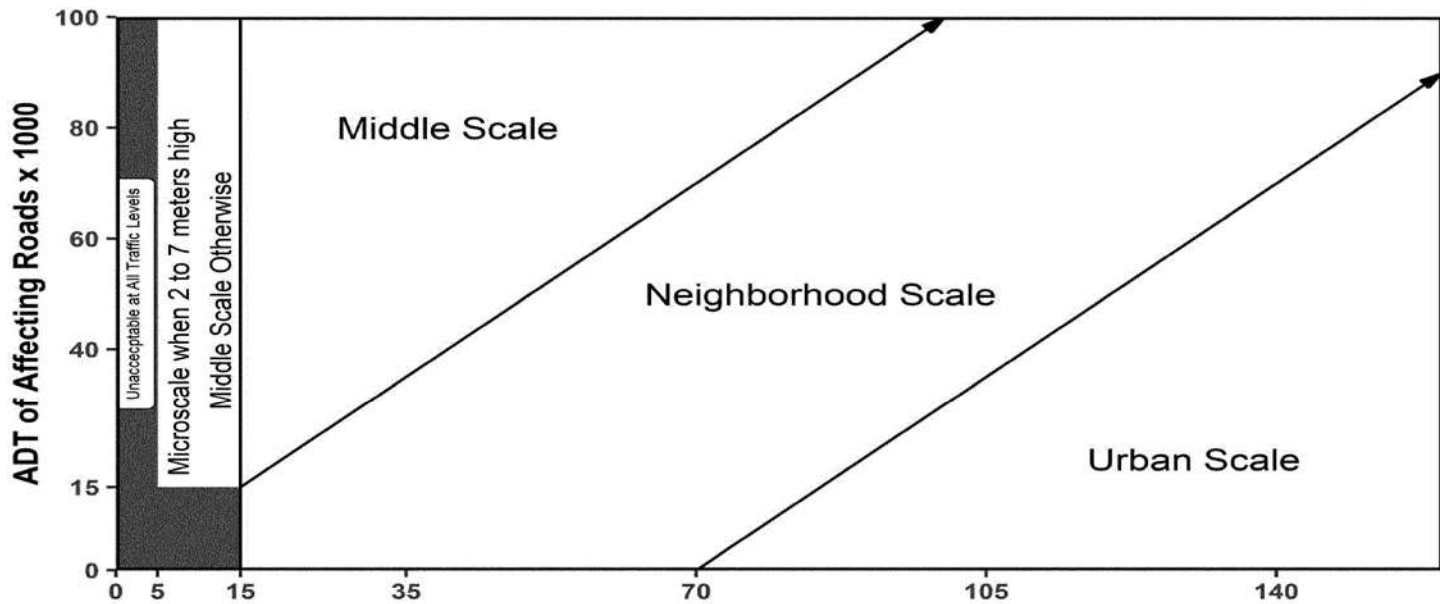


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
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0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
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For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 03/06/2026 **Location:** Kingsport, Tennessee
AQS Number: 47-163-6003
Site Name: Eastman Andrew Johnson SO2 **Pollutants:** SO2

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

MONITORING SITE EVALUATION FORM (MSEF)

Site Name: Eastman Andrew Johnson SO2 Initials: EMH Date: 03/06/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 8:40 am Departure Time: 9:15 am Primary Operator: Matthew Hayes

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut
[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____
[Yes No] Police Report Filed

Comments: _____

SHELTER – Not Present

Interior
Arrival Temperature: 22.3 °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat
[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: Fire extinguisher good (green)

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]
Height of Roof: 3.0 meters Roofing Material: Steel w/ Duro-last single ply membrane

[Yes No] Needs Maintenance (specify) _____

[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing

Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:
[Yes No] Electronic/ Hardcopy/ Both

Comments: Hardcopy logbook located on site; last entry 3/5/24

Site Name: Eastman Andrew Johnson SO2 Initials: EMH Date: 03/06/2026

MONITOR(s): _____ Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
SO2	Teledyne	T100	7117

CALIBRATOR(s): Not Present [Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date
Teledyne	T700	4152	8/13/25	2/12/26

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Yes No] Calibrations (Not Required) [Yes No] Precision Checks (Required) [Yes No] Audits (Required)

Comments: Calibrator #4152 was replaced on 3/9/26 with #4151 (certified 11/13/25)

CYLINDER GAS STANDARDS: Not Present

VENDOR: Linde (PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number
QC	SO2	900	4/19/27	15.1 ppm	EA0003983

Comments: _____

Site Name: Eastman Andrew Johnson SO2 Initials: EMH Date: 03/06/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93610083011016	Modem	Main
Agilaire	8872	051	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

Yes No] Temperature Sensor [Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 # 1349

Yes No] Needs Service Last Service Date: 08/18/2025 Condition: Good

Comments: _____

Probe Line(s): [Replaced / Cleaned] – Frequency: 1/year Last Service Date: 08/18/2025

[Yes No] Clean [Yes No] Heated [Yes No] Insulated [Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

Yes No] Locked [Yes No] Electrically Grounded [Yes No] Stabilized

[Yes No] Clean Inside [Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: _____ PM₁₀ Head Clean Schedule: _____

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: Eastman Andrew Johnson SO2 Initials: EMH Date: 03/06/2026

PROBE SYSTEM(s): External Not Present

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] Funnel Material: [Teflon® / Glass / Stainless Steel

Probe Line(s): [Teflon® / Other: _____] Probe Fitting(s): [Teflon® / Other: _____ / Not Present]

Residence Time: 7.72 seconds (20 sec. max) (Refer to chart for maximum line lengths)

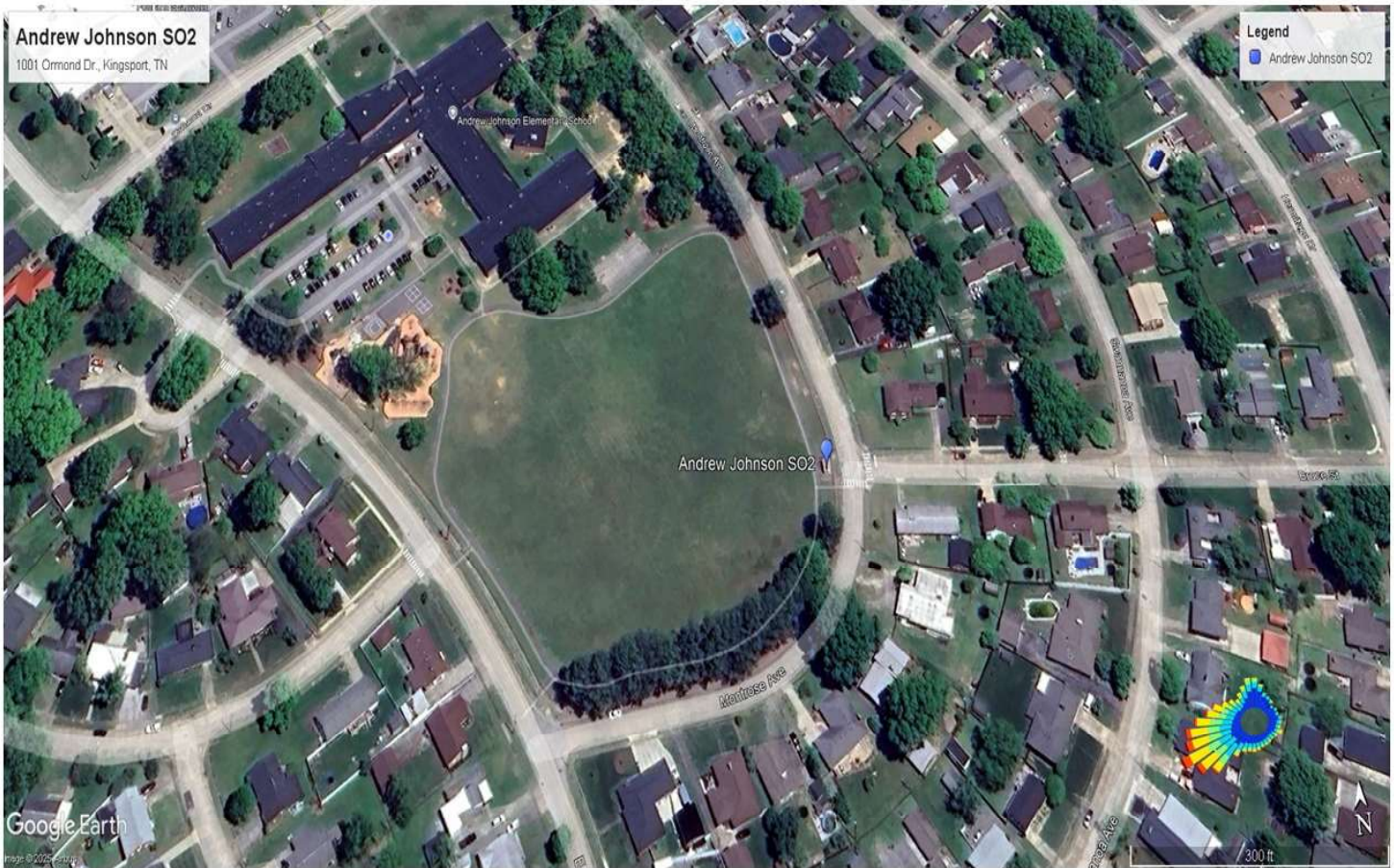
Comments: Residence worksheet completed 8/18/25

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	4.8	Side of Shelter	NA	NA	Urban	Urban

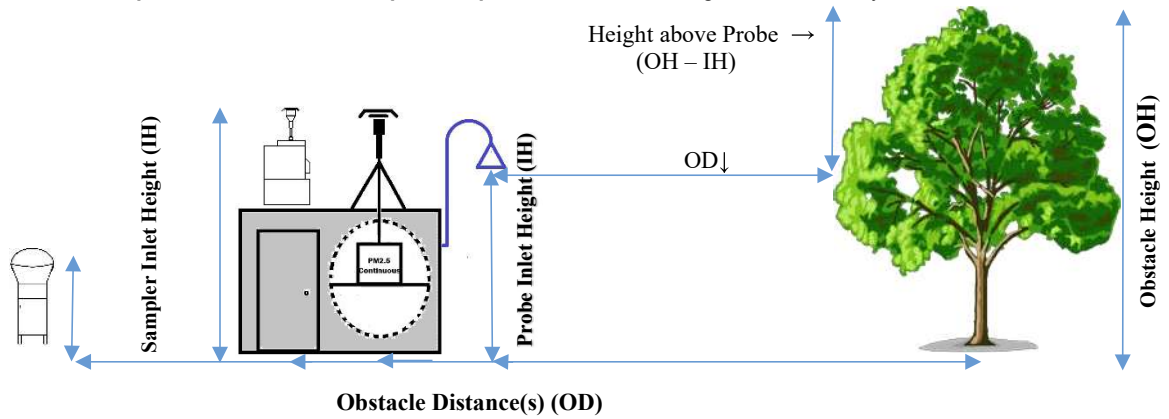
FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)

When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Aerial Photo with Wind Rose



OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

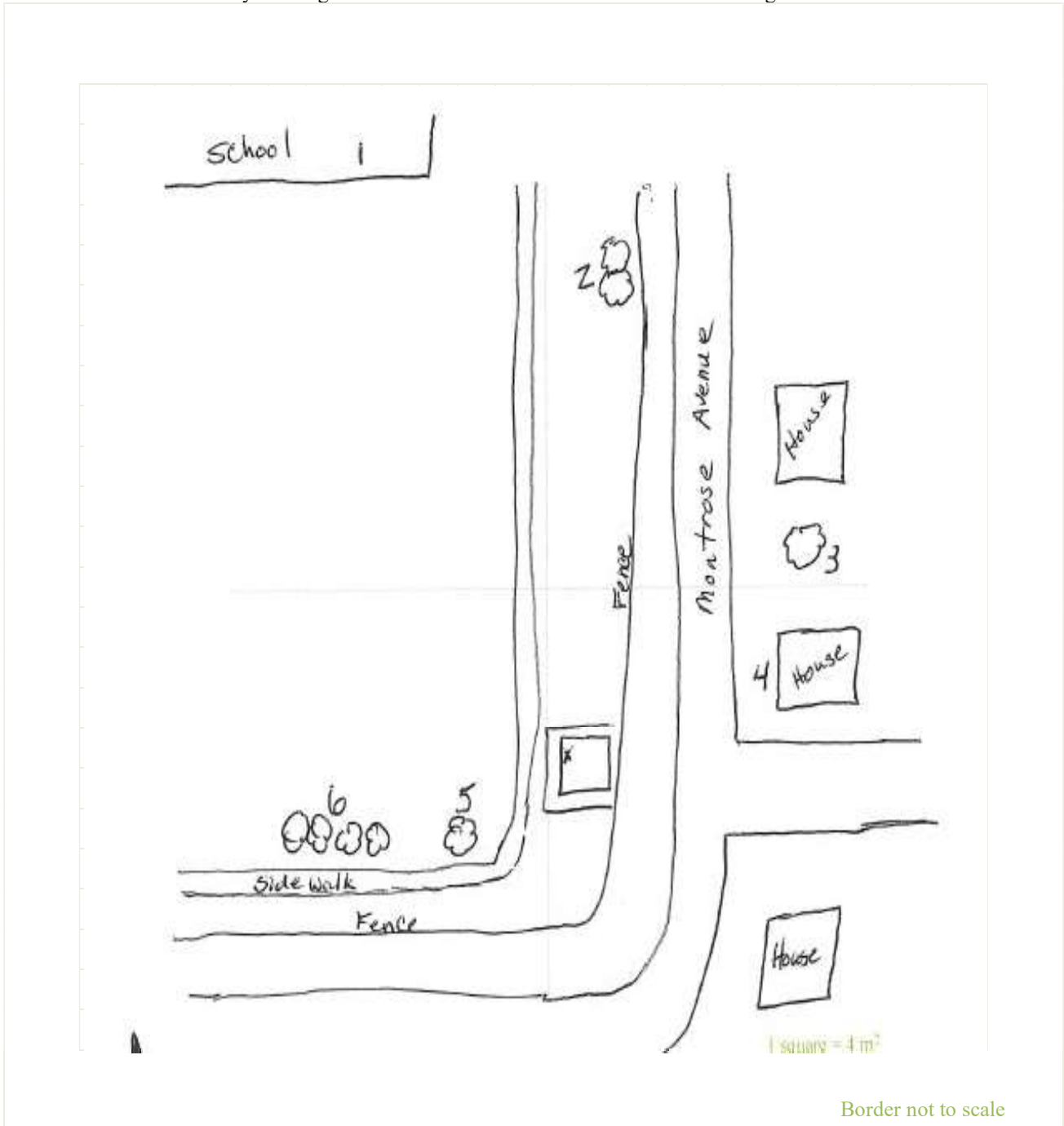
OD MUST be $\geq 2*(OH-IH)$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	School	5.0	4.8	0.4	146.0	No	327
2	Trees	24.6	4.8	40.0	141.0	No	342
3	Tree	23.4	4.8	37.2	60.0	No	51
4	House	5.0	4.8	0.4	33.6	No	74
5	Tree	21.4	4.8	33.2	26.2	Yes	200
6	Trees	23.0	4.8	36.4	53.0	No	207
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: > 270 ° Estimated Degrees of Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: Eastman Andrew Johnson SO2 Initials: EMH Date: 03/06/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 03/06/26 Photographer: JMS Description: North Directional



Photo: **002** Date: 03/06/26 Photographer: JMS Description: Northeast Directional



Photo: 003 Date: 03/06/26 Photographer: JMS Description: East Directional



Photo: 004 Date: 03/06/26 Photographer: JMS Description: Southeast Directional



Photo: 005 Date: 03/06/26 Photographer: JMS Description: South Directional



Photo: 006 Date: 03/06/26 Photographer: JMS Description: Southwest Directional



Photo: 007 Date: 03/06/26 Photographer: JMS Description: West Directional



Photo: 008 Date: 03/06/26 Photographer: JMS Description: Northwest Directional



Photo: 009 Date: 03/06/26 Photographer: JMS Description: Site



Photo: 010 Date: 03/06/26 Photographer: JMS Description: Probe



Photo: 011 Date: 03/06/26 Photographer: JMS Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O ₃	--	2-15	2-15	2-15	2-15
SO ₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

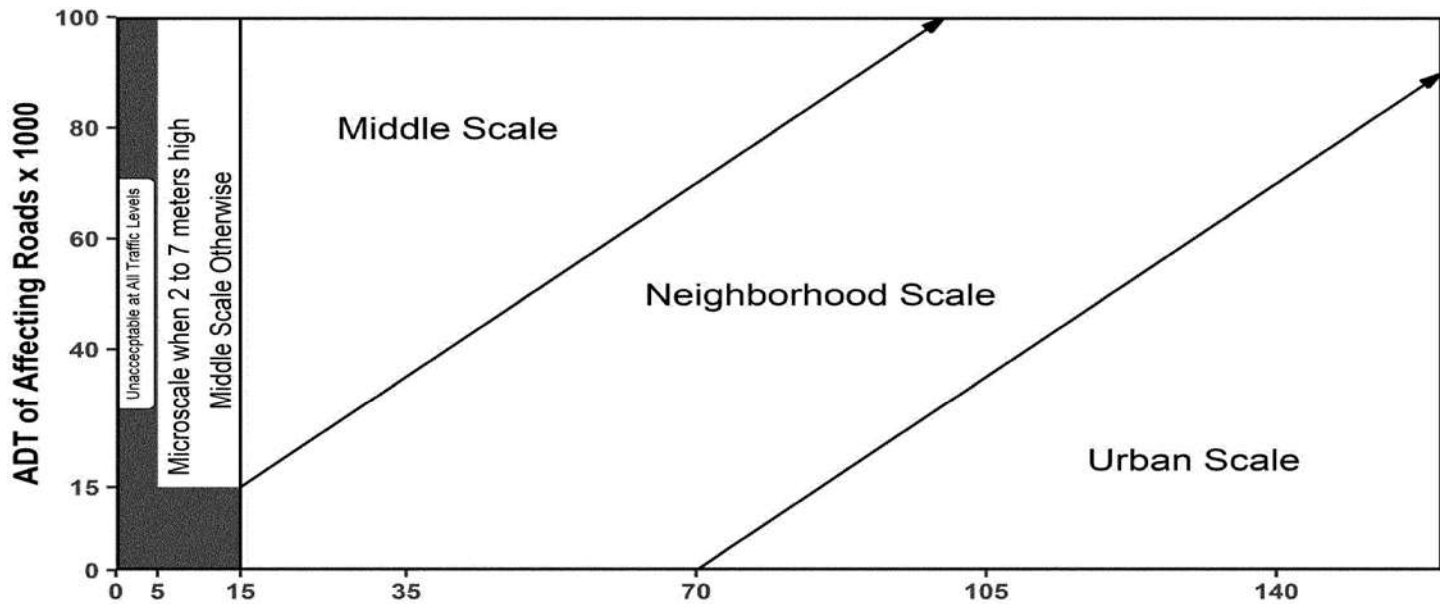


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 03/06/2026 **Location:** Kingsport, Tennessee
AQS Number: 47-163-6004
Site Name: Eastman Happy Hill SO2 **Pollutants:** SO2

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Local Site Name: Eastman Happy Hill SO2 Initials: EMH Date: 03/06/2026

Site meets EPA siting criteria: Yes No

If no, explain:

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
Happy Hill Road	22.6	NE	Local Street	NA	NA
South Eastman Road	948.0 m	NW	Local Street	1403	2025
Mooreland Drive	168.0 m	N	Local Street	1397	2025

Electrical

Utility Company: Appalachian Power Corporation Meter Number: 783184544

Additional Comments:

1. The arrival and departure times are Eastern time.
 2. The shelter temperature is 71 degrees F.
 3. Jason Stephens (JMS), EC3 assisted Evelyn Haskin (EMH) with the site evaluation.
-
-
-
-
-
-
-
-
-
-

MONITORING SITE EVALUATION FORM (MSEF)

Site Name: Eastman Happy Hill SO2 Initials: EMH Date: 03/06/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 7:45 am Departure Time: 8:20 am Primary Operator: Matthew Hayes

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____

[Yes No] Police Report Filed

Comments: _____

SHELTER – Not Present

Interior

Arrival Temperature: 22.5 °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat

[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: Fire extinguisher - good (green)

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]

Height of Roof: 3.0 meters Roofing Material: Steel w/ Duro-last single ply membrane

[Yes No] Needs Maintenance (specify) _____

[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing

Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:

[Yes No] Electronic/ Hardcopy/ Both

Comments: Hard copy logbook present on site; last entry 8/22/24

Site Name: Eastman Happy Hill SO2 Initials: EMH Date: 03/06/2026

MONITOR(s): _____ Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
SO2	Teledyne	T100	2261

CALIBRATOR(s): Not Present [Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date
Teledyne	T700	4163	11/17/25	5/14/26

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.
 All Gas Standards Pass thru all Filters during: [Yes No] Calibrations (Not Required) [Yes No] Precision Checks (Required) [Yes No] Audits (Required)

Comments: _____

CYLINDER GAS STANDARDS: Not Present

VENDOR: Linde (PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number
QC	SO2	825	12/27/26	15.5 ppm	EX0016197

Comments: _____

Site Name: Eastman Happy Hill SO2 Initials: EMH Date: 03/06/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R9361029011016	Modem	Main
Agilaire	8872	0534	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

Yes No] Temperature Sensor [Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 SN # 855

Yes No] Needs Service Last Service Date: 11/12/2024 Condition: Good

Comments: _____

Probe Line(s): [Replaced / Cleaned] – Frequency: 1/year Last Service Date: 10/09/2025

[Yes No] Clean [Yes No] Heated [Yes No] Insulated [Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

Yes No] Locked [Yes No] Electrically Grounded [Yes No] Stabilized

[Yes No] Clean Inside [Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: _____ PM₁₀ Head Clean Schedule: _____

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: Eastman Happy Hill SO2 Initials: EMH Date: 03/06/2026

PROBE SYSTEM(s): External **Not Present**

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] **Funnel Material:** [Teflon® / Glass / Stainless Steel]

Probe Line(s): [Teflon® / Other: _____] **Probe Fitting(s):** [Teflon® / Other: _____ / Not Present]

Residence Time: 12.76 (20 sec. max) (Refer to chart for maximum line lengths)

Comments: Residence time worksheet completed 10/9/25

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	11.0	Tower	NA	NA	Urban	Urban

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)
 When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Eastman Happy Hill SO2

Initials: EMH

Date: 03/06/2026

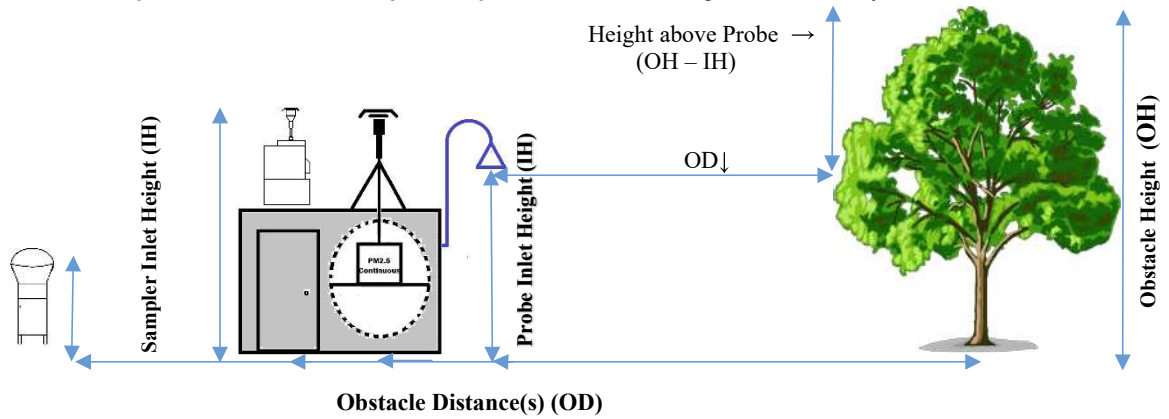
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 05/04/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Tree	18.2	11.0	14.4	65.2	No	12
2	House	5.4	11.0	NA	46.4	No	25
3	Trees	14.6	11.0	7.2	49.6	No	2
4	Tree	11.4	11.0	0.8	20.4	No	345
5	Tree	20.0	11.0	18.0	29.2	No	331
6	Trees	20.0	11.0	18.0	24.4	No	318
7	Trees	6.2	11.0	NA	5.2	No	244
8	Tree	8.0	11.0	NA	9.0	No	138
9	Barn	9.0	11.0	NA	12.2	No	55
10	Tree	19.0	11.0	16.0	37.0	No	67
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Eastman Happy Hill SO2 Initials: EMH Date: 03/06/2026

TREE DRIPLINE(s): 20.4 meters (nearest inlet to dripline) No Trees Present
24.4 meters (nearest inlet to dripline) Not Present
29.2 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **dripline must be greater than 10 meters from inlet/probe.**

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

Comments: None _____

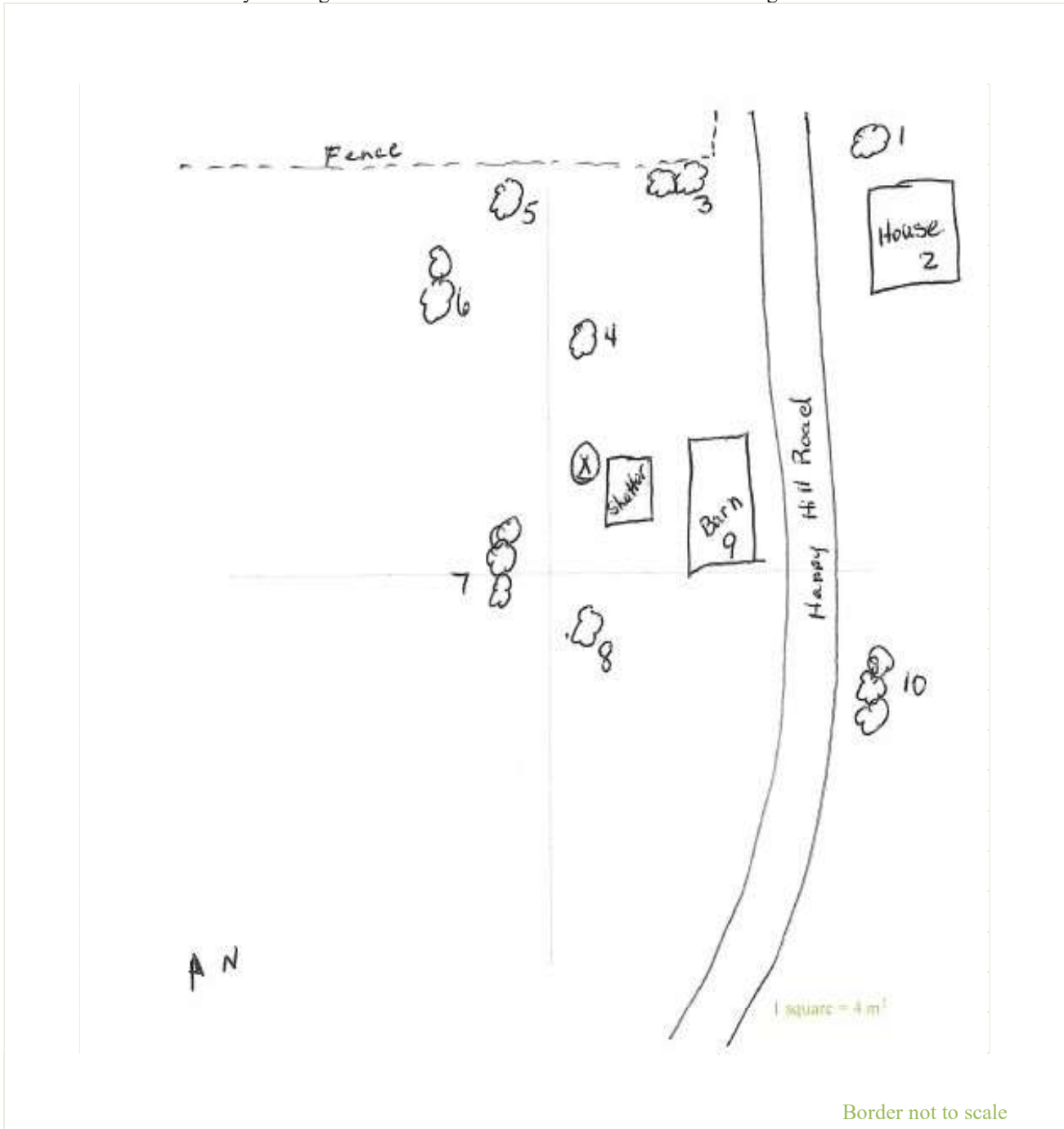
Additional Information:

Trees (Objects # 7 and 8) are shorter than the tower.

The trees measuring taller than the tower, are greater than 20 meters from the tower; therefore there are no tree dripline issues.

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: >270 ° Estimated Degrees of Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: Eastman Happy Hill SO2 Initials: EMH Date: 03/06/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: 001 Date: 03/06/26 Photographer: JMS Description: North Directional



Photo: 002 Date: 03/06/26 Photographer: JMS Description: Northeast Directional



Photo: 003 Date: 03/06/26 Photographer: JMS Description: East Directional



Photo: 004 Date: 03/06/26 Photographer: JMS Description: Southeast Directional



Photo: 005 Date: 03/06/26 Photographer: JMS Description: South Directional



Photo: 006 Date: 03/06/26 Photographer: JMS Description: Southwest Directional



Photo: 007 Date: 03/06/26 Photographer: JMS Description: West Directional



Photo: 008 Date: 03/06/26 Photographer: JMS Description: Northwest Directional



Photo: 009 Date: 03/06/26 Photographer: JMS Description: Site



Photo: 010 Date: 03/06/26 Photographer: JMS Description: Tower



Photo: 011 Date: 03/06/26 Photographer: JMS Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O ₃	--	2-15	2-15	2-15	2-15
SO ₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

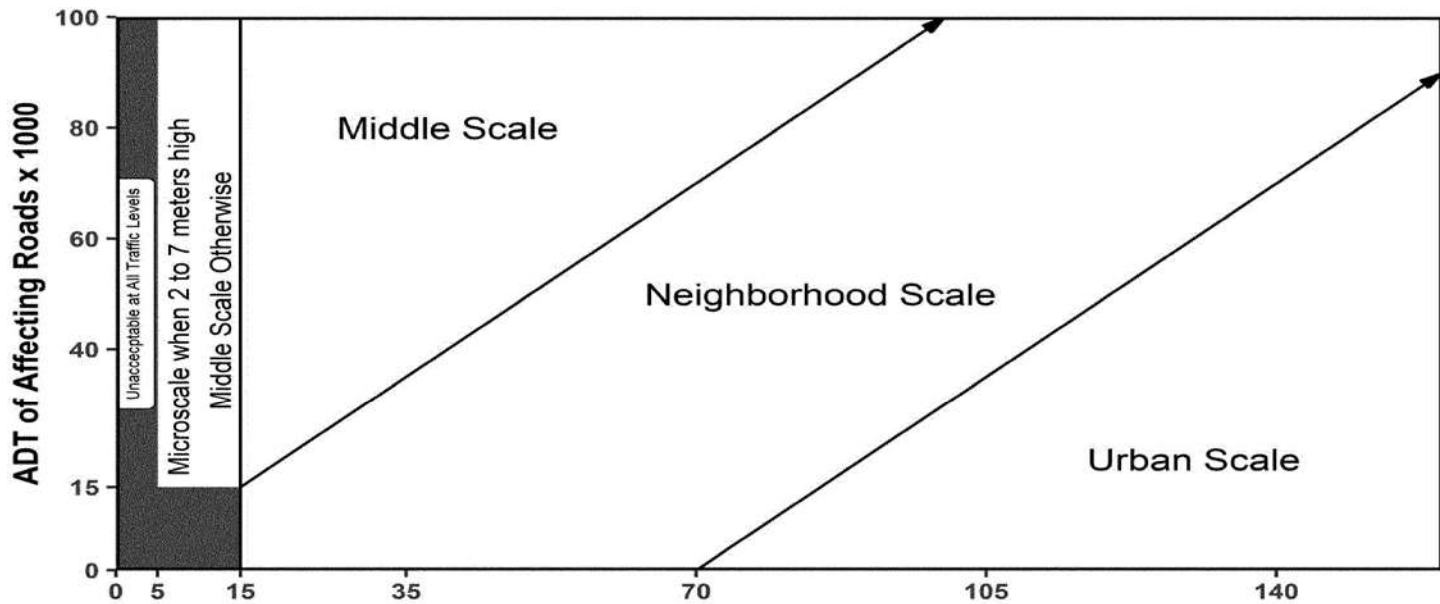


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 11/13/2025 **Location:** Hendersonville, Tennessee
AQS Number: 47-165-0007
Site Name: Hendersonville **Pollutants:** O3, PM2.5

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Local Site Name: Hendersonville Initials: EMH Date: 11/13/2025

Site meets EPA siting criteria: Yes No

If no, explain:

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
Overlook Circle	68.5 m	N	Local Street	NA	NA
Power Plant Road	255.0 m	NW	Local Street	NA	NA
Rockland Road	607.5 m	N	Local Street	10362	2024

Electrical

Utility Company: Nashville Electric System Meter Number: 334974

Additional Comments:

1. Arrival and departure times are Central.
 2. Ken Cooper is the O3 operator and John Helton/ Amber Bond are the PM operators.
 3. Shelter temperature was 73 degrees F.
 4. A Clarity node sensor is present on site.
 5. Clean up from the 12/9/2023 tornado is ongoing. Reconstruction of the US Army Corps building began in 2025.
 6. The last entry in O3 hard copy logbook is 3/27/24 and the last entry in PM hard copy logbook is 4/14/25.
 7. The 2025 O3 season ended 10/31/25. Both O3 analyzer and calibrator were still on site at the time of site evaluation.
-
-

MONITORING SITE EVALUATION FORM (MSEF)

Site Name: Hendersonville Initials: EMH Date: 11/13/2025

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 12:00 pm Departure Time: 12:40 pm Primary Operator: Ken Cooper/ John Helton

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut
[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____

[Yes No] Police Report Filed

Comments: Fence added around shelter and PM monitors in 2024.

SHELTER – Not Present

Interior

Arrival Temperature: 29.5 °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat

[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: Fire extinguisher in good condition (green)

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]

Height of Roof: 3.0 meters Roofing Material: Steel w/ Duro-last single ply membrane

[Yes No] Needs Maintenance (specify) _____

[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing

Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: Stairs are not attached to shelter.

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] [Electronic / Hardcopy / Both]

Logbooks at site:

[Yes No] [Electronic / Hardcopy / Both]

Comments: Hard copy logbooks for O3 and PM are on site.

Site Name: Hendersonville Initials: EMH Date: 11/13/2025

MONITOR(s): Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
O3	Teledyne	T400	4511
PM2.5 (BAM)	Met One	1022	W19946
PM2.5 (2025-i)	Thermo	2025-i	2025IW212301708

CALIBRATOR(s): Not Present [Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date
Teledyne	T703	1140	7/5/2025	12/5/2025

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Yes No] Calibrations (Not Required) [Yes No] Precision Checks (Required) [Yes No] Audits (Required)

Comments: _____

CYLINDER GAS STANDARDS: Not Present

VENDOR: _____ (PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number

Comments: _____

Site Name: Hendersonville Initials: EMH Date: 11/13/2025

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	LT7074065011028	Modem	Shelter
Agilaire	8872	1048	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

[Yes No] Temperature Sensor [Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 #1347

[Yes No] Needs Service Last Service Date: 02/12/2025 Condition: Good

Comments: _____

Probe Line(s): [Replaced / Cleaned] – Frequency: 1/ year Last Service Date: 02/12/2025

[Yes No] Clean [Yes No] Heated [Yes No] Insulated [Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

[Yes No] Locked [Yes No] Electrically Grounded [Yes No] Stabilized

[Yes No] Clean Inside [Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: 1/30 days PM₁₀ Head Clean Schedule: 1/30 days

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)
PM2.5 (BAM)	Lo	2.1
PM2.5 (2025-i)	Lo	2.1

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: Hendersonville Initials: EMH Date: 11/13/2025

PROBE SYSTEM(s): External Not Present

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] **Funnel Material:** [Teflon® / Glass / Stainless Steel]

Probe Line(s): [Teflon® / Other: _____] **Probe Fitting(s):** [Teflon® / Other: _____ / Not Present]

Residence Time: 6.45 seconds (20 sec. max) (Refer to chart for maximum line lengths)

Comments: Residence time (2/28/25)

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	4.2	Side of Shelter	NA	NA	Urban	Urban
PM2.5 (BAM)	2.6	Ground	2.1	NA	Urban	Urban
PM2.5 (2025-i)	2.7	Ground	2.1	NA	Urban	Urban

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)
 When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Hendersonville

Initials: EMH

Date: 11/13/2025

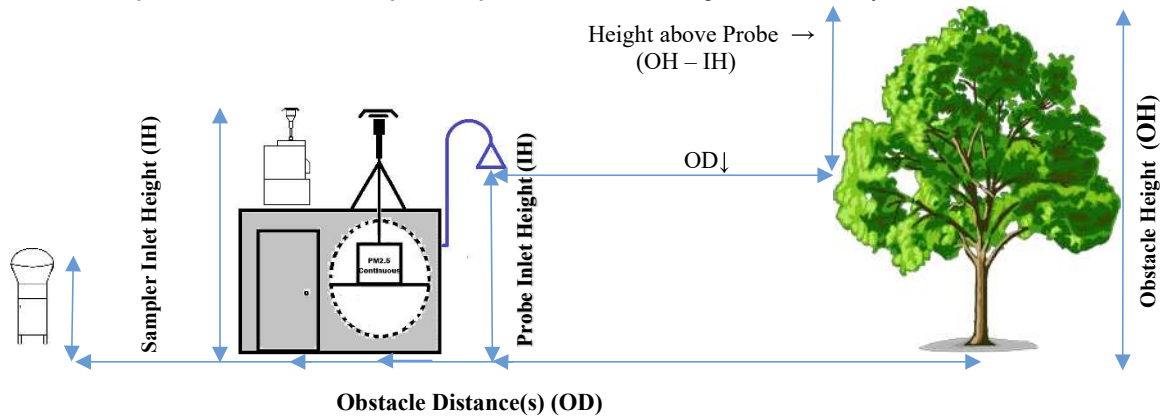
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 04/14/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Building	7.0	4.2	5.6	31.2	No	63
2	Trees	14.0	2.7	22.6	44.2	No	189
3	Shipping Container	3.0	2.7	0.6	25.0	No	215
4	Tree	5.8	2.7	6.2	42.5	No	231
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Hendersonville

Initials: EMH

Date: 11/13/2025

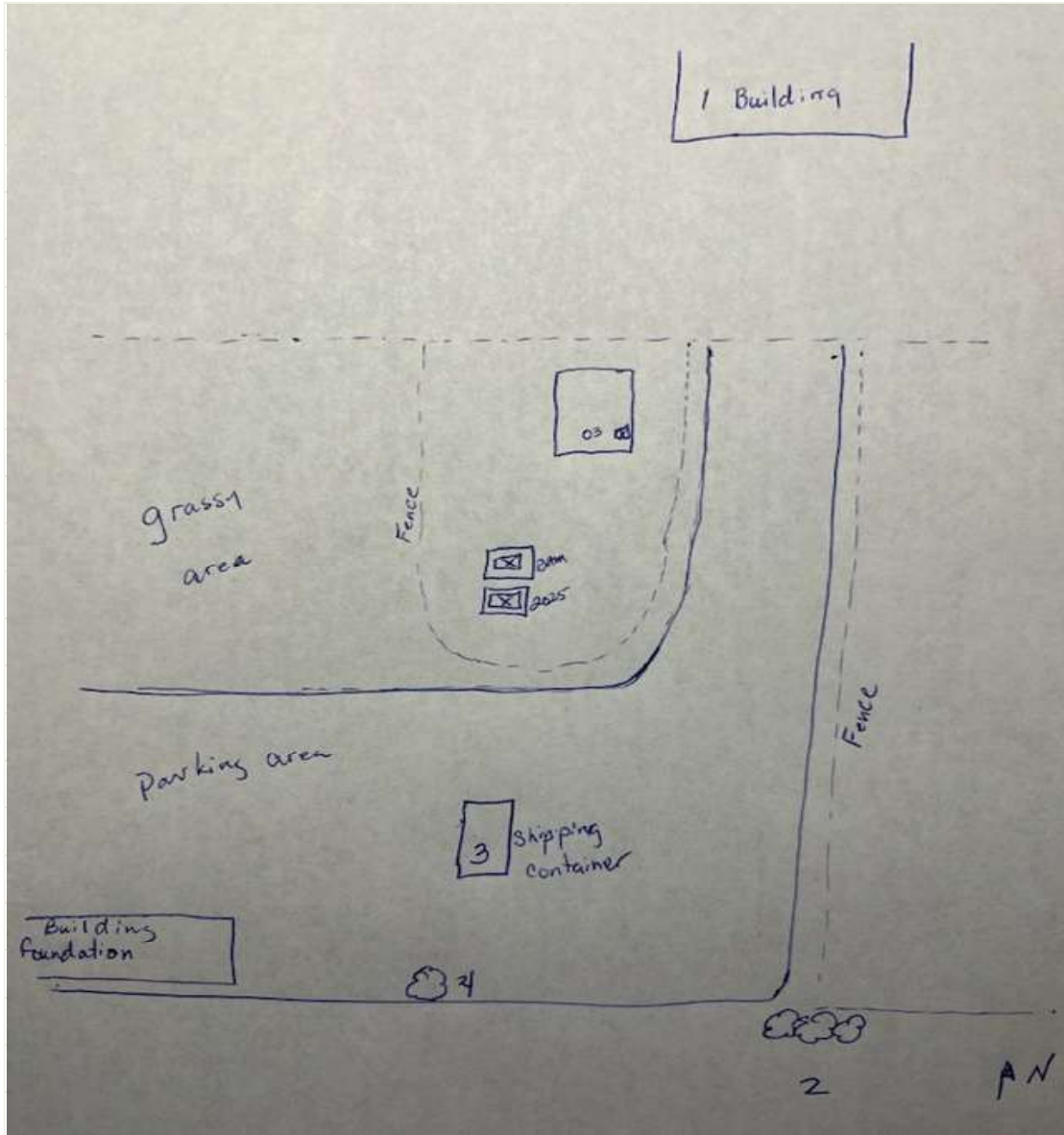
SITE DRAWING - Please Indicate: (relevant distance / height measurements)

Direction NORTH
Primary Wind Dir
Security Issues
Sloping Areas

Monitoring Shelter
Probe Position(s)
Exterior Samplers
Met Tower
Security Fencing

Nearby Trees/Shrubs
Roadways
Buildings
Walls
Other Obstructions

Possible Sources
Paved / Unpaved Areas
Nearby Construction
Flues, Vents, Boilers
Meat Cooking



Border not to scale

CONTINUOUS UNRESTRICTED AIR FLOW: >270 ° Estimated Degrees of

Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: Hendersonville Initials: EMH Date: 11/13/2025

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 11/13/25 Photographer: EMH Description: North Directional



Photo: **002** Date: 11/13/25 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 11/13/25 Photographer: EMH Description: East Directional



Photo: 004 Date: 11/13/25 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 11/13/25 Photographer: EMH Description: South Directional



Photo: 006 Date: 11/13/25 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 11/13/25 Photographer: EMH Description: West Directional



Photo: 008 Date: 11/13/25 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 11/13/25 Photographer: EMH Description: Shelter with O3 probe



Photo: 010 Date: 11/13/25 Photographer: EMH Description: PM monitors



Photo: 011 Date: 11/13/25 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O ₃	--	2-15	2-15	2-15	2-15
SO ₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

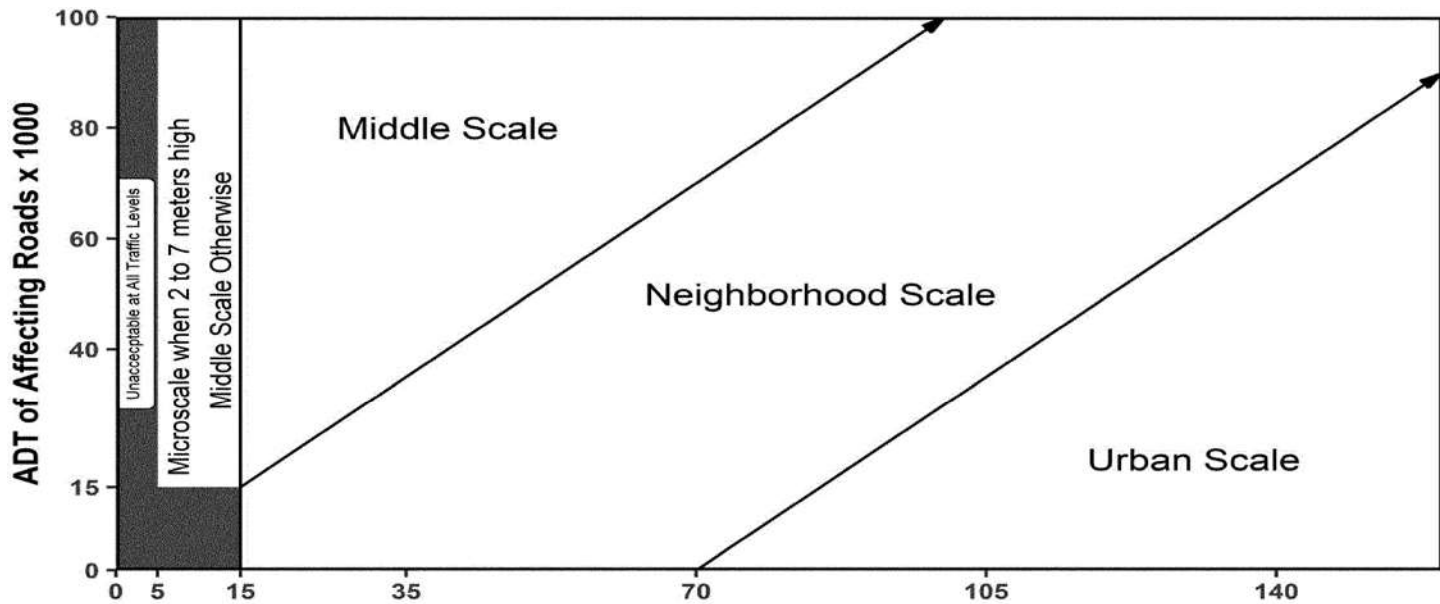


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.


**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 03/26/2026 **Location:** Fairview, Tennessee
AQS Number: 47-187-0106
Site Name: Fairview **Pollutants:** O3

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin .  . EMH . Site Specialist

2: _____ . _____ . _____ . _____

MONITORING SITE EVALUATION FORM (MSEF)

Site Name: Fairview Initials: EMH Date: 03/26/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 11:00 am Departure Time: 11:40 am Primary Operator: Kellen Vogelfanger

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____

[Yes No] Police Report Filed

Comments: _____

SHELTER – Not Present

Interior

Arrival Temperature: 25.1 °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat

[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: Fire extinguisher (good)

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]

Height of Roof: 3.0 meters Roofing Material: Steel w? Duro-last single ply membrane

[Yes No] Needs Maintenance (specify) _____

[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing

Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:

[Yes No] Electronic/ Hardcopy/ Both

Comments: Hard copy logbook on site; last entry 3/25/24

Site Name: Fairview Initials: EMH Date: 03/26/2026

MONITOR(s): Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
O3	Teledyne	T400	7267

CALIBRATOR(s): Not Present [Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date
Teledyne	T703	1028	2/21/26	7/21/26

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Yes No] Calibrations [Yes No] Precision Checks [Yes No] Audits
(Not Required) (Required) (Required)

Comments: _____

CYLINDER GAS STANDARDS: Not Present

VENDOR: _____ (PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number

Comments: _____

Site Name: Fairview Initials: EMH Date: 03/26/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93330185011016	Modem	Main
Agilaire	8872	494	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

Yes No] Temperature Sensor Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 SN# 1345

Yes No] Needs Service Last Service Date: 02/24/2026 Condition: Good

Comments: _____

Probe Line(s): Replaced / Cleaned] – Frequency: 1/year Last Service Date: 02/24/2026

Yes No] Clean Yes No] Heated Yes No] Insulated Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

Yes No] Locked Yes No] Electrically Grounded Yes No] Stabilized

Yes No] Clean Inside Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: _____ PM₁₀ Head Clean Schedule: _____

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: Fairview Initials: EMH Date: 03/26/2026

PROBE SYSTEM(s): External **Not Present**

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] **Funnel Material:** [Teflon® / Glass / Stainless Steel]

Probe Line(s): [Teflon® / Other: _____] **Probe Fitting(s):** [Teflon® / Other: _____ / Not Present]

Residence Time: 6.04 seconds (20 sec. max) (Refer to chart for maximum line lengths)

Comments: Residence time worksheet completed 2/24/26

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	4.2	Side of Shelter	NA	NA	Urban	Urban

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)
 When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Fairview

Initials: EMH

Date: 03/26/2026

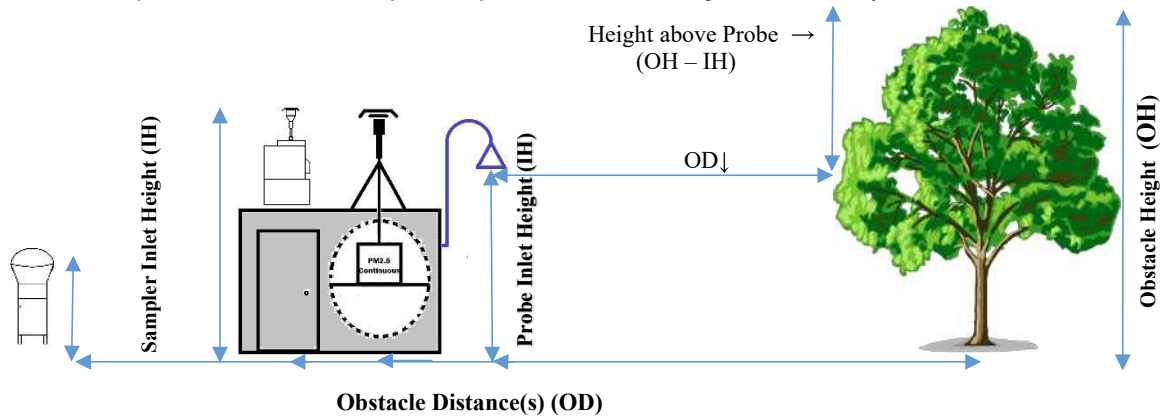
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 11/01/2024

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	School	6.0	4.2	3.6	51.6	No	36
2	Shed	5.2	4.2	2.0	41.5	No	76
3	Trees	15.2	4.2	22.0	84.0	No	126
4	Building	2.0	4.2	NA	62.0	No	179
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Fairview Initials: EMH Date: 03/26/2026

TREE DRIPLINE(s): 84.0 meters (nearest inlet to dripline) No Trees Present
 meters (nearest inlet to dripline) Not Present
 meters (nearest inlet to dripline) Not Present

Should be greater than **20 meters** from the dripline of tree(s) and **dripline must be greater than 10 meters from inlet/probe.**

Comments: _____

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

Comments: None _____

Additional Information:

The closest trees are greater than 20 meters from the O3 probe; therefore there are
no tree dripline issues.

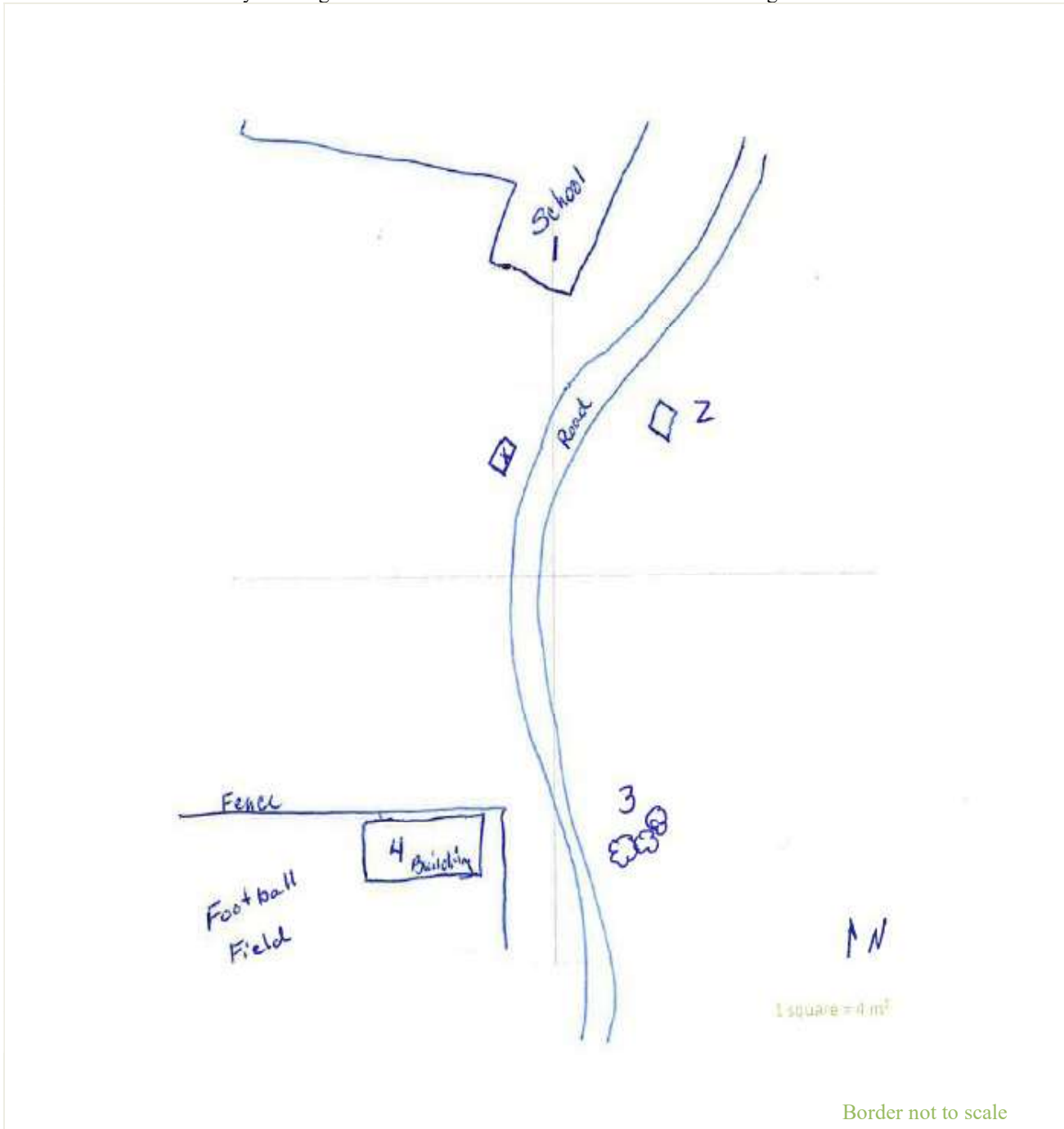
Site Name: **Fairview**

Initials: **EMH**

Date: **03/26/2026**

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: > 270 ° Estimated Degrees of Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: Fairview Initials: EMH Date: 03/26/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 03/26/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 03/26/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 03/26/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 03/26/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 03/26/26 Photographer: EMH Description: South Directional



Photo: 006 Date: 03/26/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 03/26/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 03/26/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 03/26/26 Photographer: EMH Description: Site



Photo: 010 Date: 03/26/26 Photographer: EMH Description: Probe



Photo: 011 Date: 03/26/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
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70,000	100	100
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TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

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Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O ₃	--	2-15	2-15	2-15	2-15
SO ₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

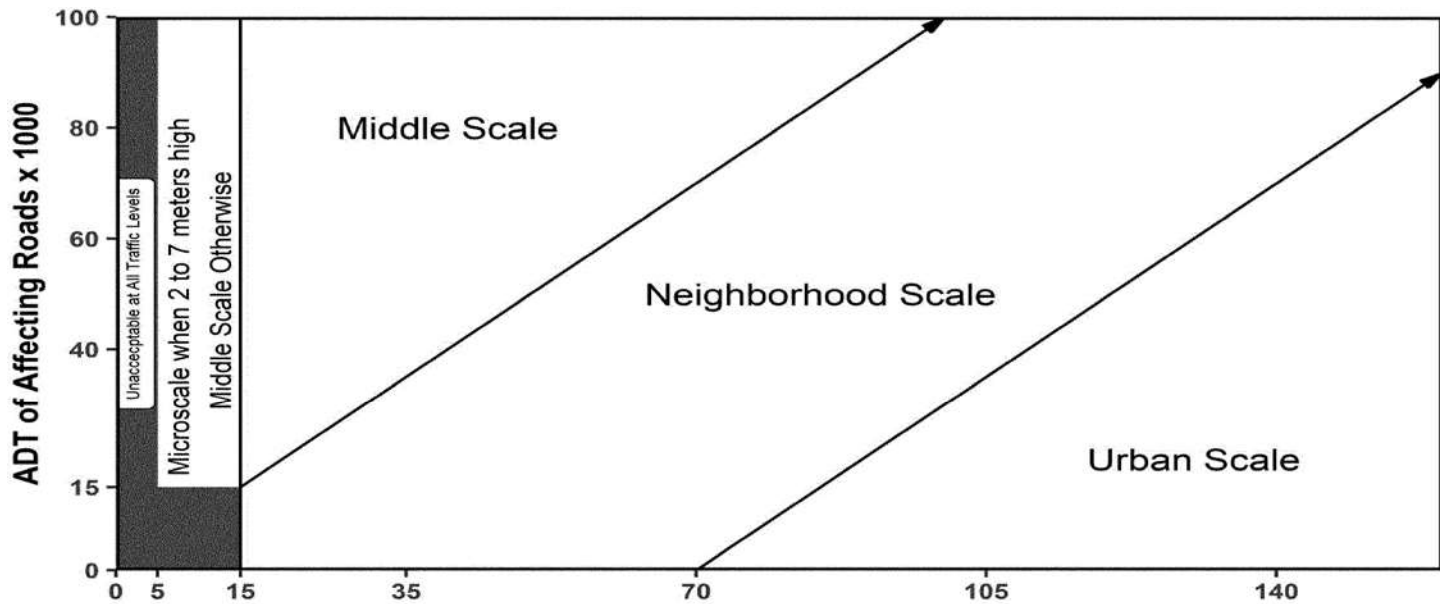


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
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For a Commercial System: give the make and model
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Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

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Primary Operator: the sites main operator, include parameters responsible for

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SITE (Questions to ask yourself)

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Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

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Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

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Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.

**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 02/10/2026 **Location:** Lebanon, Tennessee
AQS Number: 47-189-0103
Site Name: Cedars O3 **Pollutants:** O3

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin .  . EMH . Site Specialist

2: _____ . _____ . _____ . _____

MONITORING SITE EVALUATION FORM (MSEF)

Site Name: Cedars O3 Initials: EMH Date: 02/10/2026

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y / N] Completed

Arrival Time: 11:15 am Departure Time: 12:15 pm Primary Operator: Ken Cooper

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut
[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside] Date: _____
[Yes No] Police Report Filed

Comments: _____

SHELTER – Not Present

Interior
Arrival Temperature: NA °C (from data logger) Operator Site Visits: 1 per [week | month]

[Yes No] Leaking Roof [Damaged: Ceiling / Floor / Walls] [Yes No] Clean / Neat
[Yes No] Fire Extinguisher [Yes No] Insect / Wildlife Issues [Yes No] Gasoline (inside shelter)

Comments: Fire extinguisher in good condition (green)

Exterior

Type: [Freezer / Wood Building / Brick-Block / Steel]
Height of Roof: 3.0 meters Roofing Material: Steel w/ Duro-last single ply membrane

[Yes No] Needs Maintenance (specify) _____
[Yes No] Bolted Down to Concrete [Yes No] Electrically Grounded [Yes No] Roof Railing
Roof Access: [Stairs / Ladder / Not Present] [Yes No] Loose Decking (Trip Hazard)

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No] Needs Maintenance

Comments: _____

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:
[Yes No] Electronic/ Hardcopy/ Both

Comments: Hardcopy logbook on site; last entry 3/28/24

Site Name: Cedars O3

Initials: EMH

Date: 02/10/2026

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
O3			

CALIBRATOR(s): Not Present

[Yes No] Are QA/QC Check Gases Vented Outside Shelter?

Make	Model	Serial Number	Certification Date	Expiration Date

Is any analyzer sampling shelter air through its calibration line? [Yes No] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Yes No] Calibrations (Not Required) [Yes No] Precision Checks (Required) [Yes No] Audits (Required)

Comments: O3 analyzer and calibrator in shop for routine maintenance

CYLINDER GAS STANDARDS:

Not Present

VENDOR: _____

(PSI Reading < 200, tank is empty and should not be in service)

QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number

Comments: _____

Site Name: Cedars O3 Initials: EMH Date: 02/10/2026

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
Raven	R55V	2R93330167011016	Modem	Main
Agilaire	8872	510	Datalogger	Main

SUPPORTING INSTRUMENTATION: Internal Not Present

Yes No] Temperature Sensor [Yes No] Uninterruptable Power Supply

Zero Air System: Commercial System (Make / Model): Teledyne T701 # 1343

Yes No] Needs Service Last Service Date: 02/21/2025 Condition: Good

Comments: _____

Probe Line(s): [Replaced / Cleaned] – Frequency: 1/year Last Service Date: 02/21/2025

[Yes No] Clean [Yes No] Heated [Yes No] Insulated [Yes No] Moisture

Comments: _____

OUTDOOR SAMPLERS Not Present

Yes No] Locked [Yes No] Electrically Grounded [Yes No] Stabilized

[Yes No] Clean Inside [Yes No] Head/Separator Clean

Operator / Log: VSCC/WINS Clean Schedule: _____ PM₁₀ Head Clean Schedule: _____

Comments: _____

COLLOCATED SAMPLERS: Not Present (39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)

*Collocated monitors must be within 4 meters of each other and at least 2 meters apart for flow rates greater than 200 liters/min or at least 1 meter apart for samplers having flow rates less than 200 liters/min to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Site Name: Cedars O3 Initials: EMH Date: 02/10/2026

PROBE SYSTEM(s): External Not Present

Inlet Type: [Single Line / Dual Line / Bell Type (CAS design)]

Funnel(s): [Rain Shield / Part of Probe] **Funnel Material:** [Teflon® / Glass / Stainless Steel]

Probe Line(s): [Teflon® / Other: _____] **Probe Fitting(s):** [Teflon® / Other: _____ / Not Present]

Residence Time: 8.47 (20 sec. max) (Refer to chart for maximum line lengths)

Comments: Worksheet completed 2/28/25

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
O3	4.2	Side of Shelter	NA	NA	Urban	Urban

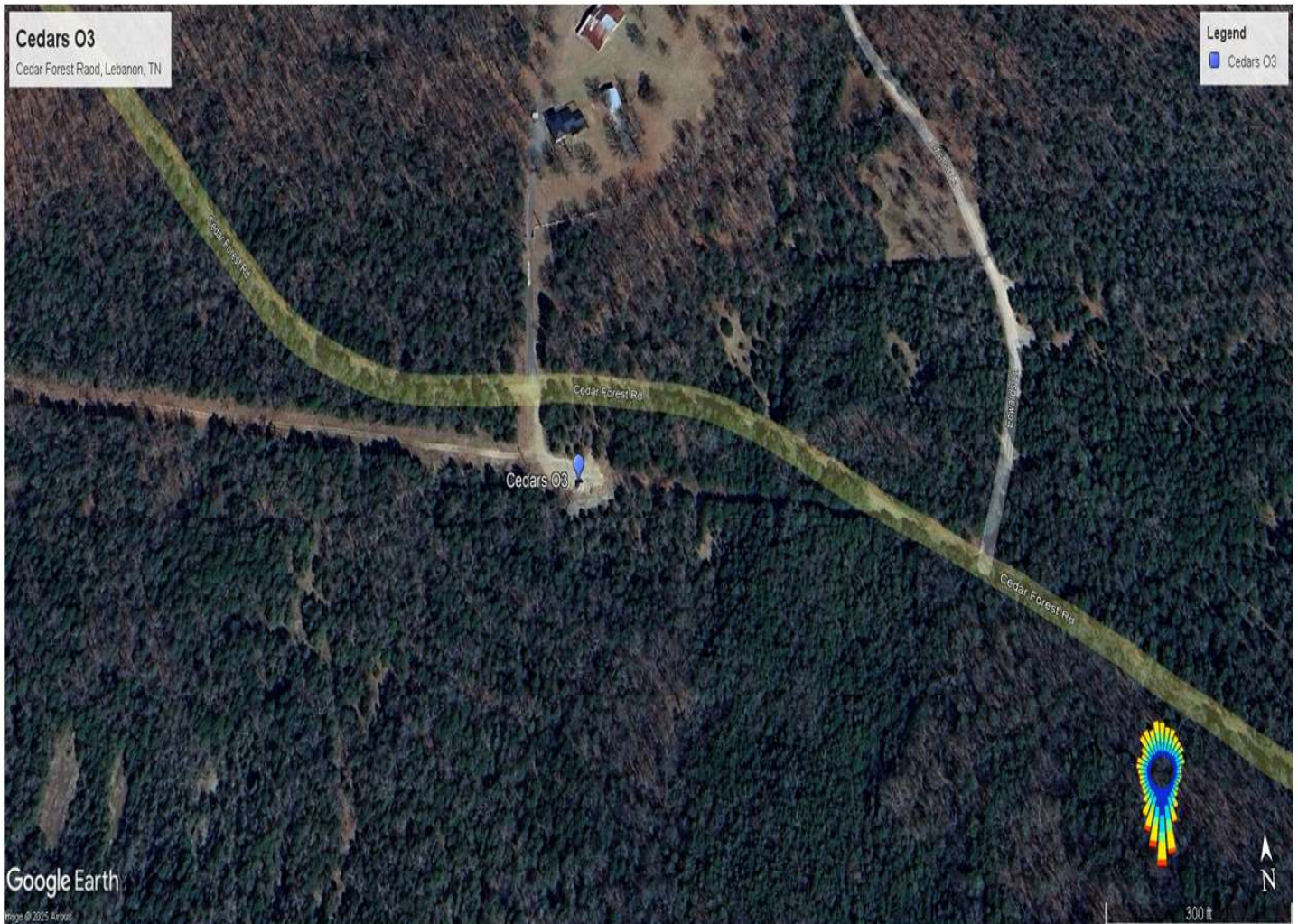
FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂,) & (2 meters for PM, Pb)
 When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Cedars O3

Initials: EMH

Date: 02/10/2026

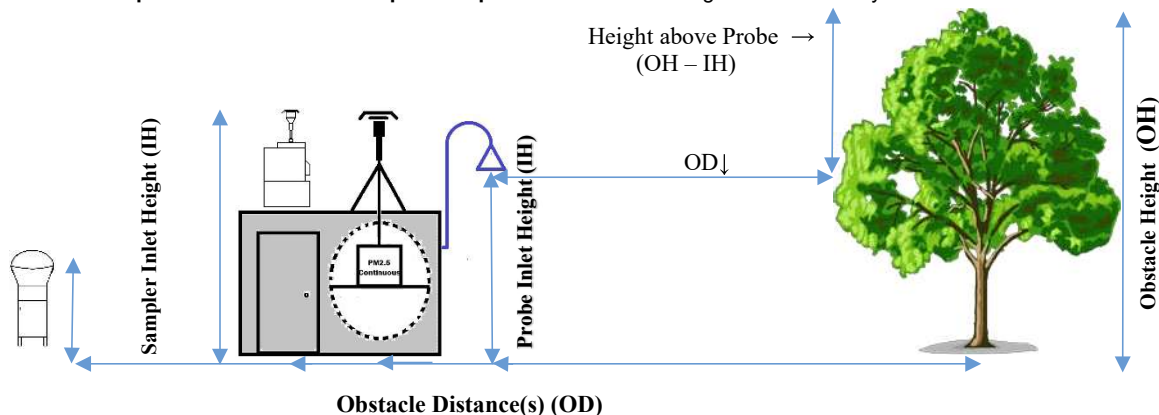
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 03/03/2025

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq [2*(OH-IH)]$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Tree	5.8	4.2	3.2	16.0	No	19
2	Tree	9.4	4.2	10.4	20.8	No	33
3	Tree	8.0	4.2	7.6	17.0	No	43
4	Trees	9.8	4.2	11.2	21.2	No	64
5	Tree	12.4	4.2	16.4	23.2	No	118
6	Trees	6.0	4.2	3.6	19.6	No	156
7	Tree	11.4	4.2	14.4	22.8	No	180
8	Trees	10.0	4.2	11.6	20.0	No	211
9	Tree	6.6	4.2	4.8	21.3	No	338
10	Tree	7.0	4.2	5.6	16.4	No	360
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the SITE DRAWING (next page)

Site Name: Cedars O3 Initials: EMH Date: 02/10/2026

TREE DRIPLINE(s): 15.0 meters (nearest inlet to dripline) No Trees Present
17.0 meters (nearest inlet to dripline) Not Present
17.6 meters (nearest inlet to dripline) Not Present

Should be greater than 20 meters from the dripline of tree(s) and dripline must be greater than 10 meters from inlet/probe.

Comments: No trees are considered obstructions; therefore no tree dripline issues.

Minor Sources:

- Groundcover, grass, etc present? (especially for PM samplers)
- Excessive number of chimnies, smoke stacks, fireplaces, diesel heating
- Off road diesel generators near NO₂ or SO₂ analyzers

Comments: None

Additional Information:

State Forestry removed a line of trees south of the shelter during November 2025.

Measured tree driplines (measured from edge of tree dripline to probe):

Object # 3 : 17.0 m

Object # 4: 15.0 m

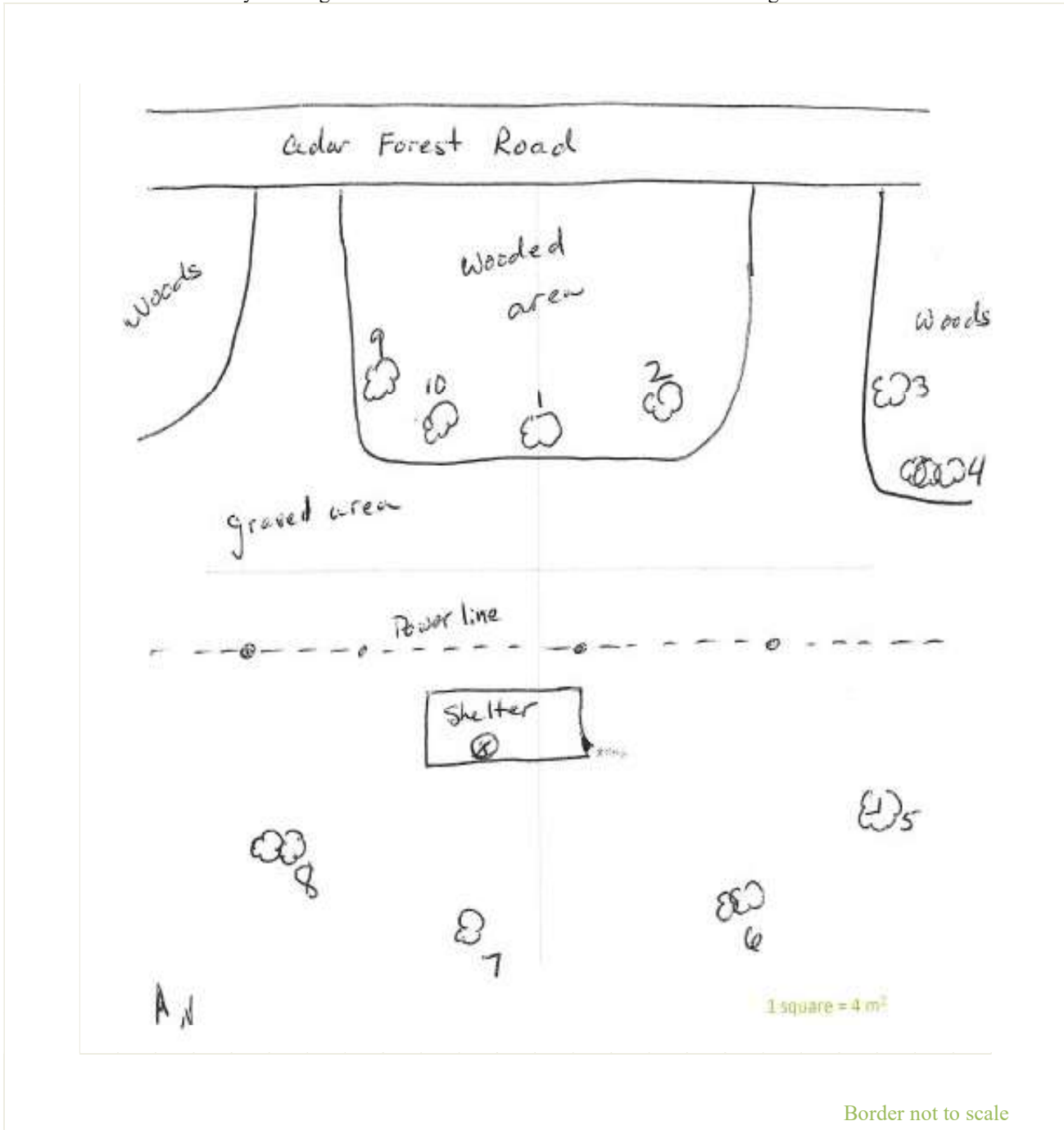
Object # 6: 18.8 m

Object # 7: 20.6 m

Object # 8: 17.6 m

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



Unrestricted Air Flow : > 270 ° Estimated Degrees of Clearance Must have continuous unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

PHOTO LOG: Site Name: Cedars O3 Initials: EMH Date: 02/10/2026

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 02/10/26 Photographer: EMH Description: North Directional



Photo: **002** Date: 02/10/26 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 02/10/26 Photographer: EMH Description: East Directional



Photo: 004 Date: 02/10/26 Photographer: EMH Description: Southeast Directional



Photo: 005 Date: 02/10/26 Photographer: EMH Description: South



Photo: 006 Date: 02/10/26 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 02/10/26 Photographer: EMH Description: West Directional



Photo: 008 Date: 02/10/26 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 02/10/26 Photographer: EMH Description: Site



Photo: 010 Date: 02/10/26 Photographer: EMH Description: O3 probe



Photo: 011 Date: 02/10/26 Photographer: EMH Description: Electric meter



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to access compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O ₃	--	2-15	2-15	2-15	2-15
SO ₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

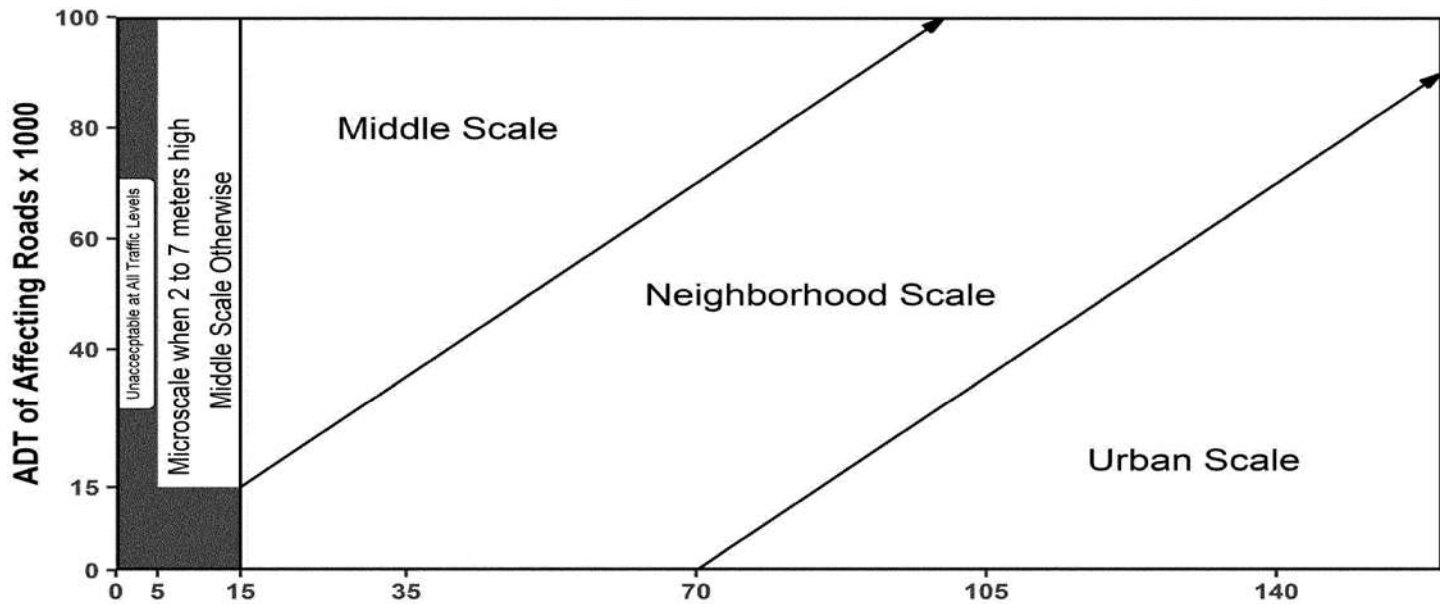


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

INDEX

Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.


**Tennessee Environment and Conservation
Division of Air Pollution Control
Davy Crockett Tower
500 James Robertson Parkway
Nashville, Tennessee 37243**



**Air Monitoring Site Evaluations
TDEC APC**

Date: 11/06/2025 **Location:** Bristol, TN
AQS Number: 47-163-3004
Site Name: Exide Pb **Pollutants:** Pb

Print Name / Signature / Initials / Duties

1: (Team Lead) Evelyn Haskin  EMH Site Specialist

2: _____

Air Monitoring Site Evaluation Summary

Site Name: Exide Pb Initials: EMH Date: 11/06/2025

Site meets EPA siting criteria: Yes No

If no, explain:

TDEC requested a waiver for the treeline on the opposite of Edison Circle from monitors. EPA approved the waiver on 10/10/2025 in their response letter for the 2025 TN Network Plan.

Tangent Roads

Road Name	Distance from Probe/Inlet	Direction	Road Type	Traffic Count	Traffic Year
Red Deer Raod	122.4 m	SW	Local Street	NA	NA
Exide Drive	212.8 m	S	Local Street	5864	2024
Edison Circle	5.8 m	SW	Local Street	NA	NA

Electrical

Utility Company: Appalachian Electric Power Corporation Meter Number: 45938

Additional Comments:

During a Pb-PEP audit in June 2025, EPA contract auditors captured photos of vegetation along a fence row near the Pb samplers and reported concerns of a potential dripline violation. EPA notified TDEC of this concern in October 2025 and a site visit was made to complete this evaluation and take corrective action if needed. Although siting nonconformities were not found during this TDEC site visit and evaluation, vegetation was trimmed back or removed to avoid any future issues.

MONITORING SITE EVALUATION FORM

Site Name: Exide Pb Initials: EMH Date: 11/06/2025

APC auditor should document in the Site Logbook – the time / date / purpose of visit / APC representatives present [Y/ N] Completed

Arrival Time: 10:25 am Departure Time: 11:00 am Primary Operator: Matthew Hayes

Observer(s): _____

SITE

[Yes No]-Security Fence [Yes No]-Razor/Barb Wire [Yes No NA] Grass/Shrubs Cut

[Yes No NA] Bare Soil Area [Yes No] Vandalism – [Inside / Outside Date: _____

[Yes No] Police Report Filed

Comments: _____

PLATFORMS – Not Present

Condition: [Yes No] Good [Yes No]Needs Maintenance

Comments: Top step needs to be replaced.

RECORDS AT SITE

Documents available (QAPPs, SOPs): [Yes No] Electronic/ Hardcopy/ Both

Logbooks at site:

[Yes No] Electronic/ Hardcopy/ Both

Comments: _____

MONITOR(s):

Location: Exterior Samplers [Roof / Ground / Not Present]

Monitor(s)	Manufacturer	Model	Serial Number
Pb (1)	Tisch	Hi-Vol	None
Pb (2)	Tisch	Hi-Vol	None

Comments: _____

Site Name: Exide Pb Initials: EMH Date: 11/06/2025

DATA COLLECTION:

Data Loggers/Modems:

Make	Model	Serial Number	Data logger/Modem	Main/Backup
NA	NA	NA	NA	NA

OUTDOOR SAMPLERS

Not Present

Yes No **Locked** Yes No **Electrically Grounded** Yes No **Stabilized** Yes No **Clean Inside**

Yes No **Head/Separator Clean**

Operator / Log: VSCC/WINS Clean Schedule: NA PM₁₀ Head Clean Schedule: NA

Comments: _____

COLLOCATED SAMPLERS: Not Present

(39.4 inches = 1 meter)

Pollutant	Flow (Hi / Lo)	*Separation Distance (meters)
Pb (1)	Hi	2.3
Pb (2)	Hi	2.3

*Collocated monitors **must be within 4 meters of each other** and at least **2 meters apart** for flow rates **greater than 200 liters/min** or at **least 1 meter apart** for samplers having flow rates **less than 200 liters/min** to preclude airflow interference, unless a waiver is in place as approved by the Regional Administrator pursuant to section 3 of Appendix A.

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	*Horizontal Distance (meters) If Applicable	*Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
Pb (1)	2.0	Ground	2.3	NA	Urban	Urban
Pb (2)	2.0	Ground	2.3	NA	Urban	Urban

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, SO₂) & (2 meters for PM, Pb)

When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Site Name: Exide Pb

Initials: EMH

Date: 11/06/2025

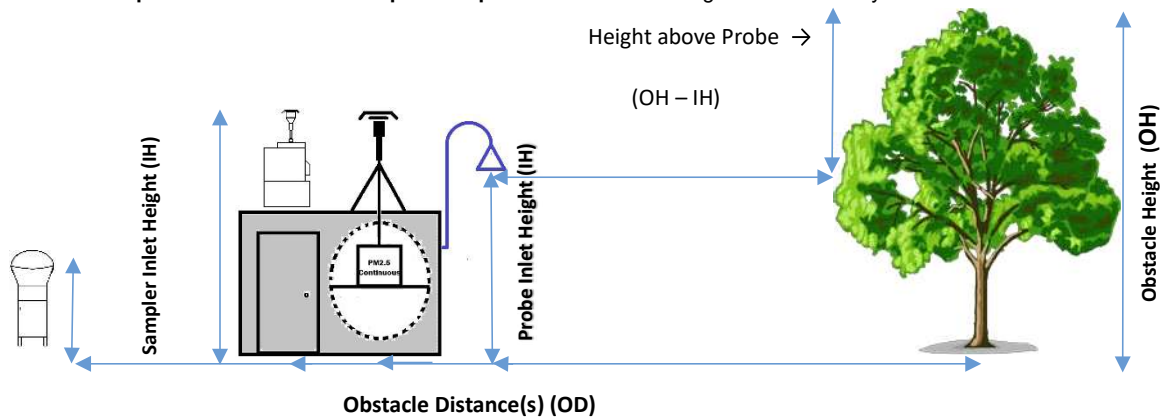
Aerial Photo with Wind Rose



Source: Google Earth Pro

Imagery Date: 05/04/2023

OBSTRUCTION(s): Distance from sampler, probe to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler and probe. Sites not meeting this criterion may be classified as middle scale.



All distances in meters

OD MUST be $\geq 2*(OH-IH)$

No.	Object(s)	Object/Obstacle Height (OH)	Sampler Probe/Inlet Height (IH)	$[2*(OH-IH)]$	Object/Obstacle Distance (OD)	Obstacle	AZ *
1	Former Exide Plant	14.2	2.0	24.4	155.0	No	75
2	Bushes	4.5	2.0	5.0	23.2	No	339
3	Tree	6.8	2.0	9.6	50.0	No	335
4	Trees	12.4	2.0	20.8	54.0	No	315
5	Trees	16.4	2.0	28.8	21.0	Yes	272
6	Trees	14.4	2.0	24.8	22.0	Yes	202
7	Trees	14.4	2.0	24.8	30.5	No	185
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

*AZ (Azimuth Reading). Please identify each of these obstacles in the **SITE DRAWING** (next page)

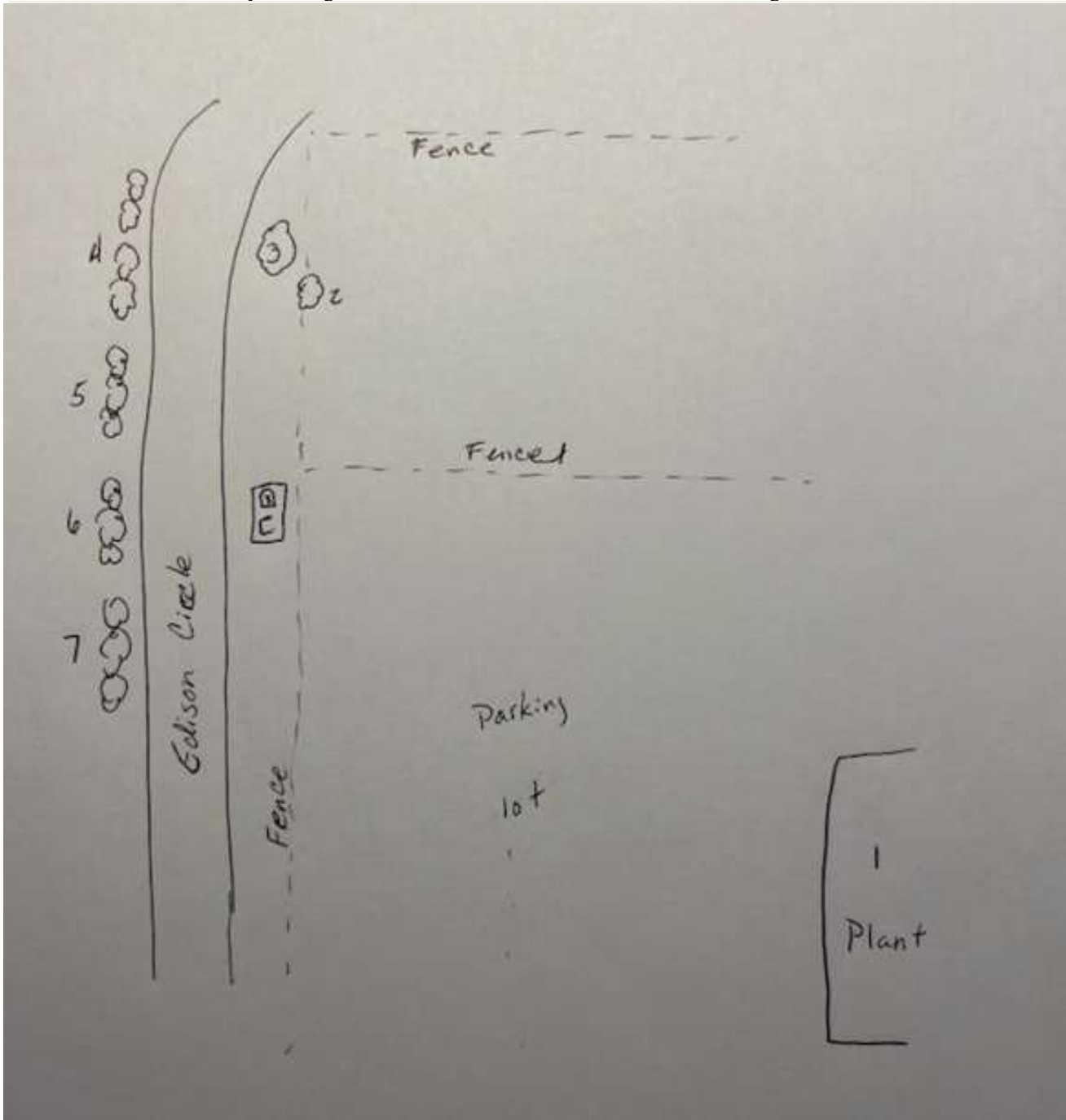
Site Name: Exide Pb

Initials: EMH

Date: 11/06/2025

SITE DRAWING - Please Indicate: (relevant distance / height measurements)

- | | | | |
|------------------|--------------------|---------------------|-----------------------|
| Direction NORTH | Monitoring Shelter | Nearby Trees/Shrubs | Possible Sources |
| Primary Wind Dir | Probe Position(s) | Roadways | Paved / Unpaved Areas |
| Security Issues | Exterior Samplers | Buildings | Nearby Construction |
| Sloping Areas | Met Tower | Walls | Flues, Vents, Boilers |
| | Security Fencing | Other Obstructions | Meat Cooking |



UNRESTRICTED AIR FLOW: < 270°. Estimated Degrees of Clearance

Must have unrestricted airflow **270 degrees** around the probe or sampler; **180 degrees** if the probe is on the **side of a building** or a wall.

PHOTO LOG: Site Name: Exide Pb Initials: EMH Date: 11/06/2025

Camera [APC / Personal – Owner: _____] Make/Model: Iphone

Photo: **001** Date: 11/06/25 Photographer: EMH Description: North Directional



Photo: **002** Date: 11/06/25 Photographer: EMH Description: Northeast Directional



Photo: 003 Date: 11/06/25 Photographer: EMH Description: East Directional



Photo: 004 Date: 11/06/25 Photographer: EMH Description: Southeast Directional

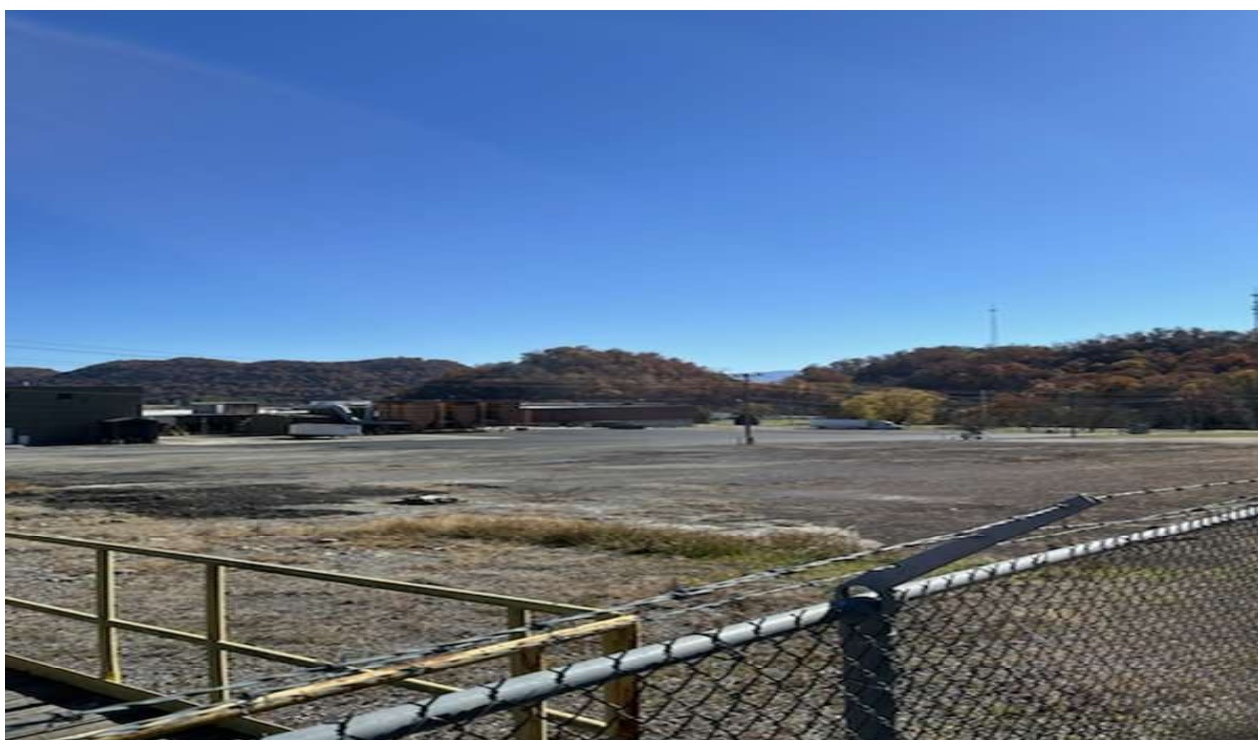


Photo: 005 Date: 11/06/25 Photographer: EMH Description: South Directional



Photo: 006 Date: 11/06/25 Photographer: EMH Description: Southwest Directional



Photo: 007 Date: 11/06/25 Photographer: EMH Description: West Directional



Photo: 008 Date: 11/06/25 Photographer: EMH Description: Northwest Directional



Photo: 009 Date: 11/06/25 Photographer: EMH Description: Site



Photo: 010 Date: 11/06/25 Photographer: EMH Description: Electrical



Photo: 011 Date: 11/06/25 Photographer: EMH Description: NW fence line after vegetation removal



Photo: 012 Date: _____ Photographer: _____ Description: _____

40 CFR Part 58, Appendix E, Tables and Figures

Roadway average daily traffic, vehicles per day	Minimum distance ¹³ (meters)	Minimum distance ¹²³ (meters)
≤1,000	10	10
10,000	10	20
15,000	20	30
20,000	30	40
40,000	50	60
70,000	100	100
≥110,000	250	250

TABLE E-1 OF APPENDIX E TO PART 58—MINIMUM SEPARATION DISTANCE BETWEEN ROADWAYS AND PROBES FOR MONITORING NEIGHBORHOOD AND URBAN SCALE OZONE (O₃)

¹Distance from the edge of the nearest traffic lane. The distance for intermediate traffic counts should be interpolated from the table values based on the actual traffic count.

²Applicable for ozone monitors whose placement has not already been approved as of December 18, 2006.

³ All distances listed are expressed as having 2 significant figures. When rounding is performed to assess compliance with these siting requirements, the distance measurements will be rounded such as to retain at least two significant figures.

Required Pollutant Probe Height (meters) vs Monitoring Scale:

Pollutant	Micro	Middle	Neighborhood	Urban	Regional
O₃	--	2-15	2-15	2-15	2-15
SO₂	--	2-15	2-15	2-15	2-15
PM, Pb	2-7	2-15	2-15	2-15	2-15

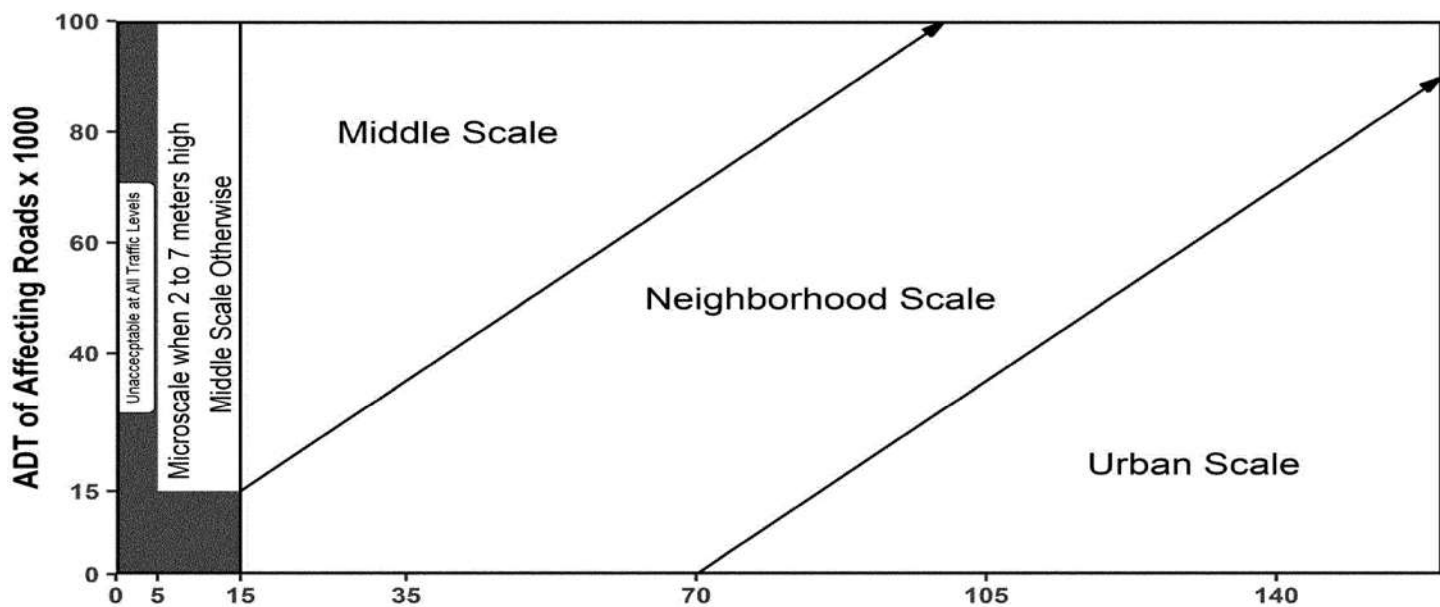


Figure E-1. Distance of PM Samplers to nearest traffic lane (meters)

Notes: Microscale street canyon sites must reside between 2 and 10 meters from the roadway.
 Near-Road sites must be within 50 meters of the roadway.
 The slopes of the lines between monitoring scales are one to one.

Residence Time: The chart provides the maximum probe line length (in feet) of ¼” OD tubing at given flow rate - using a 20 second residence time. The ID’s shown are for thick (1/8”), intermediate (5/32”) and thin (3/16”) wall Teflon® tubing. The line lengths shown **do not** account for any lo-flo manifold volumes as part of the probe system.

1/4" Line OD / 20 Sec Residence Time			
Flow Rate	1/8" ID	5/32" ID	3/16" ID
(liters/min)	feet	feet	feet
0.1	13.8	8.8	6.1
0.2	27.6	17.7	12.3
0.3	41.4	26.5	18.4
0.4	55.3	35.4	24.6
0.5	69.1	44.2	30.7
0.6	82.9	53.0	36.8
0.7	96.7	61.9	43.0
0.8	110.5	70.7	49.1
0.9	124.3	79.6	55.3
1	138.1	88.4	61.4
1.1	151.9	97.2	67.5
1.2	165.8	106.1	73.7
1.3	179.6	114.9	79.8
1.4	193.4	123.8	85.9
1.5	207.2	132.6	92.1
1.6	221.0	141.4	98.2
1.7	234.8	150.3	104.4
1.8	248.6	159.1	110.5
1.9	262.4	168.0	116.6
2	276.3	176.8	122.8

SUPPORTING INSTRUMENTATION

Temperature Sensor: the shelter must have a temperature sensor inside connected to the data logger. The sensor is not directly required in the regulation, but is needed to demonstrate the operational conditions of the analyzer meet the FRM/FEM requirements.

Uninterruptable Power Supply – not required, but a UPS can offer additional protection to the expensive equipment in the monitoring shelter.

On-Site Computer: not required, can act as a data backup device, can have electronic strip chart information for QC/QA purposes. The operator may utilize a laptop pc instead of one on-site.

Zero Air System:

For a Commercial System: give the make and model
Identify any issues with either system.

Data Logger: Identify system at site

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Local Site Name: prefer name used by agency monitoring staff for this site, this field should be completed for each page of the evaluation form, if a sheet ever separates from the logbook it can be returned to the proper place.

Initials: Initials of auditor completing form.

Date: current date site is entered by auditor

Reminder: If present, the auditor should add comment to the Site Logbook including: time, date, purpose of visit, auditors present.

Arrival Time: time auditors arrive at site

Departure Time: time auditors depart site

Primary Operator: the sites main operator, include parameters responsible for

Observers: person(s) at site, attending agency staff, site operators, other EPA, State auditors present

Networks: check all that apply, indicates type / purpose of monitoring conducted at site

SITE (Questions to ask yourself)

Security Fence: present or not? Security fencing can help with sample integrity. Is there more than one lock on gate, who has access other than monitoring staff?

Razor/Barb Wire - present or not? Note condition if damaged or aging – rusted? Is wire hanging down out of proper place?

Grass/Shrubs Cut: Is the grass and/or shrubs at the monitoring site cut and trimmed? Who is responsible for grass/shrub/tree maintenance? Is it regularly maintained?

Bare Soil: Does the site area consist of bare soil? Could be a local source for PM samplers (40 CFR Part 58 Appendix E, §3)

Vandalism – Any vandalism history at Site? Inside or Outside / check both if necessary? Date of last occurrence. Were police notified? If vandalism is current/ how serious/ gunfire into shelter?, loss of equipment/records?

SHELTER – Interior note condition/age of shelter, roof issues, water damage, and t, mold - insect issues, any electrical issues, is it clean, are the instruments securely mounted, loud pumps, is the lock secure

Arrival Temperature: Ask operator to provide current reading from data logging system if available. Values should be 20-30 °C generally, can depend on instrumentation present – FRM-FEM designations, and is specified in TDEC DAPC's QAPP. Some agencies keep the shelters near the upper limit in winter to help poorly insulated shelters maintain temperature overnight. May become too warm during mid-day hours. Conversely, an agency may keep the shelter cool in summer to help with high temperatures. Teledyne analyzers are designated FEM for a range of 5-40 °C. Therefore, TDEC DAPC keeps shelters with these monitors within this range (still keeping in mind the 2 deg SD requirement). Shelters are generally kept about 25-26 °C in the warmest months to reduce condensation in sample lines and analyzer.

Operator Site Visits: how many times per week or month, what is the schedule? Does logbook confirm?

Leaking Roof: Does roof leak, evidence may be apparent, question operator?

Damage: Ceiling, Wall, Floor: document damage if present – how long did leak exist before repair?

Clean / Neat: Is interior of shelter maintained, are the floors/counters/walls clean, well-organized, neat in appearance?

Fire Extinguisher: not required by EPA, good idea.

Insect/Wildlife Issues: Termites? Ants? Wasps/Bees? / Larger wildlife causing problems (such as nesting in the undercarriage or walls or digging dens near the foundation/supports)?

Thermometer (min/max): not required, but good insurance measure should temperature probe fail. Operator should document reading at site visit and reset.

Gasoline: Gasoline for weed trimmers, etc. is dangerous to have inside the shelter and can impact concentration values. Gasoline should not be stored in same environment as sample equipment, away from pumps and other electrical equipment as well.

Monitors: document the instrumentation present – monitor / manufacturer / model / serial #, look at the age and/or condition of the instrumentation, clean/dirty, and examine lines for moisture, cleanliness, and kinks/cracks. Moisture in the sample line can scrub pollutant concentrations – data will have to be invalidated if moisture found – determine how long the moisture has been present.

Exterior Samplers – roof or ground.

Met: define the met instrumentation present or not.

Calibrators: can be ozone, gas blenders, audit calibrators, note condition, clean/dirty, and examine lines for moisture, cleanliness, kinks/cracks, examine line from calibrator to analyzer – it should be capped or connected to a solenoid or the calibrator – if the end is open the analyzer may be sampling shelter air – photograph, document, show operator – correct problem, note in site log. For each calibrator present at the site, if the site contains no standards, mark the not present selection and move to the next section.

QA/QC Vented? – Gases should be vented, it's unhealthy for operators to breathe these pollutant concentrations.

Is analyzer sampling Shelter Air? - if the analyzer is sampling shelter air, even partially, all of the data impacted must be invalidated. Some examples of items that can cause this problem are a leaking filter holder or fitting and an uncapped TTP system or sample line tee.

FILTERS: For precision checks and audits, all gas standards (including Ozone) MUST pass through the sample line filter at the back of or internal to the instrument. Check the plumbing, interview the operator and qa auditor on this point. Calibrations may or may not pass through the filter, if it does it should be a clean filter and the records – logbook should indicate an ending precision check, then the filter change, then the calibration. If the calibration gas does not pass through the filter, there should be a probe line integrity check after the calibration – demonstrating the probe line has not impacted the pollutant concentration during the calibration.

Cylinder Gas Standards: complete the table as noted: QA/QC how is the standard used for QA or QC operations?, Gas Standard meaning CO, SO₂, NO, NO₂, the PSI reading - a low reading (<=200) is a warning that the tank should be considered empty – the gas regulator cannot reliably control lower than this reading. Note the expiration date, standard concentration and tank serial number from the certification information with the tank.