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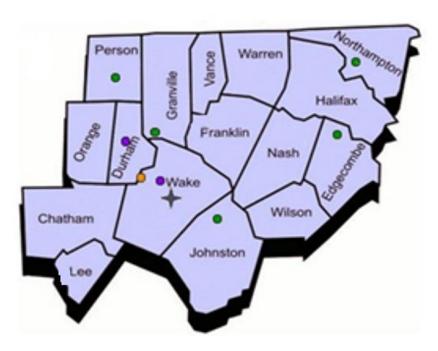


2021-2022 Annual Monitoring Network Plan for the North Carolina Division of Air Quality

Volume 2

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

D. The Raleigh Monitoring Region



July 1, 2021



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D. The Raleigh Monitoring Region

The Raleigh monitoring region of North Carolina, shown in Figure D1, consists of six sections. (1) The Durham-Chapel Hill metropolitan statistical area, or MSA, consists of Chatham, Durham, Granville, Orange and Person counties. (2) The northeastern Piedmont consists of Halifax, Northampton, Vance and Warren counties. (3) The Raleigh MSA consists of Franklin, Johnston and Wake counties. (4) The Rocky Mount MSA consists of Edgecombe and Nash counties. (5) The Wilson micropolitan statistical area (MiSA) consists of Wilson County and (6) the Sanford MiSA consists of Lee County.

(1) Durham-Chapel Hill MSA

The Durham-Chapel Hill MSA consists of five counties: Chatham, Durham, Granville, Orange and Person. The major metropolitan areas are the cities of Durham and Chapel Hill. The North Carolina Division of Air Quality, or DAQ, currently operates three monitoring sites in the Durham-Chapel Hill MSA. These sites are located at the Durham Armory in the City of Durham in Durham County, Butner in Butner in Granville County and Bushy Fork in Person County. Starting on Jan. 1, 2017, DAQ in cooperation with Duke Energy Progress started operating a fourth site in Semora (Person County). Figure D2 maps the locations of these monitors. DAO shut down the seasonal ozone monitor in Pittsboro in Chatham County on Oct. 31, 2015, at the end of ozone season and shut down the rotating sulfur dioxide monitor on Feb. 4, 2015.

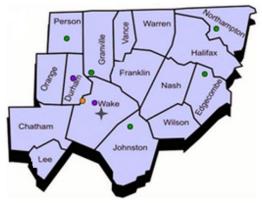


Figure D1. The Raleigh monitoring region
The dots show the approximate locations of most of the monitoring sites in this region.



Figure D2. Location of monitors in the Durham-Chapel Hill MSA.

At the Durham Armory site, DAQ operates a seasonal ozone monitor, a population weighted emission index, or PWEI, sulfur dioxide monitor, a continuous low volume PM₁₀ monitor and a continuous fine particle monitor. Figure D3 through Figure D11 presents pictures of the site, as well as views looking north, northeast, east, southeast, south, southwest, west and northwest. This fine-particle monitoring site is the design value site for the MSA. On Jan. 1, 2011, DAQ started operating a low volume PM₁₀ monitor at the site to meet minimum PM₁₀ monitoring requirements in the Durham-Chapel Hill MSA and to provide PM_{10-2.5} data. In May 2015, the division changed this monitor to a continuous low volume PM₁₀ monitor. On Aug. 14, 2019, DAQ added a collocated one-in-six-day fine particle FRM monitor. The division shut down the one-in-three-day and one-in-six-day fine particle FRM monitors on Sep. 30, 2020, and made the continuous fine particle monitor at the site the primary monitor.



Figure D3. The Durham Armory ozone, sulfur dioxide and particle-monitoring site



Figure D4. Looking north from the Durham Armory



Figure D5. Durham Armory site looking northeast



Figure D6. Durham Armory site looking northwest



Figure D7. Looking west from the Durham Armory site



Figure D8. Durham Armory site looking southwest

At the **Butner** site, 37-077-0001, DAQ operates a seasonal ozone monitor. Figure D35 through Figure D39 provide views of the site as well as looking north, northeast, east, southeast, south, southwest, west and northwest. The division established the Butner site as the downwind site for the Durham-Chapel Hill MSA when the wind is from the primary direction during the season of highest ozone concentrations. In 2022, DAQ will replace the shelter and may relocate the site.



Figure D9. Looking east from the Durham Armory site



Figure D10. Durham Armory site looking southeast



Figure D11 Durham Armory site looking south



Figure D12. The Butner ozone-monitoring site



Figure D13. Looking north from the Butner site



Figure D14. Looking northwest from the Butner site



Figure D15. Looking west from the Butner site



Figure D16. Looking northeast from the Butner site



Figure D17. Looking east from the Butner site



Figure D18. Looking southeast from the Butner site



Figure D19. Looking southwest from the Butner site

At the Bushy Fork site, DAQ operates a seasonal ozone monitor. A special purpose sulfur dioxide monitor operated for 12 months from June 2014 through May 2015 to provide background sulfur dioxide concentrations to support modeling requirements for the sulfur dioxide national ambient air quality standard, or NAAQS. Figure D21 through Figure D25 show a picture of the site as well as views looking north, east, south and west.



Figure D20. Looking south from the Butner site



Figure D21. Bushy Fork ozone monitoring site



Figure D22. Bushy Fork site looking north



Figure D24. Bushy Fork site looking east



Figure D23. Bushy Fork site looking west



Figure D25. Bushy Fork site looking south

At the beginning of the 2018 ozone season, DAQ noted that construction on an access road had begun. As the season progressed, the property owner placed a paved road within about 6 meters of the site shelter. Ultimately, the property owner paved the road with asphalt. The road provides access to a cell tower recently placed at the park. Sometime in the future, the division may shut down this monitoring site because it is no longer required by 40 CFR Part 58, Appendix D.

In 2008, the United States Environmental Protection Agency, or EPA, expanded the **lead** monitoring network to support the lower lead NAAQS of 0.15 micrograms per cubic meter.¹ On Dec. 27, 2010, the EPA revised the monitoring requirements to focus on fenceline monitoring located at facilities that emit 0.5 tons or more of lead per year and at National Core, NCore, monitoring sites.² On March 28, 2016, the EPA finalized changes to ambient monitoring quality assurance and other requirements, which removed the requirement for lead monitoring at NCore monitoring stations in urban areas with populations greater than 500,000.³ These changes to the lead monitoring network requirements did not require any lead monitoring in the Durham-Chapel Hill MSA. The Duke Energy Progress Roxboro electricity generating facility emitted 77.3 pounds of lead in 2019 and CPI USA North Carolina, LLC, emitted 118.02 pounds,⁴ both well below the 0.5-ton threshold. In addition, modeling performed in 2009 indicated the concentrations of lead in ambient air around the Duke Progress Energy Roxboro electricity generating facility are less than 0.01 micrograms per cubic meter, which is far enough below the NAAQS that no fence-line monitoring is required for this facility. CPI USA North Carolina, LLC, ceased operations on March 31, 2021.

Currently, the MSA is required to operate two **ozone** monitors – one at the Durham Armory, 37-063-0015, and one at Butner, 37-077-0001. Beginning in 2017, seasonal ozone monitoring started on March 1 instead of April 1. Sometime in the future, the division will evaluate the Bushy Fork, 37-145-0003, ozone site to determine if it is still needed. The 2010 **nitrogen dioxide** monitoring requirements, ⁵ as modified in 2016, ⁶ do not require the Durham-Chapel Hill MSA to monitor for nitrogen dioxide.

The 2010 **sulfur dioxide monitoring** requirements added additional monitoring in this MSA. Because of power generating facilities in Person and Chatham counties and a large population base, DAQ added a PWEI population exposure monitor at the Armory site on Jan. 1, 2013. Figure D31 shows the location of the PWEI monitor relative to where people lived based on the 2010 census. Figure D32 shows the

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.

¹ National Ambient Air Quality Standards for Lead, Federal Register, Vol. 73, No. 219, \ Wednesday, Nov. 12, 2008, p. 66964, available on the worldwide web at https://www.gpo.gov/fdsys/pkg/FR-2008-11-12/pdf/E8-25654 pdf

³ 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.

⁴ United States Environmental Protection Agency. (2021). *TRI Explorer* (2019 Updated Dataset (released March 2021)) [Internet database]. Retrieved from https://enviro.epa.gov/triexplorer/tri release.facility, (May 1, 2021).

⁵ Primary National Ambient Air Quality Standards for Nitrogen Dioxide, Federal Register, Vol. 75, No. 26, Feb. 9, 2010, available on the worldwide web at https://www3.epa.gov/ttn/naags/standards/nox/fr/20100209.pdf.

⁶ Revision to the Near-road NO2 Minimum Monitoring Requirements, Federal Register, Vol. 81, No. 251, Dec. 30, 2016, available on the worldwide web at https://www.gpo.gov/fdsys/pkg/FR-2016-12-30/pdf/2016-31645.pdf.

distribution of sulfur dioxide emissions among the counties in the MSA. The closest permitted source of sulfur dioxide to the Armory site is Carolina Sunrock, located 3.25 kilometers southeast of the site, as shown in Figure D33. Carolina Sunrock reported emitting 2.7 tons of sulfur dioxide in 2016.⁷ As part of the Data Requirements Rule, Duke and DAQ added a source-oriented sulfur dioxide monitor in this MSA at Semora in Person County on Jan. 1, 2017. This monitor operated until Dec. 31, 2020.

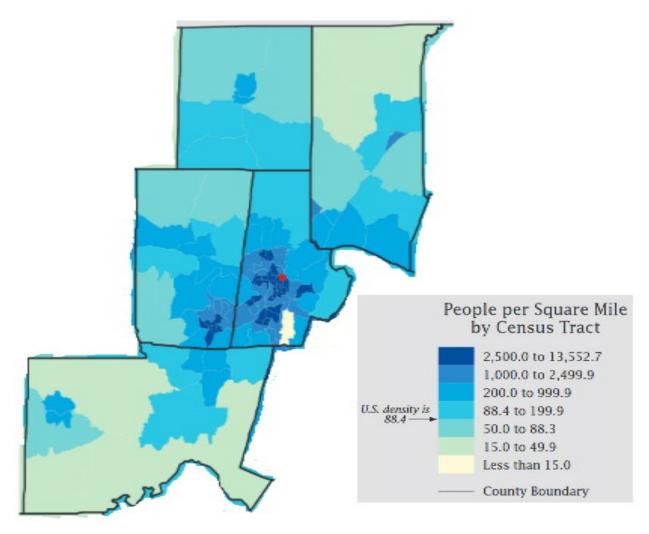


Figure D26. Location of Durham-Chapel Hill PWEI monitor in relationship to centers of population in 2010

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⁷ North Carolina Criteria and Toxic Air Pollutant Point Source Emissions Report, available on the worldwide web at https://xapps.ncdenr.org/aq/ToxicsReport/ToxicsReportFacility.jsp?ibeam=true&county_code=063&year=2016&sorting=3&overridetype=All&pollutant=264, accessed April 20, 2018.

Sulfur Dioxide (SO₂) Point Sources and Total Annual Emissions for the Durham-Chapel Hill MSA (2017)

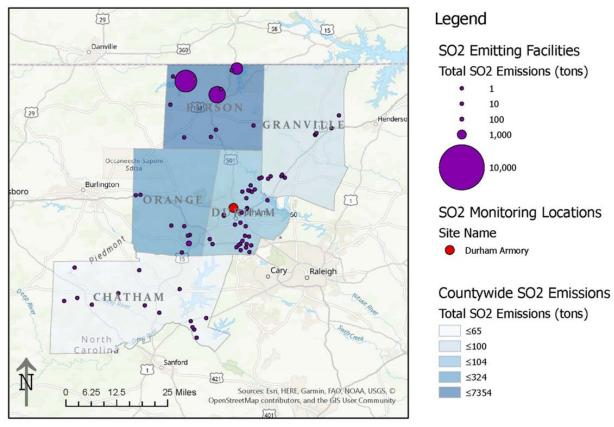


Figure D27. Location of the Durham-Chapel Hill PWEI sulfur dioxide monitor, red dot, in relationship to sulfur dioxide sources

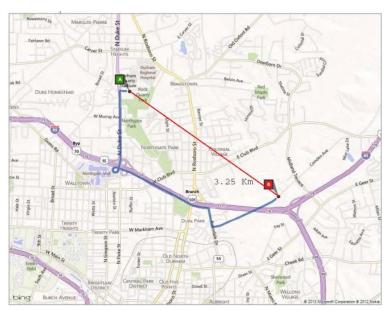


Figure D28. Location of the Armory monitoring site, A, in relationship to Carolina Sunrock, B

Changes to the **carbon monoxide monitoring** requirements did not add additional monitoring to this MSA because the population is less than one million.

(2) The Northeastern Piedmont

The northeastern Piedmont consists of four counties: Halifax, Northampton, Vance and Warren. There is not an MSA in these counties; however, Henderson MiSA is in Vance County and the Roanoke Rapids MiSA consists of Halifax and Northampton counties. DAQ currently operates one monitoring site in the northeastern Piedmont. This site is located in Northampton County. Figure D34 provides the location of this monitoring site.



Figure D29. Location of the Northampton County monitoring site

The purple circle is the Northampton County nitrogen dioxide and fine particle monitoring site.

At the **Northampton County** site, 37-131-0001, DAQ operates special purpose fine particle and nitrogen dioxide monitors. Figure D35 through Figure D39 provide pictures of the site as well as the views looking north, northeast, east, southeast, south, southwest, west and northwest. DAQ established the Northampton County site as a background site for the Roanoke Rapids MiSA.



Figure D30. The Northampton fine particle and nitrogen dioxide-monitoring site



Figure D31. Looking north from the Northampton site





Figure D32. Looking west from the Northampton site



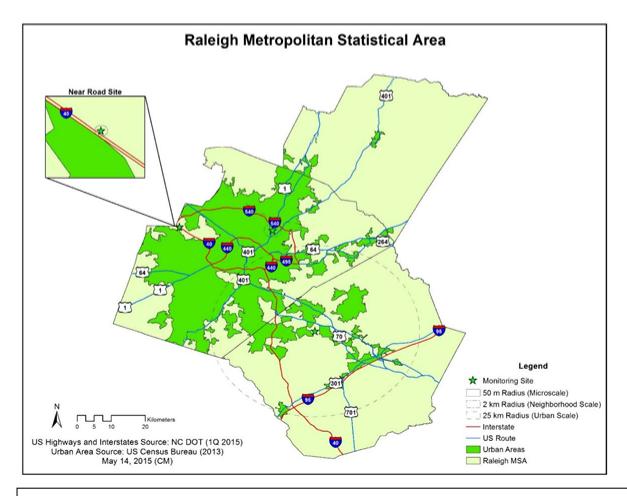
Figure D34. Looking south from the Northampton site

This area was not required to add any lead monitors because of the 2010 changes made to the **lead** monitoring requirements. No facilities here emit 0.5 ton or more of lead per year.

The 2015 **ozone monitoring** requirements did not require additional monitoring in the northeastern Piedmont. The area does not have any MSAs that 40 Code of Federal Regulations, or CFR, Part 58, Appendix D requires to conduct population exposure monitoring in urban areas. The northeastern Piedmont did not add monitors to comply with the 2010 **nitrogen dioxide** monitoring requirements because it does not have any roads exceeding the traffic threshold and does not have any MSAs that trigger nitrogen dioxide monitoring requirements. The northeastern piedmont also did not add sulfur dioxide monitors to comply with the 2010 **sulfur dioxide monitoring** requirements because there are no large sources of sulfur dioxide in this area. This area also does not need to do carbon monoxide monitoring to comply with the changes to the **carbon monoxide monitoring** requirements because the population is under one million.

(3) The Raleigh MSA

As shown in Figure D40, the Raleigh MSA consists of three counties: Franklin, Johnston and Wake. The major metropolitan areas include Raleigh and Cary. DAQ currently operates three monitoring sites in the Raleigh MSA. These sites are located at West Johnston in Johnston County and Millbrook and Triple Oak in Wake County. The division shut down the ozone monitors at Franklinton and Fuquay on Oct. 31, 2015.



Millbrook multipollutant site, center, neighborhood scale; Triple Oak near-road site, furthest west, micro scale; and West Johnston ozone and particle monitors, furthest east, urban scale.

Figure D35. Monitoring sites located in the Raleigh MSA.

At the **West Johnston** site, 37-101-0002, DAQ operates a seasonal ozone monitor and a continuous fine particle monitor. The division established the West Johnston ozone site as the upwind site for the Raleigh MSA when the wind is from the secondary direction during the season of highest ozone concentrations. This site is one of two ozone-monitoring sites in the MSA. Title 40 CFR Part 58, Appendix D requires the Raleigh MSA to have two ozone monitoring sites. The West Johnston fine particle site is the third fine-particle monitoring site in the MSA. The Raleigh MSA has a population over one million people and is currently required, based on its design value, to have two fine particle monitors. DAQ added a continuous fine particle monitor at the site in 2016 that replaced the FRM monitor at the end of 2017. Figure D41 through Figure D45 provide a picture of the site and views looking north, east, south and west.



Figure D36. The West Johnston ozone and fine-particle monitoring site



Figure D37. Looking north from the West Johnston site



Figure D38. Looking west from the West Johnston site



Figure D39. Looking east from the West Johnston site



Figure D40. Looking south from the West Johnston site

At the Millbrook site, 37-183-0014, DAQ operates year-round ozone, one-in-three-day fine particle FRM, one-in-three-day manual SASS and URG fine particle speciation, continuous BAM fine particle, continuous PM₁₀ and PM_{10-2.5}, nitrogen dioxide and trace-level sulfur dioxide, carbon monoxide and reactive oxide of nitrogen monitors. The manual one-in-three-day PM₁₀ and PM_{10-2.5} monitors, as well as the collocated one-in-six-day PM₁₀ monitor, ended in 2017 after DAQ installed a continuous PM₁₀ and PM_{10-2.5} monitor at the site. DAQ also started evaluating a Teledyne T640X PM_{10-2.5} monitor at Millbrook in April 2017 and made this monitor the primary fine particle, PM₁₀ and PM_{10-2.5} monitor on Oct. 1, 2020. The division plans to shut down the BAM fine particle, PM₁₀ and PM_{10-2.5} monitors in 2021. DAQ also operates a meteorological station at this site. The division shut down the continuous fine particle monitors for sulfate, nitrate and black carbon on March 31, 2020, to make space for the PAMS monitors. PAMS monitoring for hourly speciated VOCs, 8-hour carbonyls, and hourly mixing layer height, barometric pressure and ultraviolet radiation will begin on June 1, 2021. Also, on May 17, 2021, the division will replace the photolytic NO₂ monitor with a CAPS NO₂ monitor. Figure D46 through Figure D54 provide a picture of the site as well as views looking north, northeast, east, southeast, south, southwest, west and northwest. The Millbrook site is an NCore, National Community Representative, site so DAQ installed the probe for the reactive oxide of nitrogen monitor at this site on a 10-meter tower in late 2010. On Dec. 27, 2011, DAQ began analyzing the low volume PM₁₀ filters for lead on a one-insix-day schedule to meet the 2010 monitoring requirements for lead monitoring at NCore sites. This lead monitoring ended on April 30, 2016. In 2013, the division added a carbonyl sampler to the site to support a shale-gas development background-monitoring study in Lee County. DAQ has monitored for VOCs at Millbrook since July 14, 2004, on a one-in-six-day schedule. On April 24, 2018, the division added a background rainwater-collection sampler to the site.



Figure D41. Millbrook NCore monitoring site



Figure D42. Looking north from the Millbrook site



Figure D43. Looking northwest from the Millbrook site



Figure D44. Looking west from the Millbrook site



Figure D45. Looking southwest from the Millbrook site



Figure D46. Looking northeast from the Millbrook site



Figure D47. Looking east from the Millbrook site



Figure D48. Looking southeast from the Millbrook site



Figure D49. Looking south from the Millbrook site

At the **Triple Oak** site, 37-183-0021, DAQ operates a near road nitrogen dioxide monitor with a photolytic convertor, trace-level carbon monoxide and continuous fine particle monitors. The nitrogen dioxide monitor started operating on Jan. 8, 2014. The carbon monoxide monitor started operating on Dec. 6, 2016, and the fine particle monitor started operating in 2017. Figure D55 through Figure D63 provide a picture of the site as well as views looking north, northeast, east, southeast, south, southwest, west and northwest.



Figure D50. The Triple Oak near road nitrogen dioxide monitoring site, 37-183-0021

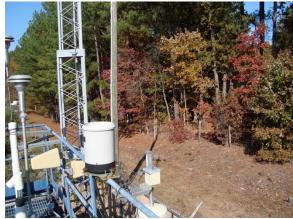


Figure D51. Looking north from the Triple Oak site



Figure D52. Looking northeast from the Triple Oak site



Figure D53. Looking northwest from the Triple Oak site



Figure D54. Looking west from the Triple Oak site



Figure D55. Looking southwest from the Triple Oak site



Figure D56. Looking east from the Triple Oak site



Figure D57. Looking southeast from the Triple Oak site



Figure D58. Looking south from the Triple Oak site

Due to the 2010 **nitrogen dioxide** monitoring requirements, DAQ added two nitrogen dioxide monitors to the Raleigh MSA. Because its population exceeds the 1,000,000-threshold, it was required to have a near-road monitor starting Jan. 1, 2014. DAQ placed the near-road monitoring station on the westbound side of I-40 between Exit 283 and 284. The EPA approved this location in 2012. The Raleigh MSA has over one million people so it is also required to have a community or area-wide monitor. This monitor is

located at the Raleigh Millbrook NCore monitoring site. The regulations required this monitor to start operating on Jan. 1, 2013. DAQ asked for permission to delay installing the monitor so that the division could install a photolytic nitrogen dioxide monitor at the site. The photolytic nitrogen dioxide monitor is more selective for nitrogen dioxide but because EPA approved it as an equivalent method in 2012, DAQ could not purchase it and have it up and operational by the Jan. 1, 2013, scheduled start date. DAQ began monitoring for nitrogen dioxide at Millbrook on Dec. 10, 2013.

This MSA was also required to add a carbon monoxide monitor to comply with the changes to the carbon monoxide monitoring requirements. Starting Jan. 1, 2017, the regulation requires near-road, carbon dioxide monitoring in MSAs with populations greater than one million. On Jan. 1, 2017, DAQ was also required to add a fine particle monitor at the Triple Oak near-road monitoring site.

Changes to the **ozone monitoring** requirements in 2015 did not require additional ozone monitoring in the Raleigh MSA. The MSA currently meets the minimum number of monitors required by 40 CFR Part 58, Appendix D for population exposure monitoring in urban areas. Seasonal ozone monitoring starts on March 1 instead of April 1 starting in 2017. The 2015 ozone monitoring regulations did require the division to begin PAMS monitoring at the Millbrook NCore site starting on June 1, 2021.

The 2010 sulfur dioxide monitoring requirements did not require additional sulfur dioxide monitors in the Raleigh MSA because there are no large sources of sulfur dioxide in the MSA. To comply with the December 2010 changes to the **lead monitoring** requirements, ⁸ DAQ began lead monitoring at the Raleigh Millbrook NCore site on Dec. 27, 2011, using the low-volume PM₁₀ monitor already at the site. This lead monitoring ended on April 30, 2016, when new monitoring regulations became effective. ⁹ The Raleigh MSA does not have any permitted facilities located within its bounds that emit 0.5 ton or more of lead per year so no other lead monitoring is required.

(4) Rocky Mount MSA

The Rocky Mount MSA consists of two counties: Edgecombe and Nash. The major metropolitan area is the City of Rocky Mount. DAQ currently operates one monitoring site in the Rocky Mount MSA, located in Edgecombe County at Leggett as shown in Figure D64.

⁸ Revisions to the Lead Ambient Air Monitoring Requirements, Federal Register, Vol. 75, No. 247, Monday, Dec. 27, 2010, available on the worldwide web at https://www.gpo.gov/fdsys/pkg/FR-2010-12-27/pdf/2010-32153.pdf#page=1.

⁹ Revisions to Ambient Monitoring Quality Assurance and Other Requirements, Federal Register, Vol. 81, No. 59, Monday, March 28, 2016, available on the worldwide web at https://www.gpo.gov/fdsys/pkg/FR-2016-03-28/pdf/2016-06226.pdf.

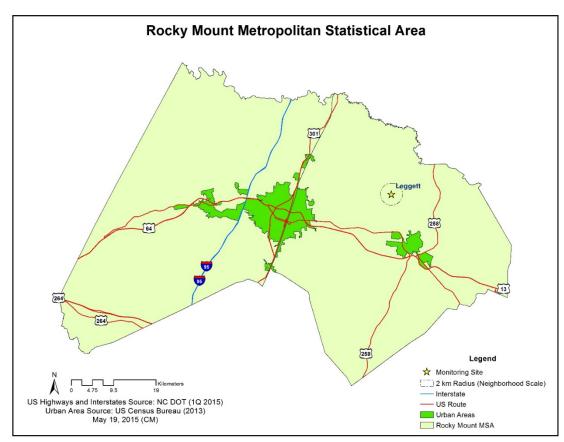


Figure D59. Monitoring site location in the Rocky Mount MSA

At the **Leggett** site, DAQ operates a seasonal ozone monitor and a non-regulatory continuous fine particle monitor. The ozone monitor is no longer required for the MSA. In April 2011, the division added a continuous fine particle monitor to the site to enable real-time fine particle air quality index reporting and fine particle forecasting. Figure D65 through Figure D73 show the site as well as views looking north, northeast, east, southeast, south, southwest, west and northwest.



Figure D60. Leggett seasonal ozone and air quality index fine particle monitoring site



Figure D61. Looking north from the Leggett site



Figure D62. Looking northwest from the Leggett site



Figure D63. Looking west from the Leggett site



Figure D64. Looking southwest from the Leggett site



Figure D65. Looking northeast from the Leggett site



Figure D66. Looking east from the Leggett site



Figure D67. Looking southeast from the Leggett site



Figure D68. Looking south from the Leggett site

Changes made to the **lead monitoring** requirements in December 2010 did not require additional monitoring in the Rocky Mount MSA. The MSA does not have any permitted facilities located within its bounds that emit 0.5 tons or more of lead per year. ¹⁰

The 2015 changes to the **ozone monitoring requirements** did not require additional monitoring in the Rocky Mount MSA. The MSA already has the minimum number of monitors required by 40 CFR Part 58, Appendix D for population exposure monitoring in urban areas. Starting in 2017, the seasonal ozone monitoring begins a month earlier on March 1 instead of April 1.

The 2010 **nitrogen dioxide monitoring** requirements did not add any monitors to the Rocky Mount MSA because its population is less than 500,000. The 2010 sulfur dioxide monitoring requirements also did not require additional monitors in this area because there are no large sources of sulfur dioxide in the MSA. This area will also not need any carbon monoxide monitors due to the changes to the **carbon monoxide monitoring** requirements because the population is under one million.

(5) The Wilson Micropolitan Statistical Area

The Wilson MiSA consists of Wilson County. There currently is no Metropolitan Statistical Area in Wilson County; however, the Wilson MiSA is located here. The Wilson area population is staying about the same or shrinking somewhat. The North Carolina Office of State Budget and Management estimates it lost 113 or 0.2 percent of its population between July 1, 2018 and April 1, 2010. DAQ currently does not operate any monitoring sites in the Wilson MiSA.

The **lead monitoring** requirements in December 2010 affected the Wilson MiSA because it had a permitted facility located within its bounds that emitted more than 0.5 tons per year of lead. Saint-Gobain Containers, LLC, reported 2009 lead emissions of 0.84 tons. DAQ requested and received a waiver for Saint-Gobain based on the results of modeling. Model results indicate the maximum ambient lead concentration in the ambient air at and beyond the fenceline is 0.015 micrograms per cubic meter, well below the 0.075 micrograms per cubic meter or 50 percent of the NAAQS threshold for monitoring. The EPA renewed the waiver in 2015 based on 2011 National Emission Inventory emissions of 0.53 tons of lead. The waiver was good until 2020. The EPA declined to renew the waiver because in 2018, Ardagh Glass, the former Saint Gobain Containers,

¹⁰United States Environmental Protection Agency. (2018). *TRI Explorer* (2018 Updated Dataset (released April 2020)) [Internet database]. Retrieved from https://enviro.epa.gov/triexplorer/tri release.facility, (April 11, 2020).

¹¹ North Carolina Office of State Budget and Management, Aspects of Municipal Population Change, April 1, 2010 to July 1, 2018, last updated Sept. 16, 2019, available on the worldwide web at https://files.nc.gov/ncosbm/demog/municipalfastgrowth 2018.html, accessed May 19, 2020.

¹² Data obtained from the DAQ emission inventory database available online at https://xapps.ncdenr.org/aq/ToxicsReport/ToxicsReportFacility.jsp?ibeam=true&county_code=195&year=2009&sorting=103&overridetype=All&pollutant=153.

¹³ 2015 State of North Carolina Ambient Air Monitoring Network Plan, The U. S. EPA Region 4 Comments and Recommendations, p7, available at

http://xapps.ncdenr.org/aq/documents/DocsSearch.do?dispatch=download&documentId=7440.

reported 427.1 pounds of lead emissions, ¹⁴ which is less than the 0.5 ton threshold requiring a waiver. In 2019, Ardagh Glass reported 460.2 pounds of lead emissions. ¹⁵

Changes to the **ozone monitoring** requirements in 2015 did not require additional monitoring in the Wilson MiSA. Until it becomes an MSA, it does not have to meet population exposure monitoring requirements for urban areas. The Office of Management and Budget did not reclassify the Wilson MiSA as an MSA in February 2013 when it revised the MSA classifications. The next scheduled revision for MSA classifications is in 2023; however, sometimes the Office of Management and Budget adjusts classifications between the scheduled revisions. Currently, the Wilson municipality is almost one thousand people short of meeting the classification requirements for a metropolitan statistical area.

The 2010 **nitrogen dioxide monitoring** rule did not require the Wilson MiSA to do any nitrogen dioxide monitoring. Its population is less than 500,000 and the annual average daily traffic measured on its roadways is below the threshold for monitoring. It also is not required to do sulfur dioxide monitoring by the 2010 **sulfur dioxide monitoring** rule because the population is too small and the sulfur dioxide emissions are too low to trigger PWEI monitoring. This area is also not required to do carbon monoxide monitoring by the changes to the **carbon monoxide monitoring** requirements because the population is under one million.

(6) The Sanford Micropolitan Statistical Area

The Sanford MiSA consists of Lee County. DAQ started a monitoring site in the Sanford MiSA in November 2013. The Blackstone monitoring station supported a special study to monitor baseline ambient air near potential shale-gas development areas in Lee County. Cozone monitoring started on Nov. 1, 2013 and a continuous fine particle monitor started Jan. 1, 2014. In December 2014, DAQ added a sulfur dioxide monitor and nitrogen dioxide monitor. The site also monitored for volatile organic and carbonyl toxic compounds and hydrocarbons. DAQ shut down this monitoring station on July 31, 2018. Figure D74 shows where the site was located. For more information on this site, see the report: Baseline Air Quality Assessment: Deep River Basin, Lee County North Carolina 17 or the 2018-2019 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, D. the Raleigh Monitoring Region. Monitoring Region.

 ¹⁴ United States Environmental Protection Agency. (2018). *TRI Explorer* (2018 Updated Dataset (released April 2020)) [Internet database]. Retrieved from https://enviro.epa.gov/triexplorer/tri release.facility, (April 11, 2020)
 ¹⁵ United States Environmental Protection Agency. (2021). *TRI Explorer* (2019 Updated Dataset (released March 2021)) [Internet database]. Retrieved from https://enviro.epa.gov/triexplorer/tri release.facility, (May 1, 2021)
 ¹⁶ Department of Environment and Natural Resources, Division of Air Quality, Project Plan for Baseline Ambient Air Monitoring near Potential Shale Gas Development Zones in Lee County, NC, Updated Nov. 8, 2013. Available online at https://files.nc.gov/ncdeq/Air%20Quality/monitor/specialstudies/DAQ Project Plan.pdf, accessed on May 19, 2019.

¹⁷ Department of Environmental Quality, Division of Air Quality, Baseline Air Quality Assessment: Deep River Basin, Lee County North Carolina, July 12, 2018. Available on the worldwide web at https://files.nc.gov/ncdeq/Air+Quality/monitor/specialstudies/blackstone_report/Baseline_Air_Quality_Assessment_Deep_River_Basin_Final_Report.pdf.

¹⁸ Department of Environmental Quality, Division of Air Quality, 2018-2019 Annual Monitoring Network Plan for the North Carolina Division of Air Quality, Volume 2, Site Descriptions by Division of Air Quality Regional Office

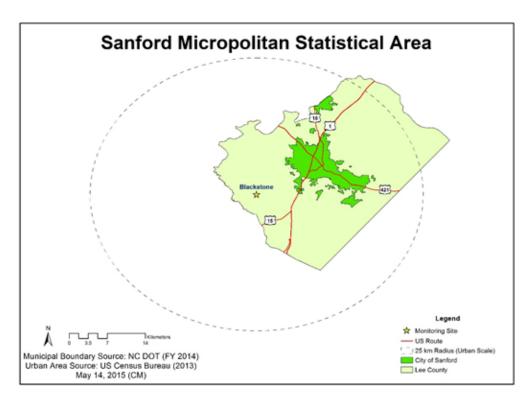


Figure D69. Monitoring site location in the Sanford MiSA

The Sanford MiSA was not required to do any lead monitoring to comply with changes made to the **lead monitoring** requirements in December 2010. There are no facilities located within its bounds that emit more than 0.5 tons per year of lead.¹⁹

Changes to the **ozone monitoring** requirements in 2015 did not require additional ozone monitoring in the Sanford MiSA. Until the Sanford municipality grows large enough for the Office of Management and Budget to classify it as an MSA, it does not have to meet population exposure monitoring requirements for urban areas.

The 2010 **nitrogen dioxide monitoring** rule did not require the Sanford MiSA to do any nitrogen dioxide monitoring. Its population is less than 500,000 and the annual average daily traffic measured on its roadways is below the threshold for monitoring. The 2010 **sulfur dioxide monitoring** rule also did not require any sulfur dioxide monitoring in this area because the population is too small and the sulfur dioxide emissions are too low to trigger PWEI monitoring. This area is also not required to do carbon monoxide monitoring by the changes to the **carbon monoxide monitoring** requirements because the population is under one million.

web at http://xapps.ncdenr.org/aq/documents/DocsSearch.do?dispatch=download&documentId=10637.

19 Data obtained from the DAQ emission inventory database, available on the worldwide web at

and Metropolitan Statistical Area, D. the Raleigh Monitoring Region, June 29, 2018. Available on the worldwide web at http://xapps.ncdenr.org/aq/documents/DocsSearch.do?dispatch=download&documentId=10637.

https://xapps.ncdenr.org/aq/ToxicsReport/ToxicsReportFacility.jsp?ibeam=true&year=2016&pollutant=153&county_code=105, accessed April 23, 2018.

Appendix D.1 Annual Network Site Review Forms for 2020

Durham Armory in Durham

Bushy Fork

Butner

Northampton County

West Johnston in Johnston County

Millbrook in Raleigh

Triple Oak Road in Cary

Leggett

Street Address-801 Stadium Drive City Durh. NC Urban Area						
Enter Exact Latitude 36.032977 Longitude -78.904025 Method of Measuring In Decimal Degrees In Decimal Degrees GPS Explanation: Google Early						
Latitude 36.032977 Longitude -78.904025 Method of Measuring In Decimal Degrees In Decimal Degrees GPS Explanation: Google Early	Urban Area Choose an item. Core-based Statistical Area Choose an item.					
In Decimal Degrees GPS Explanation: Google Ear						
Elevation Above/below Mean Sea Level (in meters) 106	<u>th</u>					
Name of nearest road to inlet probe Stadium Drive ADT Year Choose an item						
Comments: As of 2020 Stadium Drive has no ADT data available. Stadium Dr. is 37 m from shelter						
Distance of site to nearest major road (m) $\underline{132.00}$ Direction from site to nearest major road \underline{W}						
Name of nearest major road <u>Duke St./US 501</u> ADT <u>34500</u> Year <u>2019</u>						
Comments:						
Site located near electrical substation/high voltage power lines? Yes No	_					
	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 N.						
Explain any sources of potential bias; include cultivated fields, loose bulk storage, stacks, vents, railroad tracks construction activities, fast food restaurants, and swimming pools.	,					
Site is located on NC National Guard property. On occasion, the Guard will sponser events (internal and external) that lead overflow parking around the monitoring site (<2m). These events are sporadic. Also, the Armory has a stack associated of the control of t						
boiler. It is used infrequently but is in operation.	viui a					
ANSWER ALL APPLICABLE QUESTIONS: Parameters Monitoring Objective Scale Monitor Type	—					
	\dashv					
NA ☐ General/Background ☐ Micro ☐ SLAMS ☐ SO ₂ (NAAQS) ☐ General/Background ☐ Micro ☐ SLAMS						
SO ₂ (trace-level) Highest Concentration Middle SPM						
NO ₂ (NAAQS) Max O3 Concentration Monitor Network	\dashv					
\square HSNO _y \square Population Exposure SO2 & O3 \square Affiliation						
Source Oriented Neighborhood NCORF						
Hydrocarbon UrbanSO2 & O3 Unofficial PAMS						
Air Toxics Upwind Background Regional —						
CO (trace-level) Welfare Related Impacts						
	$\overline{}$					
Probe inlet height (from ground) 2-15 m? Yes No Give actual measured height from ground (meters) 3.90						
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes 🔀 N	0					
Actual measured distance from outer edge of probe to supporting structure (meters) 1.20						
Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes ☑ No ☐ NA [コー					
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 \(\square\) *No \(\square\) *Number of trees within 10 meters \(\square\)						
*Distance from probe to closest tree (m) Point Direction from probe to tree *Height of tree above probe (m)						
Are there any obstacles to air flow? *Yes \(\text{(answer *'d questions) No } \(\text{\square} \)						
*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 \(\)						
Distance of probe to nearest traffic lane (m) $\frac{40}{}$ Direction from probe to nearest traffic lane \underline{N}	_					
	_					

Parameters	Monitoring Objective	Scale		Site Type
□ NA Air flow < 200 L/min	General/Background	☐Micro	⊠SLA	MS
PM2.5 FRM	Highest Concentration	☐Middle	□SPM	[<u></u>
PM10 FRM	Population Exposure	Neighborhood		
☐ PM10 Cont. (BAM) ☐ PM10-2.5 FRM	Source Oriented	□Urban	Monito	or NAAQS Exclusion
☑ PM10-2.5 BAM	Transport	Regional	Пио	NREGULATORY
PM2.5 Cont. (BAM)	wenate Related Impacts		_	
	ground) $\square < 2 \text{ m} $ $\square $	m 7-15 m	-	□ > 15 m
	f probe inlet from horizontal (wall) a		roof) su	pnorting structure > 2 m ⁹
Actual measured distance	e from outer edge of probe inlet to su			Yes No
		1 1 1		
low volume monitor at the	ter edge of probe inlets of any low vene site = 1 m or greater?	olume monitor and any oth	er	Yes ⊠ No □ NA □
Are collocated PM2.5 Me	onitors (Two FRMs, FRM & BAM,	BAM & *Ves □ (a	nswer *	'd questions) No 🛛 NA
BAM) Located at Site?			iiswci	u questions) No 🖂 NA
	collocated PM 2.5 samplers (X) with		1 N. F	10:
each other? *Are collocated PM2.5 s	ampler inlets within 1 m vertically or		NOL	Give actual (meters)
] No [Give actual (meters)
Is a lary vialuma DM10 m	panitar callegated with a DM2.5 man	itar at the		
site to measure PM10-2.5	nonitor collocated with a PM2.5 mon 5?	*Yes 🛛 (answer '	*'d questions) No 🗌 NA
* Entire inlet opening of	collocated PM10 and PM2.5sampler	rs for PM10-2.5 (X)		7
within 2 to 4 m of each o	ther?		Yes 🗵	-
	nd PM2.5 sampler inlets within 1 m y nearest tree drip line? Yes yes	vertically of each other? *No [] (answer *'d question	Yes 🛭	No 🗌
•				O motors
	closest tree (m) Direction fr	*No *Number of trees om probe to tree *H		
				1
	o air flow? *Yes [] (answer *'d que		1	. 1
	Distance from probe inlet (m)obe to obstacle at least twice the hei			
	rest traffic lane (m) 33 Direction f	from probe to nearest traffic	c lane N	
RECOMMENDATIONS:				
	tatus? Yes *No (answer *	-		
	bjective? Yes (enter new objective? Yes (enter new objective)			
*3) Change scale of repre*4) Relocate site? Yes		v scale) No		
Comments:				
Date of Last Site Pictures	11/2/2020 New Pictures Sub	omitted? Yes No 🗌		
Reviewer KLT				Date <u>11/2/2020</u>
Ambient Monitoring Coor	rdinator TTSkelding		1	DateJune 28 2021

Region_RRO		ıme <u>Bushy Fork</u>		AQS S	ite # 37- <u>145</u> - <u>0003</u>
			City Hurdle Mills		
Urban Area ROXBORO Core-based Statistical Area Durham, NC					
	Enter E				
	.3069		9.0920		od of Measuring
In Decimal Degrees Elevation Above/bel	avy Maan Car	In Decimal Degrees		Interpolation Ex	planation: Google Earth
		be No Hwy 49 ADT	2000 V	or lotact available	<u>205.00</u>
	-				
Comments: N/A	obe to neares	st traffic lane (m) 123	Direction	1 from ozone probe to	nearest traffic lane <u>SSE</u>
	anned NC	H 40 ADT 2000	Vaan	2019	
		Hwy 49 ADT 3000		<u>2018</u>	
	earest major r	road (m) 123.00 Dire	ction fro	m site to nearest majo	or road <u>SSE</u>
Comments:			41 0		
		tion/high voltage pow	er lines?		Yes No No
Distance of site to no			14		Direction to RR NA
		to nearest power pole			(m) Direction vater tower NA
		ne of water tower (m)			icks, vents, railroad tracks,
		estaurants, and swimn			icks, vents, famoad tracks,
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	voice and or mine	mg poo		
ANSWER ALL APP	LICABLE Q	UESTIONS:			
Parameters	N/ '4 -				
		ring Objective		Scale	Site Type
◯ O ₃	⊠General/	Background	Mic	ALIEN CONTROL	
	⊠General/ □Highest	Background Concentration		ro	⊠SLAMS
	□ General/ □ Highest □ □ Max O3	Background Concentration Concentration	_ Mid	ro dle	
	☐ General/☐ Highest ☐ Max O3☐ Population	Background Concentration Concentration on Exposure	_ Mid	ro	⊠SLAMS
	□ General/ □ Highest □ □ Max O3	Background Concentration Concentration on Exposure Driented	_ Mid	ro dle ghborhood	⊠SLAMS
	General/ Highest (Max O3 Population Source Of Transport Upwind	Background Concentration Concentration on Exposure Oriented rt Background	 Mid Neig	ro dle ghborhood an	⊠SLAMS
⊠ O ₃	General/ Highest of Max O3 Population Source Of Transport Upwind Welfare	Background Concentration Concentration on Exposure Oriented rt Background Related Impacts	 Mid Neig Urba Reg	ro dle ghborhood an	⊠SLAMS
Probe inlet height	General/ Highest Max O3 Population Source Control Transport Upwind Welfare (from ground	Background Concentration Concentration on Exposure Oriented rt Background Related Impacts d) 2-15 m? Yes	☐Mid ☐Neig ☑Urba ☐Reg ☐No ☐	ro dle ghborhood an	⊠SLAMS
Probe inlet height Give actual measur	General/ Highest of Max O3 Population Source Of Transport Upwind Welfare (from ground gred height from	Background Concentration Concentration on Exposure Oriented rt Background Related Impacts d) 2-15 m? Yes om ground (meters)	MidNeig	ro dle ghborhood an ional	⊠SLAMS □SPM
Probe inlet height of Give actual measures Distance of outer e	General/ Highest of Hi	Background Concentration Concentration on Exposure Oriented rt Background Related Impacts d) 2-15 m? Yes om ground (meters) e inlet from horizont	MidNeig	ro dle ghborhood an ional	⊠SLAMS □SPM
Probe inlet height of Give actual measure. Distance of outer estructure > 1 m? Y	General/ Highest Max O3 Population Source Of Transport Upwind Welfare (from ground ground ground) Transport Welfare (from ground ground) The design of problems	Background Concentration Concentration on Exposure Oriented rt Background Related Impacts d) 2-15 m? Yes om ground (meters) e inlet from horizont	☐Mid ☐Neig ☐Urba ☐Reg ☐No ☐ 4.20 tal (wall	ro dle ghborhood an ional and/or vertical (ro	SLAMS □SPM of) supporting
Probe inlet height of Give actual measure. Distance of outer estructure > 1 m? Y	General/ Highest Max O3 Population Source Of Transport Upwind Welfare (from ground red height from ground red height from ground ses No interestance from ground	Background Concentration Concentration on Exposure Oriented rt Background Related Impacts d) 2-15 m? Yes om ground (meters) e inlet from horizont	☐Mid ☐Neig ☐Urba ☐Reg ☐No ☐ 4.20 tal (wall	ro dle ghborhood an conal and/or vertical (ro porting structure (me	SLAMS □SPM of) supporting
Probe inlet height of Give actual measure Distance of outer estructure > 1 m? Y Actual measured d	General/ Highest of Max O3 Population Source Of Transport Upwind Welfare (from ground gred height from ground from the nearest from ground f	Background Concentration Concentration on Exposure Oriented rt Background Related Impacts d) 2-15 m? Yes om ground (meters) e inlet from horizont outer edge of probest tree drip line?	☐Mid ☐Neig ☐Urba ☐Reg ☐No ☐ 4.20 cal (wall	ro dle ghborhood an conal and/or vertical (ro porting structure (me	SLAMS SPM of) supporting eters) *'d questions)
Probe inlet height of Give actual measure of outer estructure > 1 m? Y Actual measured d Is probe > 20 m from *Is probe > 10 m from *Distance from probe	General/ Highest Max O3 Population Source Of Transport Upwind Welfare (from ground red height from the nearest tree to closest tree	Background Concentration Concentration on Exposure Oriented rt Background Related Impacts d) 2-15 m? Yes om ground (meters) e inlet from horizont outer edge of probest tree drip line? ed drip line? Yes (m) Direction for	Mid Neig Urba Reg No □ 4.20 al (wall to supp Yes □ *No □ *no □ *rom probe	dle ghborhood an ional and/or vertical (ro corting structure (mo *No (answer) *Number of trees within to tree (mo) *Height	SLAMS SPM of) supporting eters) *'d questions)
Probe inlet height of Give actual measure of outer estructure > 1 m? Y Actual measured d Is probe > 20 m from *Is probe > 10 m from	General/ Highest Max O3 Population Source Of Transport Upwind Welfare (from ground red height from the nearest tree to closest tree	Background Concentration Concentration on Exposure Oriented rt Background Related Impacts d) 2-15 m? Yes om ground (meters) e inlet from horizont outer edge of probest tree drip line? ed drip line? Yes (m) Direction for	Mid Neig Urba Reg No □ 4.20 al (wall to supp Yes □ *No □ *no □ *rom probe	dle ghborhood an ional and/or vertical (ro corting structure (mo *No (answer)	of) supporting eters) *'d questions) 10 meters

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 \(\square\) No \(\square\)
Comments:
Date of Last Site Pictures: <u>December 30, 2019</u> New Pictures Submitted? Yes No
ReviewerDate:
Ambient Monitoring Coordinator TT Skelding Date: June 28, 2021

Instructions:

RECOMMENDATIONS:

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.

Region_RRO	Site Na	ıme <u>Butner</u>		AQ	S Site # 37- <u>077</u> - <u>0001</u>	
Street Address-800	Central Av	<u>e</u>	City Butner			
Urban Area BU	TNER	Core-ba	sed Stat	istical Area No	ne	
	Enter E	xact				
Latitude 36	.1413	Longitude <u>-7</u>	8.768 <u>1</u>	Me	thod of Measuring	
In Decimal Degrees	}	In Decimal Degrees		<u>Interpolation</u>	Explanation: Google Earth	
Elevation Above/be	low Mean Se	a Level (in meters)			<u>121.00</u>	
Name of nearest roa	d to inlet pro	be West G St ADT	$\underline{0}$ Year	latest available _		
Distance of ozone p	robe to neare:	st traffic lane (m) 85 I	Direction	from ozone probe	to nearest traffic lane \underline{SE}	
Comments: Traffic	count unavai	lable for G street				
Name of nearest ma	jor road Cer	ntral Ave ADT 9200	Year	<u>2018</u>		
Distance of site to n	earest major	road (m) 197.00 Dire	ection fro	m site to nearest n	najor road <u>ENE</u>	
Comments:						
		tion/high voltage pow	er lines?		Yes No No	
Distance of site to n				(m)	Direction to RR NA	
		to nearest power pole			(m) Direction	
		ne of water tower (m)				
					stacks, vents, railroad tracks,	
construction activiti	es, fast food i	restaurants, and swimi	ning poo	ds.		
ANSWER ALL API	PLICABLE O	HESTIONS:				
Parameters	11	oring Objective		Scale	Site Type	
◯ O ₃		Background	Mic			
		Concentration			⊠SLAMS	
		Concentration	☐Mid	dle	□SPM	
		on Exposure	□Neig	ghborhood		
	Source (Urb	an		
		Background				
		Related Impacts	Reg	ional		
Probe inlet height		d) 2-15 m? Yes	No	1	1	
		om ground (meters)		-		
Distance of outer	edge of prob	e inlet from horizon	tal (wall) and/or vertical	(roof) supporting	
structure > 1 m? Y	es ⊠ No □	7				
		outer edge of prob	e to supi	orting structure	(meters)	
	Is probe > 20 m from the nearest tree drip line? Yes X *No (answer *'d questions)					
*Is probe > 10 m from the nearest tree drip line? Yes \(\text{Yes} \) *No \(\text{Number of trees within 10 meters} \)						
*Distance from probe to closest tree (m) Direction from probe to tree *Height of tree above probe (m)						
Are there any obst	acles to air f	low? *Yes ☐ (ansv	ver *'d o	questions) No 🛚		
*Identify obstacle		ce from probe inlet (n	,		obe inlet to obstacle	

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 No
Comments:
Date of Last Site Pictures: November 4, 2019 New Pictures Submitted? Yes No
ReviewerDate:
Ambient Monitoring Coordinator <u>TT Skelding</u> Date: <u>June 28, 2021</u>

Instructions:

DECOMMENDATIONS:

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.

Street Address-250 Hurricane Drive Urban Area Not in an Urban Area Core-based Statistical Area Choose an item. Enter Exact Latitude 36.511657 Longitude -77.655277 Method of Measuring In Decimal Degrees In Decimal Degrees Interpolation Explanation: Google Maps Elevation Above/below Mean Sea Level (in meters) Same of nearest road to inlet probe Hurricane Drive ADTYear Choose an item Comments: Not Available Distance of site to nearest major road (m) 803.57 Direction from site to nearest major road E					
Enter Exact Latitude 36.511657 Longitude -77.655277 Method of Measuring In Decimal Degrees In Decimal Degrees Interpolation Explanation: Google Maps Elevation Above/below Mean Sea Level (in meters) 58 Name of nearest road to inlet probe Hurricane Drive ADT Year Choose an item Comments: Not Available					
Latitude 36.511657 Longitude -77.655277 Method of Measuring In Decimal Degrees In Decimal Degrees Interpolation Explanation: Google Maps Elevation Above/below Mean Sea Level (in meters) 58 Name of nearest road to inlet probe Hurricane Drive ADT Year Choose an item Comments: Not Available					
In Decimal Degrees In Decimal Degrees Interpolation Explanation: Google Maps Elevation Above/below Mean Sea Level (in meters) Name of nearest road to inlet probe Hurricane Drive ADT Year Choose an item Comments: Not Available					
Elevation Above/below Mean Sea Level (in meters) Name of nearest road to inlet probe Hurricane Drive ADT Year Choose an item Comments: Not Available					
Name of nearest road to inlet probe Hurricane Drive ADT Year Choose an item Comments: Not Available					
Comments: Not Available					
Distance of site to nearest major road (m) 803.57 Direction from site to nearest major road E					
•					
Name of nearest major road Old E.poria Rd ADT 2000 Year 2018					
Comments: ADT of 2000 is an apporximation between the 2400 and 830 readings on NCDOT ADT map. 1300m South of					
site, NC-46 ADT~6800					
Site located near electrical substation/high voltage power lines? Yes □ No ☒					
Distance of site to nearest railroad track (m) Direction to RR \(\sigma\)					
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.					
<u> </u>					
ANSWER ALL APPLICABLE QUESTIONS:					
Parameters Monitoring Objective Scale Monitor Type					
NA MCanagal/BooksgroundNO2 Distants					
SO ₂ (NAAQS)					
□ SO ₂ (trace-level) □ Highest Concentration □ Middle □ SPMNO2					
NO2 (NAAQS) Max O3 Concentration NeighborhoodNO2 HSNOy Population Exposure Monitor Network Affiliation					
D ₃ D ₄ D ₅ D ₄ D ₄ D ₄ D ₄ D ₄ D ₅ D ₄ D ₅ D ₄ D ₅					
NH ₃ Source Oriented NCORE					
Hydrocarbon Transport Dunofficial PAMS Unofficial PAMS					
☐ Air Toxics ☐ Upwind Background ☐ CO (trace-level) ☐ Welfare Related Impacts					
CO (trace-level) Welfare Related Impacts					
Probe inlet height (from ground) 2-15 m? Yes No Give actual measured height from ground (meters) 3.61					
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) 1.14					
Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes No NA					
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 \(\square\) *No \(\square\) *Number of trees within 10 meters \(\square\).					
*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 🗍					
Distance of probe to nearest traffic lane (m) -266ht Direction from probe to nearest traffic lane SE					

Parameters	Monitoring Objective	Scale	Site Type
□ NA	General/Background	Micro	□SLAMS
Air flow < 200 L/min ☐ PM2.5 FRM	Highest Concentration	Middle	 ⊠SPM
PM10 FRM	Population Exposure	Neighborhood	
☐ PM10 Cont. (BAM) ☐ PM10-2.5 FRM	Source Oriented	Urban	Monitor NAAQS Exclusion
☐ PM10-2.5 FRM	Transport	Regional	NONREGULATORY
PM2.5 Cont. (BAM)	☐Welfare Related Impacts		NONREGULATORT
Probe inlet height (from g	ground) $\square < 2 \text{ m} $ $\square $	n 7-15 m	> 15 m
	e from probe inlet to ground (meters)		
	Probe inlet from horizontal (wall) are from outer edge of probe inlet to su		
	e from outer eage of probe finet to su	pporting structure (meters)) 1 cs 🔼 1 NO
	ter edge of probe inlets of any low vo	olume monitor and any oth	er Yes No NA NA
low volume monitor at the	ne site = 1 m or greater? onitors (Two FRMs, FRM & BAM, 1	RAM&	
BAM) Located at Site?	oliitois (Two FRIVIS, FRIVI & DAIVI,	*Yes 🗌 (a	nswer *'d questions) No 🛛 NA
	collocated PM 2.5 samplers (X) with		ly Do
each other? *Are collocated PM2.5 sa	ampler inlets within 1 m vertically of		No Give actual (meters)
The conocated 11412.3 Se	impler mets within 1 in verticing of		No Give actual (meters)
Is a low-volume PM10 m site to measure PM10-2.5	nonitor collocated with a PM2.5 mon 5?	itor at the *Yes □ (answer *'d questions) No 🛛 NA
* Entire inlet opening of	collocated PM10 and PM2.5sampler	s for PM10-2.5 (X)	
within 2 to 4 m of each o	ther?		Yes No No
	nd PM2.5 sampler inlets within 1 m v		Yes No No
_	·	*No [] (answer *'d question	,
	e nearest tree drip line? Yes \(\bigcup \)* closest tree (m) \(\bigcup \) Direction fr		
-Distance from probe to	closest tree (iii) Briection in	om proce to nee · Th	eight of thee above probe (iii)
Are there any obstacles to	o air flow? *Yes 🗌 (answer *'d que	stions) No 🛛	
	Distance from probe inlet (m)		
*Is distance from inlet pr	obe to obstacle at least twice the heig	ght that the obstacle protru	des above the probe? Yes \(\) No
Distance of probe to near	rest traffic lane (m) Direction	on from probe to nearest tr	affic lane
RECOMMENDATIONS:			
1) Maintain current site s	tatus? Yes ⊠ *No 🗌 (answer *	'd questions)	
*2) Change monitoring of	bjective? Yes ☐ (enter new objective)	tive No 🔲-	
*3) Change scale of repre	esentativeness? Yes [(enter new	scale _) No [
*4) Relocate site? Yes	□ No □		
Comments:			
Date of Last Site Pictures	New Pictures Submitted? Y	es No 🛛	
Reviewer			Date
	rdinator TT Skelding		DateJune 28, 2021

Urban Area Choose an item.	Region_RRO Site Name West Johnston					AQS Site # 37- <u>101</u> - <u>0002</u>		
Latitude 35.599966 Longitude -78.462213 Method of Measuring					City CI	City Clayton		
In Decimal Degrees In Decimal Degrees Interpolation Explanation: Google Maps Elevation Above/below Mean Sea Level (in meters) S2 Name of nearest road to inlet probe Jack Rd 19m SW of shelter ADT 1900 Year Choose Name of nearest major road (m) 2020.00 Direction from site to nearest major road NE Name of nearest major road (m) 2020.00 Direction from site to nearest major road NE Name of nearest major road (m) 2020.00 Direction from site to nearest major road NE Name of nearest major road US Bypass 70 ADT 28500 Year 2018 Comments: Interpolated ADT 26k - 32k Site located near electrical substation/high voltage power lines? Yes No NE **OPTIONAL** Distance of site to nearest power pole w/transformer (m) Direction to RR NA **OPTIONAL** Distance of site to nearest power pole w/transformer (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. Name of the problem of the pro	Urban Area Choose an item. Core-based Statistical Area Rocky Mount, NC							
In Decimal Degrees			xact					
Elevation Above/below Mean Sea Level (in meters) 82	Latitude 35.590	<u>966</u>	Longitud	le <u>-78.4622</u>	213	Metho	d of Measuring	
Name of nearest road to inlet probe Jack Rd 19m SW of shelter ADT 1900 Year Choose an item 2017 Comments: NA Distance of site to nearest major road (m) 2020.00 Direction from site to nearest major road NE Name of nearest major road US Bypass 70 ADT 28500 Year 2018 Comments: Interpolated ADT 26k - 32k Site located near electrical substation/high voltage power lines? Yes No 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. NA	o			0	<u>Interpola</u>	tion Exp	lanation: Google Maps	
Distance of site to nearest major road (m) 2020.00 Direction from site to nearest major road NE Name of nearest major road USBypass 70 ADT 28500 Year 2018 Comments: Interpolated ADT 26k - 32k 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. hhbtttthhtt ANSWER ALL APPLICABLE QUESTIONS: Parameters Monitoring Objective Scale Monitor Type NA SO2 (NAAQS) SO3 (NAAQS) SO3 (trace-level) NO4 (NAAQS) Hisphest Concentration Middle SPM Monitor Network Affiliation NO5 (NAAQS) HSNO, NO6 (NAAQS) Hydrocarbon Hydro								
Distance of site to nearest major road (m) 2020.00 Direction from site to nearest major road NE Name of nearest major road US Bypass 70 ADT 28500 Year 2018 Comments: Interpolated ADT 26k - 32k 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 Explain any sources of potential bias; include cultivated fields, loose bulk storage, stacks, vents, railroad tracks, construction activities, fast food restaurants, and swimming pools. NA	Name of nearest road to in	let probe <u>J</u>	ack Rd 19m	SW of shelter	ADT <u>1900</u> Year	Choose an	item <u>2017</u>	
Name of nearest major road US Bypass 70 ADT 28500 Year 2018 Comments: Interpolated ADT 26k - 32k Site located near electrical substation/high voltage power lines?	Comments: <u>NA</u>							
Site located near electrical substation/high voltage power lines? Site located near electrical substation/high voltage power lines? Yes No No	Distance of site to nearest	major road	(m) <u>2020.0</u>	O Direction fro	m site to nearest	major road	<u>NE</u>	
Distance of site to nearest railroad track (m) Direction to RR No No No No No No No	Name of nearest major roa	d <u>US Byr</u>	ass 70 ADT	28500 Year	<u>2018</u>			
Distance of site to nearest railroad track	Comments: Interpolated A	DT 26k - 1	32 <u>k</u>					
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. hhhtttthththththththththththththththth	Site located near electrical	substation	/high voltage	power lines?			Yes ☐ No 🛛	
Distance between site and drip line of water tower (m) Direction from site to water tower NA	Distance of site to neare	st railroad	track		(m) _	I	Direction to RR N.	
Explain any sources of potential bias; include cultivated fields, loose bulk storage, stacks, vents, railroad tracks, construction activities, fast food restaurants, and swimming pools.	**OPTIONAL** Distan	ce of site	to nearest p					
ANSWER ALL APPLICABLE QUESTIONS: Parameters								
ANSWER ALL APPLICABLE QUESTIONS: Parameters						storage, sta	cks, vents, railroad tracks,	
ANSWER ALL APPLICABLE QUESTIONS: Parameters	construction activities, fa	ast food re	estaurants, a	nd swimming	pools.			
Parameters Monitoring Objective Scale Monitor Type	<u>hhhttttththt</u>							
Parameters Monitoring Objective Scale Monitor Type NA	ANGWED ALL ADDLIC	ADIFOI	IECTIONS.					
NA				iective	Scale		Monitor Type	
SO ₂ (NAAQS) SO ₂ (trace-level) NO ₂ (NAAQS) Highest Concentration NO ₂ (NAAQS) NAX O3 Concentration Noighborhood			mitoring Or	Jeenve				
SO₂ (trace-level)		_	_		Micro	-3	SLAMS	
NO2 (NAAQS)	_ ` ` ` `	High	est Concentra	ition	Middle	_	SPM	
Affiliation		=				-	Monitor Network	
NH ₃			_		Nai alda a da a a			
Hydrocarbon		Sourc	e Oriented_				NCORE	
Probe inlet height (from ground) 2-15 m? Yes No Give actual measured height from ground (meters) 3.60 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 Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes No No NA 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 *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 *No *No *No *No *No *No *No *No *No	. = .	Trans	port		∐Urban	-	Unofficial PAMS	
Probe inlet height (from ground) 2-15 m? Yes No Give actual measured height from ground (meters) 3.60 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 Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes No No NA 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 *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 *No *No *No *No *No *No *No *No *No	The state of the s	⊠ Upwi	nd Backgrou	nd	Regional_		Onometat i Aivis	
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes \Boxstyle No \Boxstyle Actual measured distance from outer edge of probe to supporting structure (meters) 1.20 Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes \Boxstyle No \Boxstyle NA \Boxstyle Is probe > 20 m from the nearest tree drip line? Yes \Boxstyle *No \Boxstyle (answer *'d questions) *Is probe > 10 m from the nearest tree drip line? Yes \Boxstyle *No \Boxstyle *Number of trees within 10 meters \Boxstyle *Distance from probe to closest tree (m) \Boxstyle Direction from probe to tree \Boxstyle *Height of tree above probe (m) \Boxstyle Are there any obstacles to air flow? *Yes \Boxstyle (answer *'d questions) No \Boxstyle \Boxstyle \Boxstyle \Boxstyle (answer *'d questions) No \Boxstyle	CO (trace-level)	Welfa	are Related I	npacts				
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes \Boxtimes No \Boxtimes Actual measured distance from outer edge of probe to supporting structure (meters) 1.20 Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes \Boxtimes No \Boxtimes NA \Boxtimes Is probe > 20 m from the nearest tree drip line? Yes \Boxtimes *No \Boxtimes (answer *'d questions) *Is probe > 10 m from the nearest tree drip line? Yes \Boxtimes *No \Boxtimes *Number of trees within 10 meters \Boxtimes *Distance from probe to closest tree (m) \Boxtimes Direction from probe to tree \Boxtimes *Height of tree above probe (m) \Boxtimes Are there any obstacles to air flow? *Yes \Boxtimes (answer *'d questions) No \Boxtimes \Boxtimes *Distance from probe to tree and the probability of the probability	D 1 1 1 1 1 1 (C	1) 0.1	5 0 37 N	7 y 🗆	0: 1	11 1	16 16	
Actual measured distance from outer edge of probe to supporting structure (meters) 1.20 Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes No NA ST NA ST N								
Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Is probe > 20 m from the nearest tree drip line? Yes X *No (answer *'d questions) *Is probe > 10 m from the nearest tree drip line? Yes X *No *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 X	Distance of outer edge of	probe inlet	from horizo	ntai (waii) and/	or vertical (root)	supporting s	structure > 1 m? Yes 🔼 No	
Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Is probe > 20 m from the nearest tree drip line? Yes X *No (answer *'d questions) *Is probe > 10 m from the nearest tree drip line? Yes X *No *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 X	Actual measured distance	from outer	edge of prol	e to supporting	g structure (mete	rs) 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 *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 *No *No *No *No *No *No *No *No *No			-				Yes ⊠ No □ NA □	
*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						questions)		
Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒	*Is probe > 10 m from the	nearest tre	ee drip line?	Yes ☐ *No	o □ *Number o	f trees within	n 10 meters	
*Identify obstacle Distance from probe inlet (m) Direction from probe inlet to obstacle	Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒							
definity dostacle Distance from proof filler (iii)Direction from proof filler to dostacle	*Identify obstacle	Distance 1	from probe in	ılet (m)	Direction from p	robe inlet to	obstacle	
*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes \(\square\) No								
Distance of probe to nearest traffic lane (m) 96 Direction from probe to nearest traffic lane SSE	Distance of probe to near	est traffic la	ane (m) 96	Direction from	n probe to neares	t traffic lane	SSE	

Parameters	Monitoring Objective	Scale	Site Type			
NA	General/Background	☐Micro	⊠SLAMS			
Air flow < 200 L/min PM2.5 FRM	Highest Concentration	☐Middle	 SPM			
PM10 FRM	Population Exposure	Neighborhood				
PM10 Cont. (BAM)	Source Oriented	Urban	Monitor NAAQS Exclusion			
☐ PM10-2.5 FRM ☐ PM10-2.5 BAM	Transport	Regional				
PM2.5 Cont. (BAM)	☐ Welfare Related Impacts		NONREGULATORY			
Probe inlet height (from	ground) $\square < 2 \text{ m}$ $\boxtimes 2-71$	m	> 15 m			
	e from probe inlet to ground (meters)) 2.3				
Distance of outer edge of	probe inlet from horizontal (wall) a	nd/or vertical (platform or	roof) supporting structure > 2 m?			
Actual measured distance	e from outer edge of probe inlet to su	ipporting structure (meters)) <u>2.1</u> Yes ⊠ No			
Distance (V) between ou	ter edge of probe inlets of any low ve	olume monitor and any oth	Ar			
low volume monitor at th		ordine morntor and any our	Yes No NA NA			
Are collocated PM2.5 M	onitors (Two FRMs, FRM & BAM,	BAM & *Ves 🗆 (a	nswer *'d questions) No 🛛 NA			
BAM) Located at Site?			ilswei - u questions) No 🖂 NA			
	collocated PM 2.5 samplers (X) with		_			
each other?			No Give actual (meters)			
*Are conocated PIVI2.5 s	ampler inlets within 1 m vertically of	Yes	No Give actual (meters)			
			Tho Give actual (meters)			
Is a low-volume PM10 monitor collocated with a PM2.5 monitor at the *Yes ☐ (answer *'d questions) No ☒ NA						
site to measure PM10-2.3?						
* Entire inlet opening of collocated PM10 and PM2.5samplers for PM10-2.5 (X) Yes No No						
within 2 to 4 m of each other? *Are collocated PM10 and PM2.5 sampler inlets within 1 m vertically of each other? Yes \[\begin{array}{cccccccccccccccccccccccccccccccccccc						
Is probe > 20 m from the nearest tree drip line? Yes \(\sigma *No \(\sigma \) (answer *'d questions)						
*Is probe > 10 m from the nearest tree drip line? Yes \Box *No \Box *Number of trees within 10 meters \Box \Box \Box \Box \Box \Box \Box \Box						
	closest tree (m) Direction fr					
	o air flow? *Yes 🔲 (answer *'d que					
*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 \square No						
Distance of probe to nearest traffic lane (m) Direction from probe to nearest traffic lane						
RECOMMENDATIONS:						
1) Maintain current site status? Yes X *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 12/3/2019 New Pictures Submitted? Yes ☐ No ☒						
Reviewer			Date			
Ambient Monitoring Coo	rdinator TT Skelding		Date June 28, 2021			

Region RRO Site Name Millbrook NCore			AQS	Site # 37	- <u>183</u> - <u>0014</u>		
Street Address-3801 Spring Forest Rd		City RALEIGH					
Urban Area RALEI	Urban Area RALEIGH Core-based S			tatistical Area Ch	oose an i	tem.	
Enter Exact							
Latitude 35.856	<u> 214</u>	Longitude	<u>-78.574147</u>	Meth	od of M	easuring	
In Decimal Degrees		In Decimal Deg	rees	<u>Interpolation</u>	Explana	tion: <u>Goo</u>	gle Earth
	Elevation Above/below Mean Sea Level (in meters) 103						
Name of nearest road to inlet probe Spring Forest Rd ADT 19000 Year latest available 2017							
Comments: Spring Forest Road is 44 meters south of the site							
Distance of site to nearest	major	road (m) 632 w	vest				
Name of nearest major roa	d US	-1 / Capital Blvd	ADT 51000	Year 2017	Comments	: The 51000	ADT is the
average of the NC DOT A	DT of	the N and S coun	ts of US-1/SpringF	orest intersection which	ch are 5300	0 and 48000	ı
respectively							
Site located near electrical	substa	tion/high voltage	power lines?			Yes	No X
Distance of site to neare	st rail	road track	(m))Directi	on to RR	XN	A
Distance between site and	drip li	ne of water tower	(m)Direc	tion from site to water	tower		XNA
Explain any sources of p					stacks, vei	nts, railroad	tracks,
construction activities, fa	ast fo	od restaurants, a	nd swimming poo	ols.			
Twice a day, at the two schools adjacent to the site have carpool lanes have influenced emissions readings as the vehicles idle for 20-60 mins due west of the site (15-40m depending on the school). The housing complexes across the street have units with fireplaces. Deliveries to the daycare facility due east, can cause high emissions readings if a diesel truck idles for long.							
							
ANSWER ALL APPLIC	ABLI						
Parameters			ing Objective	Scale	_	Monitor T	ype
□NA			ground CO, VOC	XMicro CO, VOC	XSLA	AMS <u>SO2, N</u>	O2, O3,
XSO ₂ (trace-level)		XHighest Conc				VOC, ALDE	
$X NO_2 (NAAQS)$ $X O_3$			centration <u>CO, O3</u>	XMiddle NO2			TIDE
Hydrocarbon		XPopulation Ex	xposure <u>SO2,</u> VOC, ALDEHYDE	XNeighborhood		М <u>NO2</u>	
X Air Toxics -VOC		Source Orie		SO2, NO2, O3	Moni Affili	itor Networl	ζ
XAir Toxics - Aldehyd XCO (trace-level)	es	Transport_	med	Urban		ORE <u>SO2, N</u>	[02, 02
ACO (trace-rever)		Upwind Bac	 ckground	Regional			-
					l —	VOC, ALDE	
Welfare Related Impacts Unofficial PAMS							
Probe inlet height (from ground) 2-15 m? Yes X No Give actual measured height from ground (meters) 4.86							
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes X No							
Actual measured distance from outer edge of probe to supporting structure (meters) 2.23							
Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes X No NA Service No Na Service Service No Na Service Na Na							
*Is probe > 10 m from the nearest tree drip line? Yes \(\text{Yes \(\text{V} \) *No \(\text{U} \)							
*Distance from probe to tree (m) NOTE: tree at 10.5 meters NNE of site was removed December 2019 Direction from							
		ree (m)	4.2.4	X			
Are there any obstacles to	air flo	ow? *Yes ∐ (ans	wer * 'd questions)	No X			
*Identify obstacle	Dista	nce from probe in	ılet (m)Dire	ection from probe inlet	t to obstacle	e	
*Is distance from inlet pro						probe? Yes	☐ No ☐
Distance of probe to near	est traf	tic lane (m) 39	Direction from pre	obe to nearest traffic la	ane S		

Parameters	Monitoring Objective	Scale	Site Type				
□ NA	General/Background	XMicro PM2.5	XSLAMS PM2.5 FRM, BAM PM 2.5/PM10				
Air flow < 200 L/min X PM2.5 FRM		CONT. NO3, SO4,	XSPM PM2.5 Spec.(SASS), PM2.5				
PM10 FRM	WIT: 1 4 C		Spec.(URG), PM2.5 Cont., NO3, SO4,				
X PM10 Cont. (BAM)	XHighest Concentration	Middle	-				
☐ PM10-2.5 FRM		Neighborhood	Monitor Network Affiliation				
X PM10-2.5 BAM	XPopulation Exposure		×NCORE PM2.5 FRM, BAM PM2.5/PM10				
X PM2.5 Cont (T640X)		Urban	× SUPPLEMENTAL SPECIATION PM2.5				
X PM2.5 Cont. (BAM) X PM2.5 Spec. (SASS)	Source Oriented	Regional	Spec.(SASS), PM2.5 Spec.(URG), PM2.5				
X PM2.5 Spec. (SASS) X PM2.5 Spec. (URG)	Transport		Cont. NO3, SO4				
X PM2.5 Cont. Nitrate			Monitor NAAQS Exclusion				
X PM2.5 Cont. Sulfate	☐Welfare Related Impacts		x NONREGULATORY PM2.5 Cont., NO3,				
PM2.5 Aethalometer			<u>SO4</u>				
Actual measured distance f URG (2.3),PM2.5 Cont, To	540X(3.14).	eters) PM2.5 FRM (2.	4),BAM (2.62),PM2.5 SASS(2.1), PM2.5				
Actual measured distance f	Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (platform or roof) supporting structure > 2 m? Actual measured distance from outer edge of probe inlet to supporting structure (meters) PM2.5 FRM (2.1), SASS(2.1),						
URG (2.07), PM2.5/10 Cont.(), T640X(2.48), Aeth (1.15), SO4 (0.85), NO3 (0.85 Yes x No x							
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 x No \square NA \square							
Are collocated PM2.5 Monitors (Two FRMs, FRM & BAM, BAM & *Yes x (answer *'d questions) No \(\subseteq NA \subseteq \)							
* Entire inlet opening of collocated PM 2.5 samplers (X) within 1 to 4 m of each other? Yes x No Give actual (meters) 4 Yes x No Give actual (meters) 3							
Is an URG 3000 monitor collocated with a SASS monitor at the site? *Yes x (answer *'d questions) No NA * Entire inlet opening of collocated speciation samplers inlets (X) within 1 to 4 m of each other? Yes x No							
	ollocated speciation samplers	inlets (X) within 1 to 4	m of each other? Yes x No				
Give actual (meters) 2.2	complex inlete within 1 m vie	utically of each other?	Ves v. No Circo natural (maters)				
* Are collocated speciation sampler inlets within 1 m vertically of each other? Yes x No Give actual (meters) Is a low-volume PM10 monitor collocated with a PM2.5 monitor at the							
site to measure PM10-2.5?		*Y	es x (answer *'d questions) No 🗌 NA 🗍				
* Entire inlet analysis of collected DM10 and DM2 Security for DM10 2.5 (V) within 1 to 4 m of							
each other?							
*Are collocated PM10 and PM2.5 sampler inlets within 1 m vertically of each other? Yes x No							
Is probe > 20 m from the n	Is probe > 20 m from the nearest tree drip line? Yes x *No \square (answer *'d questions)						
*Is probe > 10 m from the	nearest tree drip line? Yes	∐ *No ∐	T : 1, C				
*Distance from probe to tre	ee (m) Direction from	n probe to tree*I	Height of tree (m)				
	Are there any obstacles to air flow? *Yes \(\square\) (answer *'d questions) No x						
*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							
Distance of probe to nearest traffic lane (m) 27 Direction from probe to nearest traffic lane <u>s</u>							

Parameters	Monitoring Objective	Scale	Monitor Type			
□ NA XNO _y (trace-level)	General/Background Highest Concentration Max O3 Concentration XPopulation Exposure Source Oriented	Micro Middle XNeighborhood Urban	SLAMSNOY SPM Monitor Network Affiliation			
	Transport Upwind Background Welfare Related Impacts	Regional	X NCORE			
	ground) 10-15 m? Yes X No refrom probe inlet to ground (meters) 10	0.50				
Distance of outer edge of probe inlet from horizontal and/or vertical supporting structure > 1 m? Yes Y No Actual measured distance from outer edge of probe inlet to supporting structure (meters) 7.4 Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes X No NA						
Is probe > 20 m from the nearest tree drip line? Yes X *No \square (answer *'d questions)						
*Is probe > 10 m from the nearest tree drip line? Yes \(\text{Yes} \) *No \(\text{No} \) *Distance from probe to tree (m) \(\text{Line} \) Direction from probe to tree \(\text{Line} \) *Height of tree (m) \(\text{Line} \)						
Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No X						
*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 🔲						
Distance of probe to near	est traffic lane (m) Direction	from probe to nearest traffi	c lane			
*2) Change monitoring o *3) Change scale of repre *4) Relocate site? Yes Comments:	status? Yes X *No \(\text{ (answer *'d bjective? Yes }\) (enter new objective esentativeness? Yes \(\text{ (enter new s }\)	ve) No				
	s New Pictures Submitted? Ye	s X No 🗌				
Reviewer	ordinator TT SKELDING		Date Date 06/28/2021			
Amorem Monitoring Coc	Juliator 11 SKELDING		Date 00/28/2021			

Region_RRO Site	Site Name <u>Triple Oak</u>		AQS Site # 37- <u>183-</u> <u>0021</u>			
Street Address-2826 Triple Oak Road		City Cary				
Urban Area RALEIGH Core-based St		atistical Area Raleigh, NC				
Ente	r Exact			-		
Latitude 35.865116	Longitud	le <u>-</u>				
		<u>78.819597</u>	Met	thod of Measuring		
In Decimal Degrees	In Decim	al Degrees	Interpolation	Explanation: Google Maps		
Elevation Above/below Mean Sea Level (in meters)				<u>96</u>		
Name of nearest road to inlet probe <u>US Interstate 40 ADT 162000</u> Year latest available 2017						
Comments: Nearest Road	and Nearest M	lajor Road are the	e same.			
Distance of site to nearest r	najor road (m)	18.25 Direction	from site to near	rest major road <u>SW</u>		
Name of nearest major road	d Same ADT	Year				
Comments: See above.						
Site located near electrical	substation/hig	h voltage power l	ines?	Yes No 🛛		
Distance of site to nearest r		(m		ection to RR NA		
Distance between site and dri						
				storage, stacks, vents, railroad		
tracks, construction activiti	es, fast food re	estaurants, and sv	vimming pools.			
1.9 km to NE-RDU airport						
		exit #284 (Airpo	<u>rt Blvd) multiple</u>	hotels and restauraunts. 1.3km		
to NW-I40 exit #283 (I-540						
Parameters		g Objective	Scale	Monitor Type		
NO₂ (Near Road only)	Highest Conce		Micro	SLAMS		
CO (Near Road only)	Population Ex Source Orient		Minero			
	Transport	led		SPM		
	Welfare Relate	ed Impacts				
Probe inlet height (from ground) 2-7 m? Yes \(\sigma \) No \(\sigma \) Give actual measured height from ground (meters) \(\frac{4.20}{3.20} \)						
Distance of outer edge of probe	inlet from horizo	ntal (wall) and/or ve	rtical (roof) supporti	ing structure > 1 m? Yes ⊠ No □		
Actual measured distance from or Distance of outer edge of probe				1.40 Yes ⊠ No □ NA □		
Is probe > 20 m from the neares			(answer *'d question			
*Is probe > 10 m from the neare	st tree drip line?	Yes ⊠ *No □	•			
*Distance from probe to tree (m				ee (m) <u>30.00</u>		
Are there any obstacles to air flo				nlat to obstacle. NE		
*Identify obstacle <u>Tree Line</u> Distance from probe inlet (m) <u>11.60</u> Direction from probe inlet to obstacle <u>NE</u> *Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes No						
Distance of probe to nearest traffic lane (m) 18 Direction from probe to nearest traffic lane SW						
NO ₂ and CO 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 (**) Relocate site? Yes No (**) No (**)						
Comments:						
Date of Last Site Pictures 11/2	1/19New Pictures	s Submitted? Yes	No 🛛			
Reviewer S Helms				Date <u>January 1, 2021</u>		
Ambient Monitoring Coordinate	or TTSkelding			Date <u>June 28, 2021</u>		

Parameters	Monitoring Objective	Scale		Site Type			
☐ NA Air flow < 200 L/min ☐ PM2.5 FRM	General/Background Highest Concentration	Micro	⊠SLAMS _ □SPM				
☐ PM10 FRM ☐ PM10 Cont. (BAM)	☑Population Exposure		Monitor Netv	work Affiliation			
☐ PM10-2.5 FRM	⊠Source Oriented		Near Road	d <u>I-40</u>			
PM10-2.5 BAM	Transport		Monitor NA	AQS Exclusion			
PM2.5 Cont. (BAM)	Welfare Related Impacts		NONREG	GULATORY			
Probe inlet height (from gro Actual measured distance f	bund) $\square < 2 \text{ m}$ \square 2-7m rom probe inlet to ground (meters) $\underline{4.9}$	7-15 m		> 15 m			
	robe inlet from horizontal (wall) and/o from outer edge of probe inlet to suppo			oorting structure > 2 m? Yes No No			
	edge of probe inlets of any low volum		v other low	Yes No NA			
	itors (Two FRMs, FRM & BAM, BAI	M & *Yes	(answer *'d	l questions) No 🛛 NA 🗌			
each other?	* Entire inlet opening of collocated PM 2.5 samplers (X) within 1 to 4 m of						
Is a low-volume PM10 monitor collocated with a PM2.5 monitor at the site to measure PM10-2.5? *Yes \sum (answer *'d questions) No \sum NA							
* Entire inlet opening of collocated PM10 and PM2.5 samplers for PM10-2.5 (X) within 2 to 4 m of each other? *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 \boxtimes *No \square *Distance from probe to tree (m) 11.00 Direction from probe to tree NE *Height of tree (m) 30.00							
	nir flow? *Yes 🛛 (answer *'d question						
*Identify obstacle <u>Tree Line</u> Distance from probe inlet (m) <u>11</u> Direction from probe inlet to obstacle <u>NE</u> *Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes <u>No</u> <u>No</u> <u>Distance of probe to nearest traffic lane (m) <u>18.25</u> Direction from probe to nearest traffic lane <u>SW</u></u>							
PM 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:							
Reviewer Stephen Helms				Date May 18, 2021			
Ambient Monitoring Coord	linator			Date			

Region_RRO Site Name Leggett		AQS Site # 37- <u>065</u> - <u>0099</u>						
			City Leggett					
Urban Area Choose an item. Core-based State			Stat	istical Area	Rocky Mount, l	NC		
	Enter E	xact						
Latitude <u>35,988</u> 2	<u> 272</u>	Longitud		<u> 866</u>		lethod of Mea	suring	
In Decimal Degrees		In Decimal			<u>Interpolation</u>	Explanation	: Google	e Maps
Elevation Above/below l						<u>20</u>		
Name of nearest road to inl		NC97 ADT	<u>2600</u> Year Ch	oose a	in item <u>2018</u>			
Comments: 96m to road, S	<u>SSE</u>							
Distance of site to nearest r	najor road	(m) <u>92.20</u> I	Direction from	site to	nearest major ro	ad <u>ENE</u>		
Name of nearest major road	1 NC33 A	ADT <u>1200</u> Y	ear <u>2018</u>					
Comments: NC33 is 400m	east of sit	e. US64(alt)	and US64 are	south	(6.9 / 11.4 km res	pctv) (ADT=500	0 / 17500 1	rspctv)
Site located near electrical	substation	/high voltage	power lines?				Yes 🗌	No 🛛
Distance of site to neares					(m)	Direction t		⊠NA
OPTIONAL Distan						(m)	Dire	ection
Distance between site and o					on from site to wa			_⊠NA
Explain any sources of p						ge, stacks, vents	, railroad	tracks,
construction activities, fa	ist rood re	estaurants, a	na swimming	g poor	S.			
<u>hhhttttththt</u>								
ANSWER ALL APPLIC	ARLE OI	IESTIONS.						
Parameters		onitoring Ob	jective		Scale	Me	onitor Typ	e
□NA								
\square SO ₂ (NAAQS)		ral/Backgrou			Micro	⊠SLAM	S	
SO ₂ (trace-level)		est Concentra			Middle	SPM_		
□ NO ₂ (NAAQS)	=	O3 Concentra		$ \Box$		Monitor N	Network	
□HSNO _y ☑ O ₃		lation Exposi		l L	ghborhood	Affiliation		
	=	e Oriented_			-	□NCOR	E	
Hydrocarbon		port			U rban _		cial PAMS	
Air Toxics	Upwi	nd Backgrou	nd		Regional		ciai i Aivis	
CO (trace-level)	Welfa	are Related I	npacts					
Droke inlet height (from ground) 2.15 m2. Vec No. No								
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) 1.20								
Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes ☒ No ☐ NA ☐								
Is probe > 20 m from the nearest tree drip line? Yes X *No (answer *'d questions)								
*Is probe > 10 m from the nearest tree drip line? Yes \(\text{Yes} \) *No \(\text{Number of trees within 10 meters} \)								
*Distance from probe to closest tree (m) Properties 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 pro	be to obsta	acle at least to	wice the height	that t	he obstacle protri	ides above the pr	obe? Yes	□ No
Distance of probe to nearest traffic lane (m) 96 Direction from probe to nearest traffic lane SSE								

Parameters	Monitoring Objective	Scale		Site Type		
NA	General/Background	☐Micro	⊠SLAN	MS		
Air flow < 200 L/min ☐ PM2.5 FRM	Highest Concentration	Middle				
PM10 FRM	Population Exposure	⊠Neighborhood				
PM10 Cont. (BAM)	Source Oriented	Urban	Monitor	r NAAQS Exclusion		
☐ PM10-2.5 FRM ☐ PM10-2.5 BAM	Transport	Regional		\$1.1 A 188 A 18 A 18 A 18 A 18 A 18 A 18		
PM2.5 Cont. (BAM)	Welfare Related Impacts			NREGULATORY		
Probe inlet height (from	ground) $\square < 2 \text{ m} \underline{\qquad} 2-7 \text{ r}$	n 7-15 m		> 15 m		
Actual measured distance	e from probe inlet to ground (meters)		_	_		
	f probe inlet from horizontal (wall) an					
Actual measured distance	e from outer edge of probe inlet to su	pporting structure (meters)	2.1	Yes 🛛 No		
Distance (Y) between our	ter edge of probe inlets of any low vo	olume monitor and any oth	er			
low volume monitor at the				Yes No NA NA		
	onitors (Two FRMs, FRM & BAM,	BAM & *Yes □ (a	nswer *'	d questions) No 🛛 NA		
BAM) Located at Site?						
	collocated PM 2.5 samplers (X) with		1 NI- []	Cina anti-al (material)		
each other? *Are collocated PM2.5 s.	ampler inlets within 1 m vertically of] NO [Give actual (meters)		
The conocated 1112.5 S	ampier mets within 1 in vertically of] 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 \sum (answer *'d questions) No \sum NA						
* Entire inlet opening of collocated PM10 and PM2.5samplers for PM10-2.5 (X) within 2 to 4 m of each other?						
*Are collocated PM10 and PM2.5 sampler inlets within 1 m vertically of each other? Yes \(\scale= \) No \(\scale= \)						
Is probe > 20 m from the	nearest tree drip line? Yes 🛛 *	No (answer *'d question	ons)			
*Is probe > 10 m from the nearest tree drip line? Yes \(\square\) *No \(\square\) *Number of trees within 10 meters						
*Distance from probe to	closest tree (m) Direction fr	om probe to tree *He	eight of t	ree above probe (m)		
Are there any obstacles to air flow? *Yes [(answer *'d questions) No []						
•	-, -		et to obst	acle		
*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						
Distance of probe to nearest traffic lane (m) Direction from probe to nearest traffic lane						
RECOMMENDATIONS:						
1) Maintain current site status? Yes X *No (answer *'d questions)						
*2) Change monitoring objective? Yes (enter new objective) No						
*3) Change scale of representativeness? Yes \(\square\) (enter new scale \(\) No \(\)						
*4) Relocate site? Yes \(\subseteq \text{No} \subseteq \)						
Comments:						
Date of Last Site Pictures 12/10/2019 New Pictures Submitted? Yes ☐ No ☒						
Reviewer				Date		
Ambient Manitoring Coo	rdinator TT Skalding		г	Onta Juna 28 2021		

Appendix D-2. Scale of Representativeness

Agencies must describe each station in the monitoring network 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 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

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 match correctly 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 D-1. Site Type Appropriate Siting Scales

Table D-1. Site 1	ype Appropriate Siting Seales
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