Roy Cooper
Governer
Elizabeth Biser
Secretary
Michael A. Abraczinskas
Director

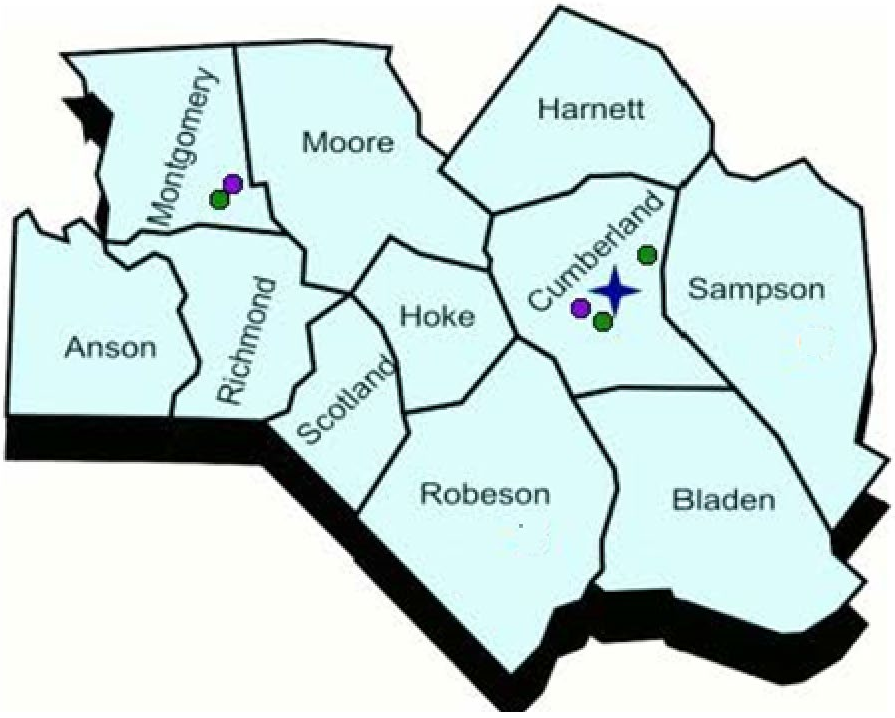
NORTH CAROLINA
Environmental Quality

2021-2022 Annual Monitoring Network Plan for the North Carolina Division of Air Quality

Volume 2

Site Descriptions by Division of Air Quality Regional Office and Metropolitan Statistical Area

E. The Fayetteville Monitoring Region



July 1, 2021

North Carolina Department of Environmental Quality | Division of Air Quality
217 West Jones Street | 1641 Mail Service Center | Raleigh, North Carolina 27699-1641
919.707.8400

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E. The Fayetteville Monitoring Region

The Fayetteville monitoring region, shown in Figure E1, consists of three sections: (1) the non-Metropolitan Statistical Area, or MSA, portion of the Fayetteville monitoring region - Bladen, Montgomery, Moore, Richmond, Robeson, Sampson and Scotland counties, (2) the Fayetteville MSA, Cumberland, Harnett and Hoke Counties and (3) the southeastern portion of the Charlotte-Gastonia-Concord MSA, Anson County, previously discussed as part of the Mooresville Monitoring Region in **Section C.**

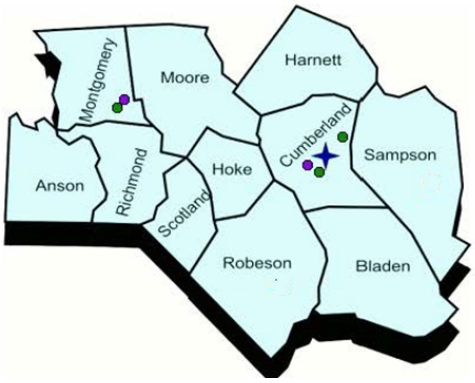

Figure E1. The Fayetteville monitoring region
The dots show the approximate locations of most of the monitoring sites in this region.

(1) The Non-MSA Portion of the Fayetteville Monitoring Region

The non-MSA portion of the Fayetteville monitoring region contains seven counties - Bladen, Montgomery, Moore, Richmond, Robeson, Sampson and Scotland. It has no MSAs. The Southern Pines-Pinehurst Micropolitan Statistical Area (MiSA) is in Moore County. The Lumberton MiSA is in Robeson County. The North Carolina Division of Air Quality, or DAQ, currently operates one monitoring site in this area of the Sand Hills at Candor in Montgomery County. The location of the Candor monitoring site is shown in Figure E2.

Figure E2. Location of the Candor monitoring site
A is the Candor fine particle, air toxic and CASTNET monitoring site.
The circle approximates the neighborhood scale, 0.5 to 4 kilometers [Km].

At the Candor site, DAQ operates a continuous fine particle beta attenuation monitor, or BAM; a rotating every third year PM_{10} monitor; air toxics volatile organic compound and carbonyl monitors; a rainwater collection sampler; and ambient temperature, relative humidity, wind speed and direction sensors. DAQ also operates a weekly mercury deposition monitor at this site to measure total mercury, Hg, concentration and deposition in precipitation. Table E1

summarizes monitoring information for the site. Figure E3 through Figure E9 show the site and views looking north, east, south and west. The Candor site is collocated with a clear air status and trends network, CASTNET, site.

Table E1. Site Information Table for Candor

Site Name:	Candor		**AQS Site Identification Number**	37-123-0001	
Location:	136 Perry Drive, Candor, North Carolina				
CBSA:	Not in a CBSA	**CBSA #:**	00000	**Elevation**	173.1 meters
Latitude	35.263165	**Longitude**	-79.836636	**Datum:**	NAD83

Parameter Name	**Method**	**Method Reference ID**	**Sample Duration**	**Sampling Schedule**
PM 2.5 local conditions, BAM	Met One BAM-1020 Mass Monitor w/VSCC, 170	EQPM-0308-170	1-hour	Year-round
PM10 total 0-10um STP	Met One Beta Attenuation BAM-1020, 122	EQPM-0798-122	1-hour	Year-round, every third year
Volatile organic compounds	SS 6L- pressurized canister w/ cryogenic preconcentration: GC/MS, 150	Not applicable	24-hour	Every sixth day, year-round
Carbonyl compounds	Silica-DNPH-CART-KI O3 Scrub HPLC, 202	Not applicable	24-hour	Every sixth day, year-round

Date Monitor Established	
PM 2.5 local conditions, continuous monitor, BAM	Aug. 1, 2013
PM10 total 0-10um STP, primary monitor	Feb. 16, 2011
Volatile organic compounds	Jan. 26, 2002
Carbonyl compounds	July 3, 2013

Nearest Road:	McCallum Rd	**Traffic Count:**	200	**Year of Count:**	2017

Parameter Name	**Distance to Road**	**Direction to Road**	**Monitor Type**	**Statement of Purpose**
PM 2.5 local conditions, BAM	1079 meters	North northeast	SLAMS	Real-time data reporting. AQI reporting.
PM10 total 0-10um STP	1079 meters	North northeast	Special purpose	Prevention of significant deterioration, PSD, Modeling
Volatile organic compounds	1079 meters	North northeast	Non-regulatory	General background monitor
Carbonyl compounds	1079 meters	North northeast	Non-regulatory	General background monitor

Parameter Name	**Monitoring Objective**	**Scale**	**Suitable for Comparison to NAAQS**	**Proposal to Move or Change**
PM 2.5 local conditions, BAM	General background; welfare related impacts	Regional	Yes	None
PM10 total 0-10um STP	General background	Regional	Yes	None
Volatile organic compounds	General background	Regional	Not applicable	None
Carbonyl compounds	General background	Regional	Not applicable	None

	Meets Part 58 Requirements for:			
Parameter Name	**Appendix A**	**Appendix C**	**Appendix D**	**Appendix E**
PM 2.5 local conditions, BAM	Yes	Yes	Yes- required background site	Yes
PM10 total 0-10um STP	Yes	Yes	Yes – not required	Yes
Volatile organic compounds	Yes	Not applicable	Yes – not required	Yes
Carbonyl compounds	Yes	Not applicable	Yes – not required	Yes

Parameter Name	**Probe Height in meters**	**Distance to Support**	**Distance to Trees**	**Obstacles**
PM 2.5 local conditions, BAM	2.46	> 2 meters	>20 meters	None
PM10 total 0-10um STP	3.17	2.87 meters	>20 meters	None
Volatile organic compounds	3.91	1.117 meters	> 20 meters	None
Carbonyl compounds	3.91	1.117 meters	> 20 meters	None

Each CASTNET dry deposition station measures:

- Weekly average atmospheric concentrations of sulfate, nitrate, ammonium, sulfur dioxide and nitric acid; and
- Hourly concentrations of ambient ozone levels.

The CASTNET meteorological equipment was transferred to the division in 2012.

The Candor site is located on the eastern edge of the Uwharrie National Forest. In 2013, DAQ added a BAM and a one-in-six-day carbonyl sampler to support a background monitoring study. July 1, 2015, the BAM became the primary monitor at the site when DAQ shut down the FRM.

Figure E4. The Candor particle monitors, rainwater collection sampler, shelter, and meteorological tower

Figure E5. The Candor mercury deposition monitor and rain gauge

Figure E3. The Candor air toxics shelter and rainwater collection sampler

Figure E6. Looking north from the Candor site

Figure E7. Looking east from the Candor site

Figure E8. Looking west from the Candor site

Figure E9. Looking south from the Candor site

There are no new monitoring requirements that will require additional monitoring in this area.

(2) The Fayetteville MSA

The Fayetteville MSA consists of three counties: Cumberland, Harnett and Hoke. The major urban area is the City of Fayetteville. In July 2019, the U.S. Census Bureau, Population Division, estimated 526,719 people lived here.[1] DAQ currently operates three monitoring sites in the Fayetteville MSA. These sites are all located in Cumberland County at William H. Owen Elementary School, E. Melvin Honeycutt Elementary School in Fayetteville and at Wade. The division shut down the Golfview site in Hope Mills on Oct. 31, 2014. The locations of these monitors are shown in Figure E10.

Figure E10. Monitors located in the Fayetteville MSA

[1] Source: Cumulative Estimates of Resident Population Change and Rankings for Metropolitan Statistical Areas in the United States and Puerto Rico: April 1, 2010 to July 1, 2019, U.S. Census Bureau, Population Division, Released March 2020, available online at https://www.census.gov/newsroom/press-kits/2020/pop-estimates-county-metro.html.

At the **Honeycutt** site, DAQ operates a seasonal ozone monitor and a special purpose sulfur dioxide monitor that operates for 12 months every three years. DAQ established this site in April 2015. The division discovered in February 2014 that the golf course where the Golfview monitoring station was located was closed and the property where the monitor was located was for sale. The property owner agreed to allow DAQ to continue using the site until the property sold. The property sold in August 2014 and the new owner requested DAQ move the monitoring station as soon as possible. The division investigated surrounding properties to identify a potential location for the monitoring station. The property abuts YMCA property on one side and city property on the other. DAQ considered relocating the monitoring station about 100 meters southeast to the YMCA property, however, the YMCA never responded to the request. Thus, the division worked with the school system to move the site to E. Melvin Honeycutt Elementary School at 4665 Lakewood Drive, Fayetteville, North Carolina. As shown in Figure E11, the school is located about 3.2 kilometers northwest of the former Golfview location.

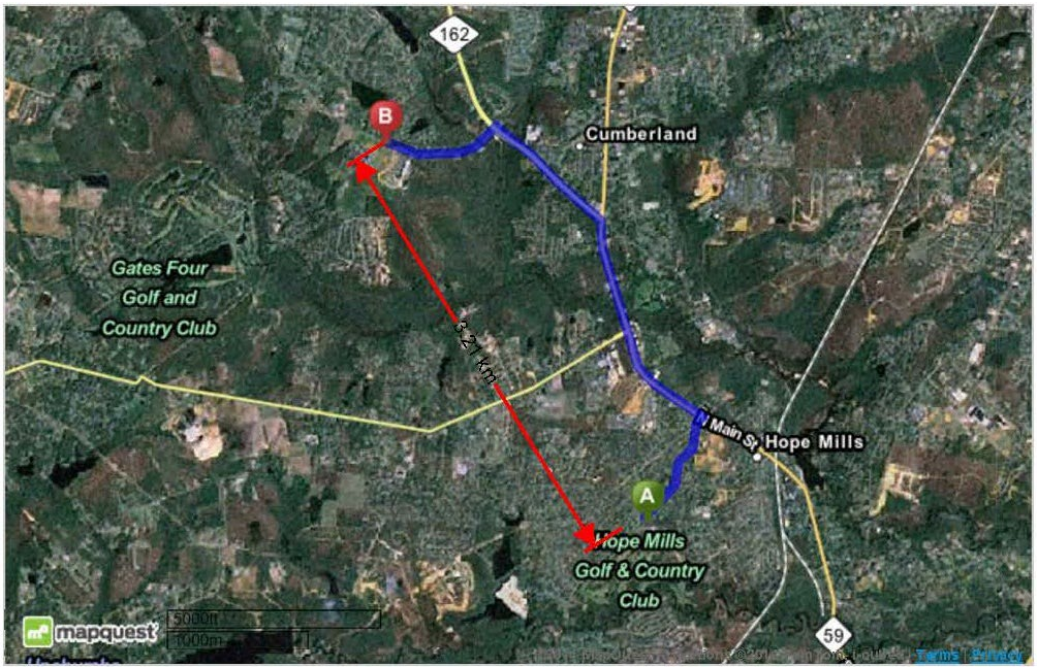

Figure E11. Location of Honeycutt site, B, relative to Golfview, A

Figure E12 through Figure E16 show the site and views looking north, east, south and west. Table E2 summarizes monitoring information for the site. The Honeycutt ozone site is the upwind site for the Fayetteville MSA. Sulfur dioxide monitoring occurs here every third year because the site is a good background site for obtaining data for Prevention of Significant Deterioration modeling requirements. This sulfur-dioxide monitor started operating on March 15, 2021, and will operate until March 31, 2022.

Figure E12. Honeycutt ozone and sulfur dioxide monitoring site, 37-051-0010

Figure E13. Looking north from the Honeycutt site

Figure E14. Looking east from the Honeycutt site

Figure E15. Looking west from the Honeycutt site

Figure E16. Looking south from the Honeycutt site

Table E2. Site Information Table for Honeycutt

Site Name:	Honeycutt			**AQS Site Identification Number:**		37-051-0010	
Location:	4665 Lakewood Drive, Fayetteville, North Carolina			**CBSA:**	Fayetteville, NC	**CBSA #:**	22180
Latitude	35.00165	**Longitude**	-78.99075	**Datum:**		WGS84	
Elevation	59.1 meters						

Parameter Name	**Method**	**Method Reference ID**	**Sample Duration**	**Sampling Schedule**
Ozone	Instrumental with ultra violet photometry, 047	EQOA-0880-047	1-Hour	March 1 to Oct. 31
Sulfur dioxide	Instrumental with pulsed fluorescence, 060	EQSA-0486-060	1-Hour	Year-round; every third year

Date Monitor Established:		
	Ozone	May 9, 2015
	Sulfur dioxide	May 9, 2015

Nearest Road:	Fisher Road	**Traffic Count:**	16,500	**Year of Count:**	2018

Parameter Name	**Distance to Road**	**Direction to Road**	**Monitor Type**	**Statement of Purpose**
Ozone	43 meters	North northeast	SLAMS	Real-time AQI reporting and forecasting. Compliance w/NAAQS.
Sulfur dioxide	43 meters	North northeast	Special purpose	Prevention of significant deterioration, PSD, modeling

Parameter Name	**Monitoring Objective**	**Scale**	**Suitable for Comparison to NAAQS**	**Proposal to Move or Change**
Ozone	Population exposure	Neighborhood	Yes	None
Sulfur dioxide	Population exposure General background	Neighborhood	Yes	None

Parameter Name	**Meets Part 58 Appendix A Requirements**	**Meets Part 58 Appendix C Requirements**	**Meets Part 58 Appendix D Requirements**	**Meets Part 58 Appendix E Requirements**
Ozone	Yes	Yes	Yes	Yes
Sulfur dioxide	Yes	Yes	Not applicable	Yes

Parameter Name	**Probe Height in meters**	**Distance to Support**	**Distance to Trees**	**Obstacles**
Ozone	4.22 meters	1.2 meters	>20 meters	None
Sulfur dioxide	4.22 meters	1.5 meters	>20 meters	None

Because 40 CFR 58 Appendix D requires MSAs with more than 350,000 people to have two ozone monitors, this site is the second required ozone site for the Fayetteville MSA.

At the Wade site, DAQ operates a seasonal ozone monitor. A picture of the site as well as views looking north, east, south and west are provided in Figure E17 through Figure E21. Table E3 summarizes monitoring information for the site. The Wade site was established as the downwind site for the Fayetteville MSA. 40 CFR 58 Appendix D currently requires the Fayetteville MSA to have two ozone monitoring sites. In October 2019, the DAQ evaluated the site to see if it still meets the siting criteria in Appendix E to 40 Code of Federal Regulations (CFR) Part 58. Figure E22 shows an aerial view of the Wade site.

Figure E17. Wade ozone monitoring Site, 37-051-0008

Figure E18. Looking north from Wade site

Figure E20. Looking east from the Wade site

Figure E19. Looking west from the Wade site

Figure E21. Looking south from the Wade site

Table E3. Site Information Table for Wade

Site Name:	Wade			**AQS Site Identification Number:**			37-051-0008		
Location:	7112 Covington Lane, Wade, North Carolina			**CBSA:**	Fayetteville, NC		**CBSA #:**	22180	
Latitude	35.1587	**Longitude**	-78.7281	**Datum:**	WGS84		**Elevation**	45 meters	
Parameter Name	**Method**			**Method Reference ID**		**Sample Duration**	**Sampling Schedule**		
Ozone	Instrumental with ultra violet photometry, 047			EQOA-0880-047		1-Hour	March 1 to Oct. 31		
Date Monitor Established:	Ozone						May 8, 1990		
Nearest Road:	Covington Road			**Traffic Count:**	140	**Year of Count:**	2017		

Parameter Name	**Distance to Road**	**Direction to Road**	**Monitor Type**	**Statement of Purpose**
Ozone	87 meters	West	SLAMS	Compliance w/NAAQS. Real-time AQI reporting & forecasting.

Parameter Name	**Monitoring Objective**	**Scale**	**Suitable for Comparison to NAAQS**	**Proposal to Move or Change**
Ozone	Highest concentration	Urban	Yes	Will relocate site

Parameter Name	**Meets 40 CFR Part 58 Requirements for:**			
	Appendix A	**Appendix C**	**Appendix D**	**Appendix E**
Ozone	Yes	Yes	Yes	Yes

Parameter Name	**Probe Height in meters**	**Distance to Support**	**Distance to Trees**	**Obstacles**
Ozone	4.40	1.2 meter	>20 meters	None

Figure E22. Aerial view of the Wade site

As can be seen in Figure E22, the site is surrounded by trees on three sides. However, the trees are only obstacles resulting in an obstruction to air flow on two sides. There is a tree 10.5 meters to the west that obstructs 18 degrees of air flow. A row of trees 28.6 meters to the east obstruct an additional 61 degrees of air flow. Since the site has 281 degrees of unobstructed air flow it continues to meet the 40 CFR Part 58, Appendix E requirements of having 270 degrees of unobstructed air flow. However, since the site barely meets the 40 CFR Part 58, Appendix E siting requirements and DAQ plans to replace the monitoring shelter at the site, the DAQ decided to move the site to District 7 Elementary School. The new site at District 7 Elementary School is 2.23 kilometers southeast of the current Wade site as shown in Figure E23. The Cumberland County Board of Education agreed to this location on Feb. 11, 2020.

Figure E23. Location of new site relative to the Wade site

Mr. Mark Whitley, Executive Director for Cumberland County Schools, at District 7 Elementary School approved placing the relocated Wade monitor inside the fence where the old pump house is as shown in Figure E24. The DAQ posted a network plan addendum on the Department of Environmental Quality Division of Air Quality website for public comment for 30 days from February 25 to March 26, 2020, and submitted it to the EPA on April 1, 2020.[2] The DAQ did not receive any public comments on the request to relocate the Wade site. The Wade School site will be established sometime during the 2021 ozone season or before the start of the 2022 ozone season if power can be obtained for the site.

[2] North Carolina Department of Environmental Quality 2019-2020 Final Network Monitoring Plan, Volume 1, Addendum 1. Wade Relocation Siting Analysis and Site Information, Available on the worldwide web at http://xapps.ncdenr.org/aq/documents/DocsSearch.do?dispatch=download&documentId=12992.

Figure E24. Aerial view of the proposed site

At the William Owen site, DAQ operates continuous fine particle and PM_{10} monitors. Figure E25 shows the site. Table E4 summarizes monitoring information for the site. Views looking north, northeast, east, southeast, south, southwest, west and northwest are provided in Figure E26 through Figure E33. The meteorological tower with wind speed and wind direction sensors, ambient temperature sensors at 10 meters and 2 meters, rainfall and solar radiation sensors was shut down on Nov. 12, 2014. In mid-January 2016, the collocated high-volume PM_{10} monitors at the site were shut down and replaced with a low-volume continuous PM_{10} monitor. At the end of 2015 the well-impactor ninety-six, WINS, on the FRM was replaced with a very sharp cut cyclone, VSCC. This change was made because the VSCC is easier and less expensive to maintain. In mid-2017, a one-in-six-day collocated fine particle FRM was added to the site. At the end of 2019, the division shut down the two fine particle FRMs at the site.

Figure E25. The William Owen particle monitoring site

Table E4. Site Information Table for William Owen School

Site Name:	William Owen School			**AQS Site Identification Number**		37-051-0009	
Location:	4533 Raeford Road, Fayetteville, North Carolina						
CBSA:	Fayetteville, NC			**CBSA #:**	22180		
Latitude	35.041416	**Longitude**	-78.953112	**Datum:**	WGS84	**Elevation**	63 meters

Parameter Name	**Method**	**Method Reference ID**	**Sample Duration**	**Sampling Schedule**
PM 2.5 local conditions, BAM	Met One BAM-1022 Mass Monitor w/ VSCC	EQPM-1013-209	1-Hour	Year-round
PM10 total 0-10µm STP, primary	Met One Beta Attenuation BAM-1020	EQPM-0798-122	1-Hour	Year-round

Date Monitor Established:	PM 2.5 local conditions, continuous monitor	Dec. 30, 2015
	PM10 total 0-10µm STP, primary monitor	Jan. 1, 1999

Nearest Road:	Raeford Road	**Traffic Count:**	45,500	**Year of Count:**	2018

Parameter Name	**Distance to Road**	**Direction to Road**	**Monitor Type**	**Statement of Purpose**
PM 2.5 local conditions, continuous	210 meters	North	SLAMS	Real-time AQI reporting & forecasting.
PM10 total 0-10µm STP, primary	210 meters	North	SLAMS	Compliance w/NAAQS.

Parameter Name	**Monitoring Objective**	**Scale**	**Suitable for NAAQS Comparison**	**Proposal to Move or Change**
PM 2.5 local conditions, continuous	Population exposure	Urban	Yes	None
PM10 total 0-10µm STP, primary	Population exposure	Urban	Yes	None

	Meets Part 58 Requirements for:			
Parameter Name	**Appendix A**	**Appendix C**	**Appendix D**	**Appendix E**
PM 2.5 local conditions, continuous	Yes	Yes	Yes	Yes
PM10 total 0-10µm STP, primary	Yes	Yes	Yes	Yes

Parameter Name	**Probe Height in meters**	**Distance to Support**	**Distance to Trees**	**Obstacles**
PM 2.5 local conditions, continuous	4.666	> 2 meters	>20 meters	None
PM10 total 0-10µm STP, primary	2.64	2.38	>20 meters	None

Figure E26. William Owen site looking north

Figure E27. William Owen site looking northwest

Figure E28. William Owen site looking west

Figure E29. William Owen Site looking southwest

Figure E30. William Owen Site looking northeast

Figure E31. William Owen site looking east

Figure E32. William Owen site looking southeast

Figure E33. William Owen site looking south

Additional monitoring could be required in the Fayetteville MSA to comply with the 2010 **lead monitoring** requirements,[3] as revised in 2016[4]. In 2013, Fort Bragg reported over 0.5 tons of fugitive lead emissions in the TRI. Calculation of the 2014 fugitive lead emissions using AP-42 emission factors resulted in 2014 emissions of less than 0.5 tons. [5] Thus, in 2015 DAQ requested a waiver from lead monitoring at Fort Bragg. The EPA did not grant the waiver because the lead emissions were less than 0.5 tons. In 2018, Fort Bragg again reported over 0.5 tons of fugitive lead emissions in the TRI.[6] As a result, DAQ requested a waiver for monitoring at the facility.[7] In its response to the 2020-2021 network plan,[8] the EPA agreed with the rationale DAQ provided; however, the EPA asked to work with DAQ and Fort Bragg to further determine if base activities have the potential to cause elevated ambient lead concentrations. Thus, the EPA neither required lead monitoring nor granted a waiver of lead monitoring requirements for the area near Fort Bragg. Instead the EPA requested that DAQ work with the EPA to provide supplemental information in the next network plan on whether Fort Bragg would be expected to potentially contribute to elevated lead concentrations. DAQ met internally after receiving EPA's request and determined DAQ has done all it has the authority to do regarding monitoring at Fort Bragg. DAQ will provide the EPA with all of the information obtained to date on lead emissions and modeling for lead at Fort Bragg via a separate document.

There are no other new or existing monitoring requirements that will require additional monitoring in this area.

[3] Revisions to Lead Ambient Air Monitoring Requirements, Federal Register, Vol. 75, No. 247, Monday, Dec. 27, 2010, p. 81126, available on the worldwide web at https://www.gpo.gov/fdsys/pkg/FR-2010-12-27/pdf/2010-32153.pdf#page=1.

[4] Revisions to Ambient Monitoring Quality Assurance and Other Requirements, Federal Register, Vol. 81, No. 59, Monday, March 28, 2016, p. 17248, available on the worldwide web at https://www.gpo.gov/fdsys/pkg/FR-2016-03-28/pdf/2016-06226.pdf.

[5] United States Environmental Protection Agency. 2014 Toxic Release Inventory, released March 2015, available on the worldwide web at https://iaspub.epa.gov/triexplorer/tri_release.chemical.

[6] United States Environmental Protection Agency. (2020). TRI Explorer (2018 National Analysis Dataset (released November 12, 2019)) [Internet database]. Retrieved from https://enviro.epa.gov/triexplorer/tri_release.chemical, https://enviro.epa.gov/triexplorer/, (April 11, 2020).

[7] 2020-2021 Annual Monitoring Network Plan for the North Carolina Division of Air Quality, Volume 1, July 2, 2020, Section II.G.2, https://xapps.ncdenr.org/aq/documents/DocsSearch.do?dispatch=download&documentId=14029 (accessed May 5, 2021).

[8] United States Environmental Protection Agency, 2020-2021 State of North Carolina Ambient Air Monitoring Network Plan, The U. S. EPA Region 4 Comments and Recommendations, p14, available at https://xapps.ncdenr.org/aq/documents/DocsSearch.do?dispatch=download&documentId=13593

Appendix E.1 Annual Network Site Review Forms for 2020

Candor

Honeycutt

Wade

William Owen in Fayetteville

Site Review Form Calendar Year 2020

Site Information

Region FRO	**Site Name** CANDOR	**AQS Site # 37-** 123- 0001
Street Address- 136 Perry Drive	**City** CANDOR	
Urban Area Not in an Urban Area	**Core-based Statistical Area** None	
Enter Exact		
Latitude 35.263165	**Longitude** -79.836636	**Method of Measuring:** Google Earth
In Decimal Degrees	In Decimal Degrees	**Matches Web Map**: Yes ☒ No ☐
Elevation Above/below Mean Sea Level (in meters) 173.10		**Method of Measuring:**

Name of nearest road to inlet probe Mccallum ADT Latest available_____ Year 2017

Distance of PM inlet to nearest traffic lane (m) 1079 Direction from inlet to nearest traffic lane NNE

Comments: _____

Name of nearest major road McCallum ADT 350 Year estimated 2017

Distance of site to nearest major road (m) 1079.00 Direction from site to nearest major road NNE

Comments: _____

Site located near electrical substation/high voltage power lines?	Yes ☐ No ☒
Distance of site to nearest railroad track (m) 8787 Direction to RR ENE	☐NA
OPTIONAL Distance of site to nearest power pole w/transformer (m) _____ Direction ___	
Distance between site and drip line of water tower (m) _____ Direction from site to water tower _____	☒NA

Explain any sources of potential bias; include cultivated fields, loose bulk storage, stacks, vents, railroad tracks, construction activities, fast food restaurants, and swimming pools.

_____

Instructions:

Address: Sometimes local addresses change. Confirm the local address of the site using a 911 locator or the address used by the local utility company, community or county to identify the site location.

Urban Area: If the monitor is located within the bounds of an urban area (an incorporated area with a population of 10,000 or more people), select the appropriate urban area from the list. Otherwise select "Not in an Urban Area".

Core-Based Statistical Area (CBSA): If the monitor is located in a county that belongs to a metropolitan statistical area (MSA) or a micropolitan statistical area (MiSA), then it is in a core-based statistical area. If the monitoring station is located in a county included in a MSA or MiSA, select the CBSA from the list. Otherwise select "None".

Longitude and Latitude: Determine the longitude and latitude using Google Earth. Report the longitude and latitude that matches up with the exact location of the monitoring shelter or monitor if no shelter is at the site. The longitude and latitude should be entered in decimal degrees. Use a conversion program, such as http://transition.fcc.gov/mb/audio/bickel/DDDMMSS-decimal.html, to convert to decimal degrees if needed.

Road Information: For the nearest road to the inlet probe, list whatever roadway that carries vehicles closest to the probe, whether it is a named or public road and even if it has very little traffic. Use the comments space to describe the road or the source of the annual average daily traffic (AADT) counts. If the monitor is located near an unnamed, little used, private road, use the nearest major road space to list the closest named public road to the site. Include the distance and direction of the nearest major road from the site and the AADT if available. If the closest road is a small public road but there is a large major roadway such as an interstate highway, divided highway, major thoroughfare, etc., near the monitoring station use the nearest major road space to list the information about this major roadway. Include the distance and direction of the major road from the site and the AADT. The AADT for state roads can be obtained from the North Carolina Division of Transportation at http://www.ncdot.gov/travel/statemapping/trafficvolumemaps/default.html. For AADT values for local roadways contact the appropriate local governments.

Any Sources of Potential Bias: Use this space to record information about the site that is not requested elsewhere. Especially note any changes that occurred near the site in the past year, such as road construction, building construction, new businesses, businesses closing, or changes in traffic patterns, crops or other agricultural activities.

Site Review Form Calendar Year 2020

Parameters	Monitoring Objective	Scale	Monitor Type
Air flow < 200 L/min ☐ PM2.5 FRM ☒ PM10 Cont. (BAM) ☐ PM10-2.5 FRM ☐ PM10-2.5 BAM ☒ PM2.5 Cont. (BAM1020) ☐ PM2.5 Cont. (BAM1022) ☐ PM2.5 Cont. (T640X)	☒ General/Background_____ ☐ Highest Concentration_____ ☐ Population Exposure_____ ☐ Source Oriented_____ ☐ Transport_____ ☐ Welfare Related Impacts _____	☐ Micro_____ ☐ Middle_____ ☐ Neighborhood _____ ☐ Urban_____ ☒ Regional_____	☒ SLAMS _____ ☐ SPM_____ ☐ Nonregulatory_____

Probe inlet height (from ground) ☐ < 2 m _____ ☒ 2-7m _____ ☐ 7-15 m _____ ☐ > 15 m_____
Actual measured distance from probe inlet to ground (meters) __2.46___
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (platform or roof) supporting structure > 2 m? Yes ☒ No ☐
Actual measured distance from outer edge of probe inlet to supporting structure (meters) _____

Distance (Y) between outer edge of probe inlets of any low volume monitor and any other low volume monitor at the site = 1 m or greater?	Yes ☐ No ☐ NA ☒
Are collocated PM2.5 Monitors (Two FRMs, FRM & BAM, BAM & BAM) Located at Site?	*Yes ☐ (answer *'d questions) No ☒ NA ☐
* Entire inlet opening of collocated PM 2.5 samplers (X) within 1 to 4 m of each other?	Yes ☐ No ☐ Give actual (meters): _____
*Are collocated PM2.5 sampler inlets within 1 m vertically of each other?	Yes ☐ No ☐ Give actual (meters): _____
Is a low-volume PM10 monitor collocated with a PM2.5 monitor at the site to measure PM10-2.5?	*Yes ☒ (answer *'d questions) No ☐ NA ☐
* Entire inlet opening of collocated PM10 and PM2.5samplers for PM10-2.5 (X) within 2 to 4 m of each other?	Yes ☒ No ☐
*Are collocated PM10 and PM2.5 sampler inlets within 1 m vertically of each other?	Yes ☒ No ☐

Is probe > 20 m from the nearest tree drip line? Yes ☒ *No ☐ (answer *'d questions)
*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐ *Number of trees within 10 meters _____
*Distance from probe to closest tree (m) _____ Direction from probe to tree ___ *Height of tree above probe (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒
*Identify obstacle _____ Distance from probe inlet (m) _____Direction from probe inlet to obstacle ___
*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐
*Width of obstacle in terms of degrees blocked (see instructions) _____

RECOMMENDATIONS:

1) Maintain current site status? Yes ☒ *No ☐ (answer *'d questions)
*2) Change monitoring objective? Yes ☐ (enter new objective: _____) No ☐
*3) Change scale of representativeness? Yes ☐ (enter new scale:) No ☐
*4) Relocate site? Yes ☐ No ☐

Comments: _____

Date of Last Site Pictures: December 1, 2020 New Pictures Submitted? Yes ☒ No ☐

Reviewer __Roger Caulder_____Date: 12/21/2020

Ambient Monitoring Coordinator Steve Allen_____Date: 12/23/20

Site Review Form Calendar Year 2020

Site Information

Region FRO	**Site Name** Honeycutt	**AQS Site # 37-051-0010**
Street Address-4665 Lakewood Drive		**City Fayetteville**
Urban Area FAYETTEVILLE	**Core-based Statistical Area** Fayetteville, NC	
Enter Exact		
Latitude 35.0018	**Longitude** -78.9905	**Method of Measuring**
In Decimal Degrees	In Decimal Degrees	___ **Explanation: Google Earth**
Elevation Above/below Mean Sea Level (in meters)		**60.04**

Name of nearest road to inlet probe Fisher Road ADT 16500 Year latest available 2018

Distance of ozone probe to nearest traffic lane (m) _____ Direction from ozone probe to nearest traffic lane ___

Comments: _____

Name of nearest major road Bingham Drive (NC 162) ADT 28000 Year latest available 2016

Distance of site to nearest major road (m) 953.00 Direction from site to nearest major road ENE

Comments: _____

Site located near electrical substation/high voltage power lines?	Yes ☐ No ☒
Distance of site to nearest railroad track	(m) _____ Direction to RR ___ ☒NA
OPTIONAL Distance of site to nearest power pole w/transformer	(m) _____ Direction ___
Distance between site and drip line of water tower (m) _____	Direction from site to water tower _____ ☐NA

Explain any sources of potential bias; include cultivated fields, loose bulk storage, stacks, vents, railroad tracks, construction activities, fast food restaurants, and swimming pools.

_____

ANSWER ALL APPLICABLE QUESTIONS:

Parameters	Monitoring Objective	Scale	Site Type
☒ O_3	☐General/Background ☐Highest Concentration ☐Max O3 Concentration ☒Population Exposure ☐Source Oriented ☐Transport ☐Upwind Background ☐Welfare Related Impacts	☐Micro ☐Middle ☒Neighborhood ☐Urban ☐Regional	☒SLAMS ☐SPM

Probe inlet height (from ground) 2-15 m? Yes ☒ No ☐

Give actual measured height from ground (meters) 4.26

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes ☒ No ☐

Actual measured distance from outer edge of probe to supporting structure (meters) 1.20

Is probe > 20 m from the nearest tree drip line? Yes ☒ *No ☐ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☐ *No ☐ *Number of trees within 10 meters _____

*Distance from probe to closest tree (m) _____ Direction from probe to tree ___ *Height of tree above probe (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒

*Identify obstacle _____ Distance from probe inlet (m) _____ Direction from probe inlet to obstacle ___

*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Site Review Form Calendar Year 2020

RECOMMENDATIONS:

1) Maintain current site status? Yes ☒ *No ☐ (answer *'d questions)

*2) Change monitoring objective? Yes ☐ (enter new objective: _____) No ☐

*3) Change scale of representativeness? Yes ☐ (enter new scale:) No ☐

*4) Relocate site? Yes ☐ No ☐

Comments: _____

Date of Last Site Pictures: November 2, 2020 New Pictures Submitted? Yes ☒ No ☐

Reviewer Roger Caulder Date: December 21, 2020

Ambient Monitoring Coordinator Stephen Allen Date: December 23, 2020

Instructions:

Trees: The probe or inlet must be at least 10 meters or further from the drip line of trees. A distance of at least 20 meters between the probe and any tree or trees is preferred.

Obstacles: An obstacle is anything that restricts air flow. A tree can be an obstacle because it has branches and leaves that restrict the flow of air but a pole is not considered to be an obstacle. To avoid interference from obstacles, the probe or inlet must have unrestricted airflow and be located away from obstacles. The distance from the obstacle to the probe or inlet must be at least twice the height that the obstacle protrudes above the probe, inlet, or monitoring path.

If the annual network review has indicated that the monitoring objectives and scale of representativeness for the site have not changed and the siting criteria still meets those monitoring objectives and that scale of representativeness and there are no other reasons to modify the site in any way, check "Yes" to the question "Maintain current site status?" and skip the rest of the recommendations section.

If the annual network review has indicated that the monitoring objectives, scale of representativeness, or siting criteria have changed for some reason or there is another reason to modify the site in some way, check "No" to the question "Maintain current site status?" and complete the rest of the recommendations section. If the monitoring objective or scale of representativeness needs to be changed, check the "Yes" box and write in the new monitoring objective or scale of representativeness on the line. Otherwise check the "No" box. If the site needs to be relocated, check the "Yes" box. If the site needs to be shut down, write "Shut down" in the comments line. Also, use the comments line to explain any change requested.

Check the site picture archive to find out when the last set of site pictures were taken and write the date down on the line. If the pictures are more than five years old or if something at the site has changed in the past year, take new site pictures. Changes that require new site pictures include additions, removals, or movement of monitors at the site, growth or removal of trees and other shrubs at the site, and construction of roads or buildings at or in the vicinity of the site.

Pictures of the site should at a minimum include at least one picture showing the site itself and pictures standing at the probe or inlet or as close as possible to the probe or inlet looking in the four compass directions (north, east, south, and west). If meteorological data are collected at the site, pictures standing at the meteorological tower looking southwest and northeast should also be included. Sometimes pictures looking at the site from the four compass directions are also helpful.

Be sure to correctly identify the pictures as to which compass direction they show. This documentation may be achieved by using good notes when taking the pictures, holding a compass in front of the camera, or placing a sign with the appropriate direction indicated somewhere in the picture. Label the pictures with the name of the site using the two-digit logger ID (HC, JW, *etc.*), the direction (N, NE, E, SE, S, SW, W, NW), and the date taken (YYYYMMDD) and transfer the pictures to the group drive in the appropriate Incoming/Regional Office directory.

Site Review Form Calendar Year 2020

Site Information

Region FRO	**Site Name** Wade	**AQS Site # 37-051-0008**
Street Address-7112 Covington Lane		**City Wade**
Urban Area FAYETTEVILLE	**Core-based Statistical Area** Fayetteville, NC	
Enter Exact		
Latitude 35.1587	**Longitude** -78.7281	**Method of Measuring**
In Decimal Degrees	In Decimal Degrees	**Interpolation** | **Explanation: Google Earth**
Elevation Above/below Mean Sea Level (in meters)		46.00

Name of nearest road to inlet probe Covington Lane ADT 140 Year latest available 2017

Distance of ozone probe to nearest traffic lane (m) 87 Direction from ozone probe to nearest traffic lane W

Comments: Wade Stedman Road - 1700 (2017); Dunn Road (US 301) - 2300 (2017)

Name of nearest major road I-95 ADT 57500 Year 2018

Distance of site to nearest major road (m) 792.00 Direction from site to nearest major road ESE

Comments: _____

Site located near electrical substation/high voltage power lines?	Yes ☐ No ☒
Distance of site to nearest railroad track	(m) 825 Direction to RR NW ☐NA
OPTIONAL Distance of site to nearest power pole w/transformer	(m) 91 Direction W
Distance between site and drip line of water tower (m) **153** Direction from site to water tower **NW**	☐**NA**

Explain any sources of potential bias; include cultivated fields, loose bulk storage, stacks, vents, railroad tracks, construction activities, fast food restaurants, and swimming pools.

_____

ANSWER ALL APPLICABLE QUESTIONS:

Parameters	Monitoring Objective	Scale	Site Type
☒ O_3	☐General/Background ☒Highest Concentration ☐Max O3 Concentration ☐Population Exposure ☐Source Oriented ☐Transport ☐Upwind Background ☐Welfare Related Impacts	☐Micro ☐Middle ☐Neighborhood ☒Urban ☐Regional	☒SLAMS ☐SPM

Probe inlet height (from ground) 2-15 m? Yes ☒ No ☐

Give actual measured height from ground (meters) 3.80

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes ☒ No ☐

Actual measured distance from outer edge of probe to supporting structure (meters) _____

Is probe > 20 m from the nearest tree drip line? Yes ☒ *No ☐ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☒ *No ☐ *Number of trees within 10 meters 1.00

*Distance from probe to closest tree (m) 10.5 Direction from probe to tree W *Height of tree above probe (m) _____

Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒

*Identify obstacle _____ Distance from probe inlet (m) _____Direction from probe inlet to obstacle ___

*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐

Site Review Form Calendar Year 2020

RECOMMENDATIONS:

1) Maintain current site status? Yes ☐ *No ☒ (answer *'d questions)

*2) Change monitoring objective? Yes ☐ (enter new objective: _____) No ☒

*3) Change scale of representativeness? Yes ☐ (enter new scale:) No ☒

*4) Relocate site? Yes ☒ No ☐

Comments: Currently trying to relocate site to District 7 Elementary School in Wade due to the height of the trees at the current site.

Date of Last Site Pictures: November 2, 2020 New Pictures Submitted? Yes ☒ No ☐

Reviewer Mike Turner Date: November 3, 2020

Ambient Monitoring Coordinator Stephen Allen Date: December 23, 2020

Instructions:

Trees: The probe or inlet must be at least 10 meters or further from the drip line of trees. A distance of at least 20 meters between the probe and any tree or trees is preferred.
Obstacles: An obstacle is anything that restricts air flow. A tree can be an obstacle because it has branches and leaves that restrict the flow of air but a pole is not considered to be an obstacle. To avoid interference from obstacles, the probe or inlet must have unrestricted airflow and be located away from obstacles. The distance from the obstacle to the probe or inlet must be at least twice the height that the obstacle protrudes above the probe, inlet, or monitoring path.

If the annual network review has indicated that the monitoring objectives and scale of representativeness for the site have not changed and the siting criteria still meets those monitoring objectives and that scale of representativeness and there are no other reasons to modify the site in any way, check "Yes" to the question "Maintain current site status?" and skip the rest of the recommendations section.

If the annual network review has indicated that the monitoring objectives, scale of representativeness, or siting criteria have changed for some reason or there is another reason to modify the site in some way, check "No" to the question "Maintain current site status?" and complete the rest of the recommendations section. If the monitoring objective or scale of representativeness needs to be changed, check the "Yes" box and write in the new monitoring objective or scale of representativeness on the line. Otherwise check the "No" box. If the site needs to be relocated, check the "Yes" box. If the site needs to be shut down, write "Shut down" in the comments line. Also, use the comments line to explain any change requested.

Check the site picture archive to find out when the last set of site pictures were taken and write the date down on the line. If the pictures are more than five years old or if something at the site has changed in the past year, take new site pictures. Changes that require new site pictures include additions, removals, or movement of monitors at the site, growth or removal of trees and other shrubs at the site, and construction of roads or buildings at or in the vicinity of the site.

Pictures of the site should at a minimum include at least one picture showing the site itself and pictures standing at the probe or inlet or as close as possible to the probe or inlet looking in the four compass directions (north, east, south, and west). If meteorological data are collected at the site, pictures standing at the meteorological tower looking southwest and northeast should also be included. Sometimes pictures looking at the site from the four compass directions are also helpful.

Be sure to correctly identify the pictures as to which compass direction they show. This documentation may be achieved by using good notes when taking the pictures, holding a compass in front of the camera, or placing a sign with the appropriate direction indicated somewhere in the picture. Label the pictures with the name of the site using the two-digit logger ID (HC, JW, *etc.*), the direction (N, NE, E, SE, S, SW, W, NW), and the date taken (YYYYMMDD) and transfer the pictures to the group drive in the appropriate Incoming/Regional Office directory.

Site Review Form Calendar Year 2020

Site Information

Region FRO	**Site Name** William Owen	**AQS Site # 37-** 051 - 0009
Street Address-4533 Raeford Road		**City** Fayetteville
Urban Area FAYETTEVILLE	**Core-based Statistical Area** Fayetteville, NC	
Enter Exact		
Latitude 35.0414	**Longitude** 78.953100	**Method of Measuring:** Google Earth
In Decimal Degrees	In Decimal Degrees	**Matches Web Map**: Yes ☒ No ☐
Elevation Above/below Mean Sea Level (in meters) **63.70**		**Method of Measuring:** tt

Name of nearest road to inlet probe Raeford Road ADT Choose an Item45500 Year 2018

Distance of PM inlet to nearest traffic lane (m) 210 Direction from inlet to nearest traffic lane N

Comments: _____

Name of nearest major road Raeford Road ADT 45500 Year Choose an item 2018

Distance of site to nearest major road (m) 210.00 Direction from site to nearest major road N

Comments: None

Site located near electrical substation/high voltage power lines?	Yes ☐ No ☒
Distance of site to nearest railroad track	(m) 837Direction to RR N ☐NA
OPTIONAL Distance of site to nearest power pole w/transformer	(m) 28 Direction N
Distance between site and drip line of water tower (m) _____Direction from site to water tower _____	☒NA

Explain any sources of potential bias; include cultivated fields, loose bulk storage, stacks, vents, railroad tracks, construction activities, fast food restaurants, and swimming pools.

_____

Instructions:

Address: Sometimes local addresses change. Confirm the local address of the site using a 911 locator or the address used by the local utility company, community or county to identify the site location.

Urban Area: If the monitor is located within the bounds of an urban area (an incorporated area with a population of 10,000 or more people), select the appropriate urban area from the list. Otherwise select "Not in an Urban Area".

Core-Based Statistical Area (CBSA): If the monitor is located in a county that belongs to a metropolitan statistical area (MSA) or a micropolitan statistical area (MiSA), then it is in a core-based statistical area. If the monitoring station is located in a county included in a MSA or MiSA, select the CBSA from the list. Otherwise select "None".

Longitude and Latitude: Determine the longitude and latitude using Google Earth. Report the longitude and latitude that matches up with the exact location of the monitoring shelter or monitor if no shelter is at the site. The longitude and latitude should be entered in decimal degrees. Use a conversion program, such as http://transition.fcc.gov/mb/audio/bickel/DDDMMSS-decimal.html, to convert to decimal degrees if needed.

Road Information: For the nearest road to the inlet probe, list whatever roadway that carries vehicles closest to the probe, whether it is a named or public road and even if it has very little traffic. Use the comments space to describe the road or the source of the annual average daily traffic (AADT) counts. If the monitor is located near an unnamed, little used, private road, use the nearest major road space to list the closest named public road to the site. Include the distance and direction of the nearest major road from the site and the AADT if available. If the closest road is a small public road but there is a large major roadway such as an interstate highway, divided highway, major thoroughfare, etc., near the monitoring station use the nearest major road space to list the information about this major roadway. Include the distance and direction of the major road from the site and the AADT. The AADT for state roads can be obtained from the North Carolina Division of Transportation at http://www.ncdot.gov/travel/statemapping/trafficvolumemaps/default.html. For AADT values for local roadways contact the appropriate local governments.

Any Sources of Potential Bias: Use this space to record information about the site that is not requested elsewhere. Especially note any changes that occurred near the site in the past year, such as road construction, building construction, new businesses, businesses closing, or changes in traffic patterns, crops or other agricultural activities.

Site Review Form Calendar Year 2020

Parameters	Monitoring Objective	Scale	Monitor Type
Air flow < 200 L/min ☐ PM2.5 FRM ☒ PM10 Cont. (BAM) ☐ PM10-2.5 FRM ☐ PM10-2.5 BAM ☐ PM2.5 Cont. (BAM1020) ☒ PM2.5 Cont. (BAM1022) ☐ PM2.5 Cont. (T640X)	☐ General/Background_____ ☐ Highest Concentration_____ ☒ Population Exposure_____ ☐ Source Oriented_____ ☐ Transport_____ ☐ Welfare Related Impacts _____	☐ Micro_____ ☐ Middle_____ ☐ Neighborhood _____ ☒ Urban_____ ☐ Regional_____	☒ SLAMS _____ ☐ SPM_____ ☐ Nonregulatory_____

Probe inlet height (from ground) ☐ < 2 m _____ ☒ 2-7m _____ ☐ 7-15 m _____ ☐ > 15 m_____
Actual measured distance from probe inlet to ground (meters) __2.46_

Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (platform or roof) supporting structure > 2 m? Yes ☐ No ☐
Actual measured distance from outer edge of probe inlet to supporting structure (meters) __None____

Distance (Y) between outer edge of probe inlets of any low volume monitor and any other low volume monitor at the site = 1 m or greater? Yes ☒ No ☐ NA ☐

Are collocated PM2.5 Monitors (Two FRMs, FRM & BAM, BAM & BAM) Located at Site? *Yes ☐ (answer *'d questions) No ☒ NA ☐

* Entire inlet opening of collocated PM 2.5 samplers (X) within 1 to 4 m of each other? Yes ☐ No ☐ Give actual (meters): ___

*Are collocated PM2.5 sampler inlets within 1 m vertically of each other? Yes ☐ No ☐ Give actual (meters): _____

Is a low-volume PM10 monitor collocated with a PM2.5 monitor at the site to measure PM10-2.5? *Yes ☐ (answer *'d questions) No ☒ NA ☐

* Entire inlet opening of collocated PM10 and PM2.5samplers for PM10-2.5 (X) within 2 to 4 m of each other? Yes ☐ No ☐

*Are collocated PM10 and PM2.5 sampler inlets within 1 m vertically of each other? Yes ☐ No ☐

Is probe > 20 m from the nearest tree drip line? Yes ☐ *No ☒ (answer *'d questions)

*Is probe > 10 m from the nearest tree drip line? Yes ☒ *No ☐ *Number of trees within 10 meters _____
*Distance from probe to closest tree (m) _____ Direction from probe to tree ___ *Height of tree above probe (m) _____

Are there any obstacles to air flow? *Yes ☒ (answer *'d questions) No ☒

*Identify obstacle _____ Distance from probe inlet (m) _____Direction from probe inlet to obstacle ___
*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes ☐ No ☐
*Width of obstacle in terms of degrees blocked (see instructions) _____

RECOMMENDATIONS:

1) Maintain current site status? Yes ☒ *No ☐ (answer *'d questions)

*2) Change monitoring objective? Yes ☐ (enter new objective: _____) No ☐
*3) Change scale of representativeness? Yes ☐ (enter new scale:) No ☐
*4) Relocate site? Yes ☐ No ☐

Comments: There are large bushes/trees <20 meters from FRMs and BAMS. May want to evaluate updated pictures taken this year. They are >10 meters away from nearest probe._____

Date of Last Site Pictures: November 11, 2020 New Pictures Submitted? Yes ☒ No ☐

Reviewer ___Mike Turner_____ Date: December 17, 2020

Ambient Monitoring Coordinator Stephen Allen_____ Date: December 23, 2020

Appendix E-2. Scale of Representativeness

Each station in the monitoring network must be described in terms of the physical dimensions of the air parcel nearest the monitoring station throughout which actual pollutant concentrations are reasonably similar. Area dimensions or scales of representativeness used in the network description are:

a) Microscale - defines the concentration in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
b) Middle scale - defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometers.
c) Neighborhood scale – defines concentrations within an extended area of a city that has relatively uniform land use with dimensions ranging from about 0.5 to 4.0 kilometers.
d) Urban scale - defines an overall citywide condition with dimensions on the order of 4 to 50 kilometers.
e) Regional Scale - defines air quality levels over areas having dimensions of 50 to hundreds of kilometers.

Closely associated with the area around the monitoring station where pollutant concentrations are reasonably similar are the basic monitoring exposures of the station.

There are six basic exposures:

a) Sites located to determine the highest concentrations expected to occur in the area covered by the network.
b) Sites located to determine representative concentrations in areas of high population density.
c) Sites located to determine the impact on ambient pollution levels of significant sources or source categories.
d) Sites located to determine general background concentration levels.
e) Sites located to determine the extent of regional pollutant transport among populated areas.
f) Sites located to measure air pollution impacts on visibility, vegetation damage or other welfare-based impacts and in support of secondary standards.

The design intent in siting stations is to correctly match the area dimensions represented by the sample of monitored air with the area dimensions most appropriate for the monitoring objective of the station. The following relationship of the six basic objectives and the scales of representativeness are appropriate when siting monitoring stations:

Table E5. Site Type Appropriate Siting Scales

1. Highest concentration	Micro, middle, neighborhood, sometimes urban or regional for secondarily formed pollutants
2. Population oriented	Neighborhood, urban
3. Source impact	Micro, middle, neighborhood
4. General/background & regional transport	Urban, regional
5. Welfare-related impacts	Urban, regional