

Jefferson County Department of Health



2023

Annual Ambient Air Monitoring Network Plan

**Environmental Health Services
Air and Radiation Protection Division
1400 Sixth Avenue South
Birmingham, AL 35233**

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Acronyms

Appendix D	Volume 40, Code of Federal Regulations, Part 58, Appendix D
AQI	Air Quality Index
AQS	Air Quality System
CASTNET	Clean Air Status and Trends Network
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSA	Combined Statistical Area
EJ	Environmental Justice
FEM	Federal Equivalent Method
FRM	Federal Reference Method
JCDH	Jefferson County Department of Health
MSA	Metropolitan Statistical Area
μSA	Micropolitan Statistical Areas
NAAQS	National Ambient Air Quality Standards
NCore	National Core Multipollutant Monitoring Station
NO _x	Oxides of Nitrogen
NO _y	Total Reactive Nitrogen
NO ₂	Nitrogen Dioxide
O ₃	Ozone
PAMS	Photochemical Assessment Monitoring Station
PM	Particulate matter
PM _{2.5}	Particulate matter 2.5 micrometers in diameter or less
PM ₁₀	Particulate matter 10 micrometers in diameter or less
PM _{10-2.5}	Particulate matter with a diameter between 2.5 and 10 micrometers
QAPP	Quality Assurance Project Plan
QMP	Quality Management Plan
SLAMS	State or Local Air Monitoring Station
SO ₂	Sulfur Dioxide
SPM	Special Purpose Monitor
STN	Speciation Trends Network
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

1.0 Background

Federal Regulations (40 CFR 58.10) require that State and Local Agencies operating an ambient air quality monitoring network shall review their air quality monitoring network on an annual basis. Any needed modifications to the network should be identified. A detailed monitoring network description should also be included. In addition, the plan shall be available for public comment. The Jefferson County Department of Health's (JCDH) Ambient Air Monitoring Network Plan is available on the JCDH website at: <https://www.jcdh.org/SitePages/Programs-Services/Scores-Lists/Air/AirPollutionControl.aspx?AQTab=Notices>

JCDH's Ambient Air Monitoring Network Plan was placed on the website on May 2023 for a 30-day public review and comment period.

The Monitoring Network review that is specified in *40 CFR 58.10* contains the following elements that apply to each monitoring site:

- The USEPA Air Quality System (AQS) site identification number.
- The location, including street address and geographical coordinates.
- The sampling and analysis method(s) for each measured parameter.
- The operating schedules for each monitor.
- Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.
- The monitoring objective and spatial scale of representativeness for each monitor as defined in Appendix D of Part 58.
- The identification of any sites that are suitable and sites that are not suitable for comparison against the annual PM_{2.5} and Ozone National Ambient Air Quality Standards (NAAQS) as described in part 58.30.
- The MSA, CBSA, CSA or other area represented by the monitor.
- The annual monitoring network plans and or periodic network assessments are subject to Regional approval according to part 58.14.

2.0 Overview

The ambient air monitoring network for Jefferson County, Alabama is operated by the Jefferson County Department of Health (JCDH). Ambient air monitors in Jefferson County, Alabama are operated for a variety of monitoring objectives. These objectives include: determining if Jefferson County meets the National Ambient Air Quality Standards, providing public information to US Environmental Protection Agency's (USEPA) AirNow data mapping website, Air Quality Index (AQI) reporting for public information, background data collection, spatial considerations, and special projects. The daily AQI forecast for Jefferson County, Alabama is reported on the JCDH website at: <https://www.jcdh.org/SitePages/Programs-Services/EnvironmentalHealth/Air-RadiationProtectionDivision/AirQualForecast.aspx>

In addition, hourly Ozone (O₃), continuous Particulate Matter (PM₁₀ and PM_{2.5}), Nitrogen Dioxide (NO₂), Sulfur Dioxide (SO₂), and Carbon Monoxide (CO) data is reported to the USEPA AirNow site. 40 CFR 58 has set minimum monitoring requirements for the pollutants that are to be compared with the NAAQS. These minimum requirements are based on population, the level of monitored pollutants, and Metropolitan Statistical Areas (MSA) as defined in the latest US Census information. Jefferson County has a 2020 MSA population estimate of 674,721. The Core Based Statistical Area (CBSA) is a collective term for both MSA and Micropolitan Statistical Areas (μSA). The population of the CBSA which includes the counties of Jefferson, Bibb, Blount, Chilton, Shelby, St. Clair, and Walker has a 2020 population estimate of 1,180,631.

JCDH air monitoring site data are suitable for NAAQS comparisons per appendices A, C, D, and E. JCDH's Quality Management Plan (QMP) is current with an approval date of June 28, 2019. JCDH Quality Assurance Project Plan (QAPP) for Ambient Air Quality Monitoring of Criteria and Multi-Pollutants is current with an approval date of December 14, 2018.

Based on 40 CFR part 58, Appendix D, JCDH began making Photochemical Assessment Monitoring (PAMS) measurements at the NCore site on the established begin date of June 1, 2021.

JCDH will be installing continuous PM_{2.5} FEMs at its sites and coding them as SPMs. Previous years have shown issues with the FEMs thus JCDH will operate FRMs at these sites for NAAQS comparability as well as determining if the FEMs data are comparable to the FRMs.

JCDH reviewed all USEPA requirements for this monitoring plan including Environmental Justice (EJ) considerations. Currently, all monitors in this Ambient Air Monitoring Network Plan operate and monitor in areas that can be categorized as EJ areas. JCDH did not identify any new monitoring needs as it relates to EJ in Jefferson County. JCDH is currently exploring the utilization of portable monitoring equipment and has approved funding for Jefferson County schools to install low-cost air pollution sensors to further address any air pollution concerns at schools, including those in EJ areas.

3.0 Types of Monitoring Stations

CASTNET – Clean Air Status and Trends Network: is a national air quality monitoring network designed to provide data to assess trends in air quality, atmospheric deposition, and ecological effects due to changes in air pollutant emissions. CASTNET provides long-term monitoring of air quality in rural areas to determine trends in regional atmospheric nitrogen, sulfur, and ozone concentrations and deposition fluxes of sulfur and nitrogen pollutants in order to evaluate the effectiveness of national and regional air pollution control programs. US Environmental Protection Agency sponsored CASTNET ozone monitors are Part 58 compliant, therefore the data can be used for regulatory purposes. CASTNET ozone data is now reported to the Air Quality System (AQS).

NCore – National Core multi-pollutant monitoring station: Sites that measure multiple pollutants at trace levels in order to provide support to integrated air quality management data needs. Each state is required to operate one NCore site.

PAMS – Photochemical Assessment Monitoring Station: PAMS are established to obtain more comprehensive data in areas with high levels of ozone pollution by also monitoring oxides of nitrogen (NO_x) and volatile organic compounds (VOCs). PAMS monitoring requirements were revised in the 2016 ozone NAAQS rule and a PAMS site is required in the state of Alabama in Jefferson County.

SLAMS – State or Local Ambient Monitoring Station: The SLAMS make up ambient air quality monitoring sites that are primarily needed for National Ambient Air Quality Standard comparisons.

STN – PM_{2.5} Speciation Trends Network: A PM_{2.5} speciation station designated to be part of the speciation trends network. This network provides chemical species data of fine particulates. There are currently two STN sites located in Jefferson County.

Supplemental Speciation – Any PM_{2.5} speciation station that is used to gain supplemental data and is not dedicated as part of the speciation trends network.

4.0 Proposed Changes for 2024

- Discontinue the Corner site and all of the monitors at this site.
- Move all monitors at the Fairfield monitoring site (one O₃ monitor, one SO₂ monitor, and one CO monitor) to the nearby Wylam monitoring site.
- Discontinue all monitoring at the Shuttlesworth monitoring site, but leave equipment on-site.
- Add one manual FRM PM_{2.5} monitor and one FEM PM_{2.5} monitor at the Tarrant monitoring site.
- JCDH has requested an exclusion of continuous FEM PM_{2.5} data from comparison to the NAAQS. See Appendix C for the request and Appendix D for USEPA's response.
- All continuous FEM PM_{2.5} monitors are designated as Special Purpose Monitors (SPM).

5.0 Monitoring Site Discussion

JCDH's ambient air monitoring network has been reviewed based on historic monitoring data, air quality monitoring regulations, data representation based on spatial considerations, special data needs, and changes needed based on the monitoring regulations. The items used in the evaluation were the following: AQS database, the 40 CFR parts 53 and 58 documents, and the census data and maps. JCDH monitors are classified as either State or Local Air Monitoring Station (SLAMS) or Special Purpose Monitor (SPM).

The following describes the purposes and any changes related to each monitor in the ambient air monitoring network in Jefferson County based on the review of the existing monitoring efforts.

1. **Corner (01-073-5003)** – JCDH operates one O₃ monitor and one continuous non-FEM PM_{2.5} monitor at this site. This site is the background site for the JCDH. JCDH proposes to discontinue this site and all of the monitors. The current shelter and site are in need of replacement and

upgrades if monitoring is to continue at this site. Over the last 5 design value periods, the Corner site has consistently had the lowest O₃ concentrations and has been in attainment of the NAAQS (Figure 1). The most recent design value (2020-2022) for O₃ is 0.060 ppm, which is the lowest of any monitor in Jefferson County and below the current NAAQS. The continuous PM_{2.5} data at this site is used to report hourly concentrations to EPA's AirNow website and is frequently the lowest reporting monitoring site in Jefferson County (Figure 2).

- Site Approval Status:** Site and monitors meet all design criteria for the monitoring network. The ozone sample inlet is approximately 6.1 meters above ground level, and the continuous PM_{2.5} is approximately 6.4 meters above ground level. A tree is located north of the site, approximately 10 meters. There are no other trees or obstacles that would impact the siting criteria for this site.

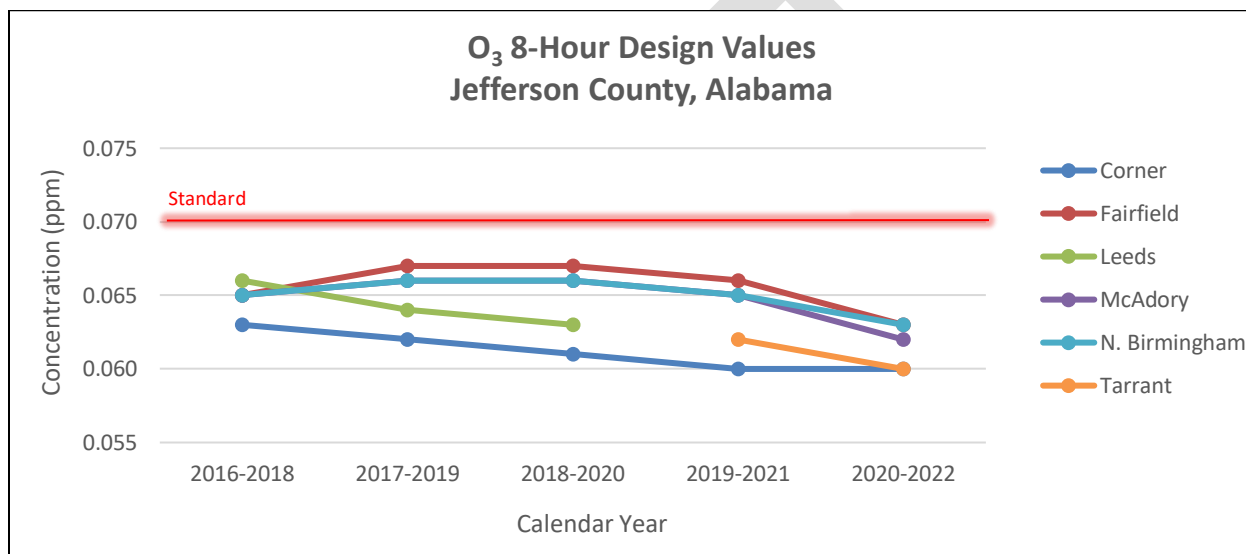


Figure 1: 8-hour O₃ design values (in ppm). The highlighted red line indicates the NAAQS, which is 0.070 ppm.

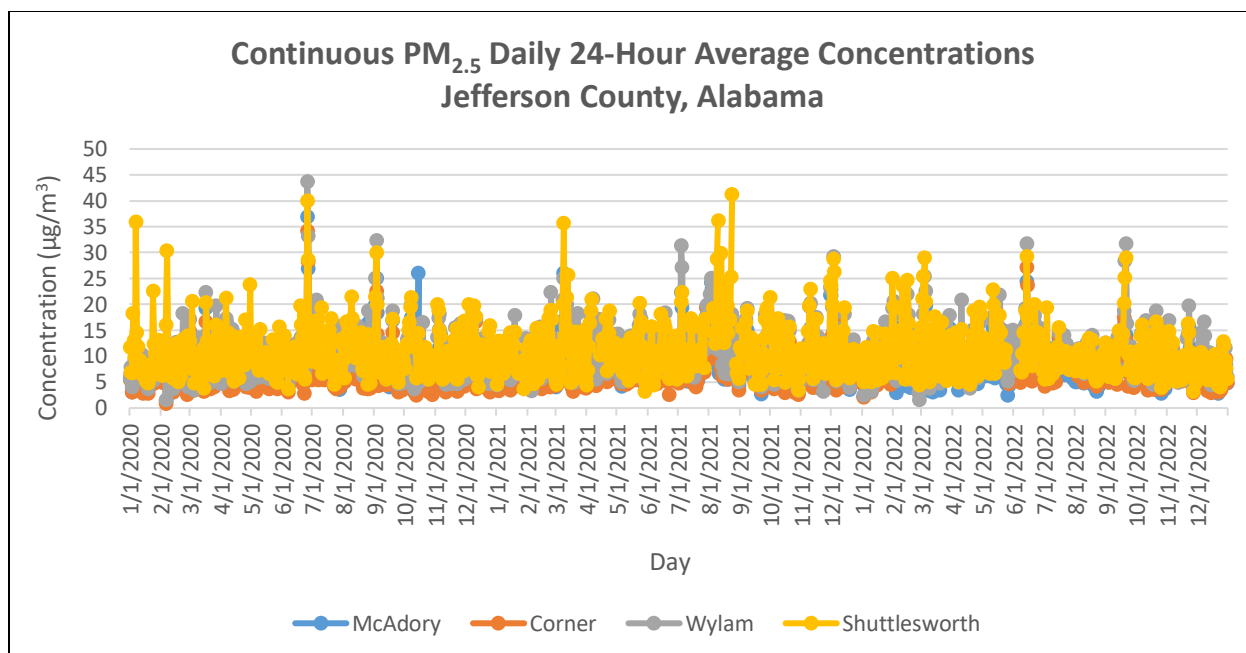


Figure 2: 24-hour average continuous PM_{2.5} concentrations (in µg/m³).

2. **Fairfield (01-073-1003)** – JCDH operates one O₃ monitor, one SO₂ monitor, and one CO monitor at this site. JCDH proposes to consolidate the Fairfield and Wylam monitoring sites by moving all the monitors at Fairfield site to the nearby Wylam site that is located 1.8 kilometers to the northwest. The Fairfield site has an older shelter on a leased lot while the Wylam site has a new shelter that was designed to house additional equipment from the Fairfield site and JCDH owns the property where the site is located. If JCDH kept the Fairfield site it would need to replace the building and make site improvements for a new building as the current shelter is in need of repairs/replacement. The nearest industrial facility to the Fairfield site, US Steel, is closer to the Wylam site. In 40 CFR 58 Appendix D, it states “The goal in locating monitors is to correctly match the spatial scale represented by the sample of monitored air with the spatial scale most appropriate for the monitoring site type, air pollutant to be measured, and the monitoring objective.” Both the Wylam and Fairfield sites have the same site type (population oriented), siting scale (neighborhood), and monitoring objectives (population exposure). Neighborhood scale is defined as a range of 0.5 to 4.0 kilometers and the distance between the Fairfield and Wylam sites is 1.8 kilometers (Figure 3). Therefore, all pollutants currently measured at Fairfield would be representative at the Wylam site as well. A wind rose is shown in Figure 4 to show the climatological wind direction and speed in the area. Data from the Fairfield site for O₃ (Figure 1), CO, (Figures 5 and 6), and SO₂ (Figure 7) show attainment of the NAAQS the last several years. JCDH will submit a request to EPA to link the old and new sites in AQS, so that design value trends and assessment of NAAQS compliance are not affected.

- **Site Approval Status:** Site and monitors meet all design criteria for the monitoring network. The sample inlets for the three monitors are approximately 5 meters above ground level. No trees or obstacles impact the siting criteria for this site.

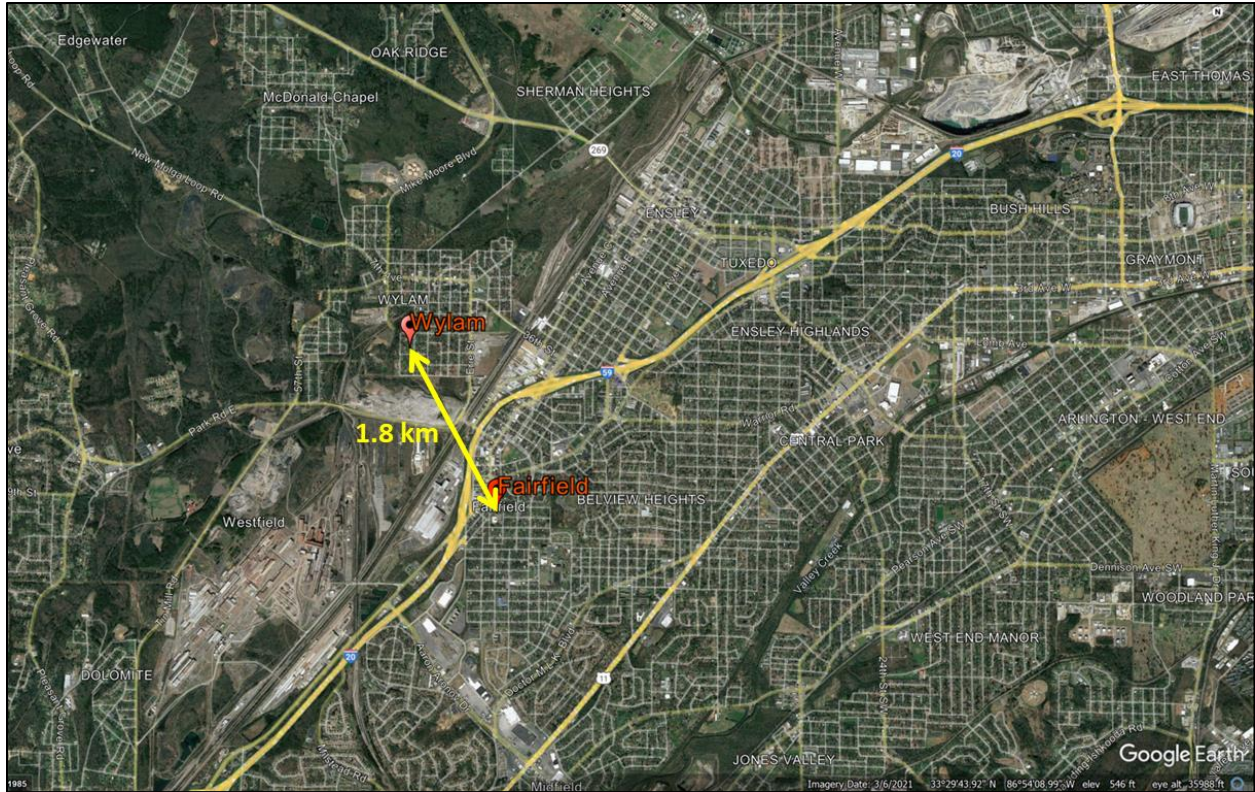


Figure 3: Map showing the distance between the Fairfield and Wylam monitoring sites.

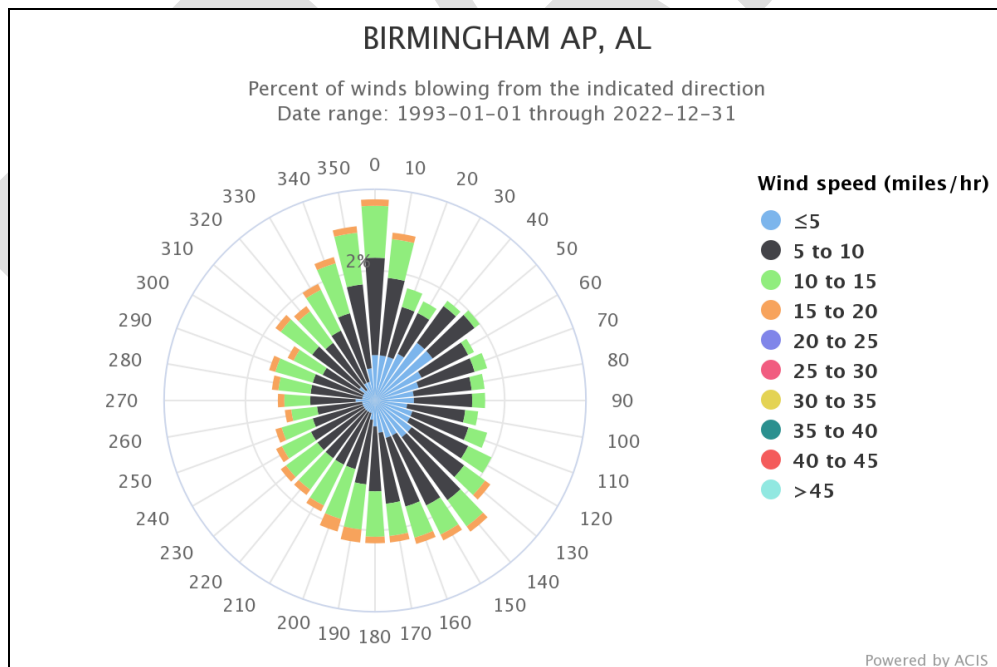


Figure 4: Wind rose showing data from the nearby Birmingham Airport for the most recent 30-year period (1993-2022).

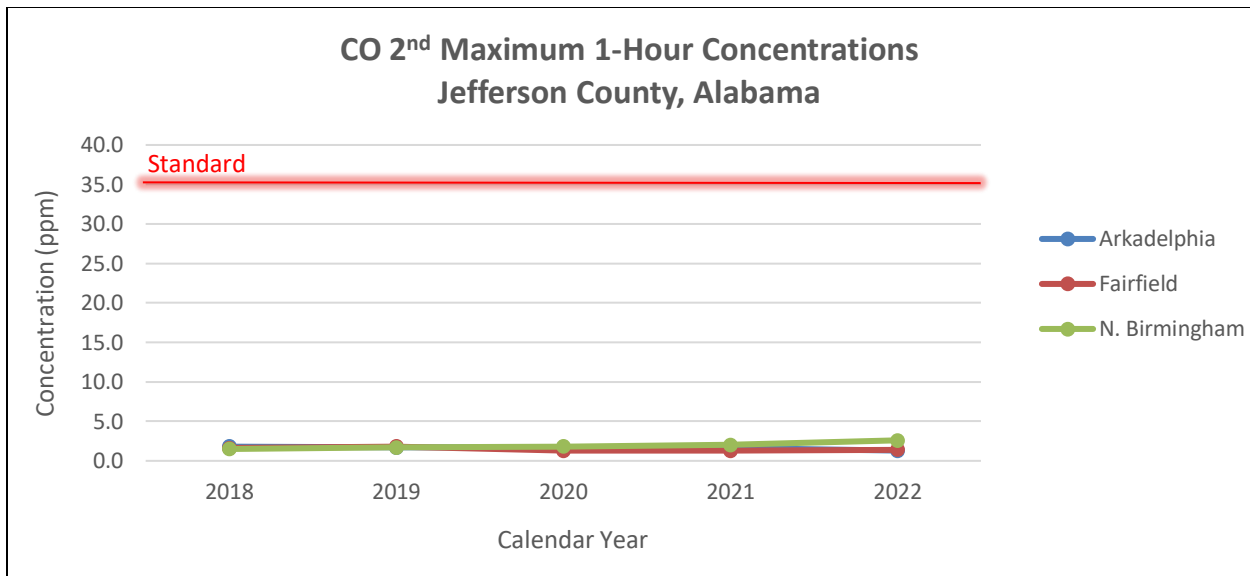


Figure 5: CO₂nd maximum 1-hour average concentrations (in ppm). The highlighted red line indicates the NAAQS, which is 35 ppm.

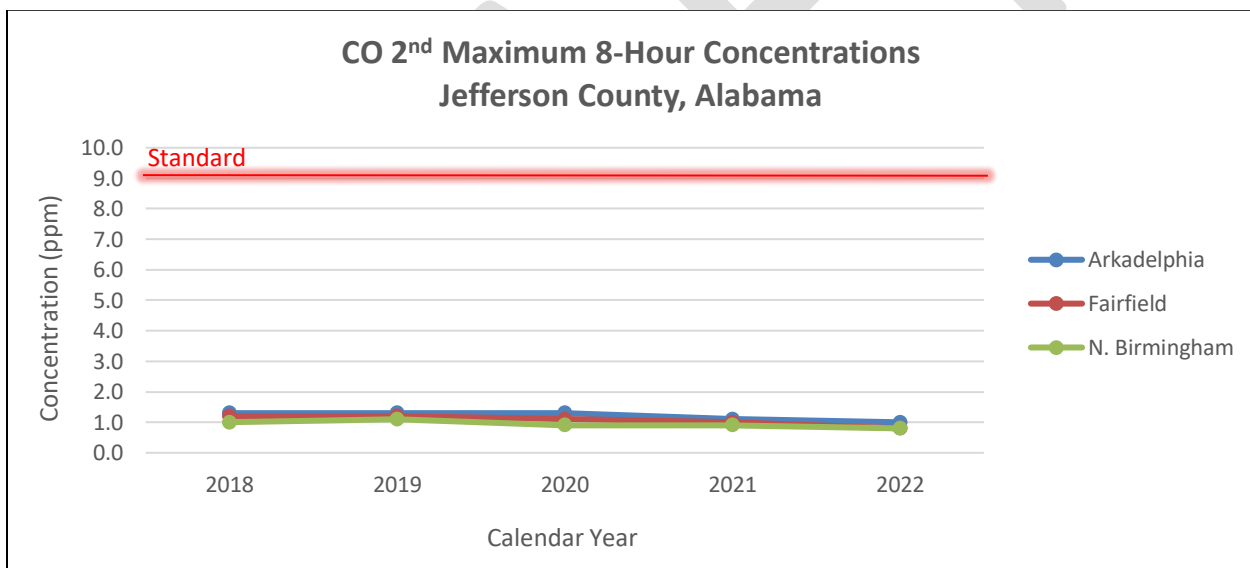


Figure 6: CO₂nd maximum 8-hour average concentrations (in ppm). The highlighted red line indicates the NAAQS, which is 9 ppm.

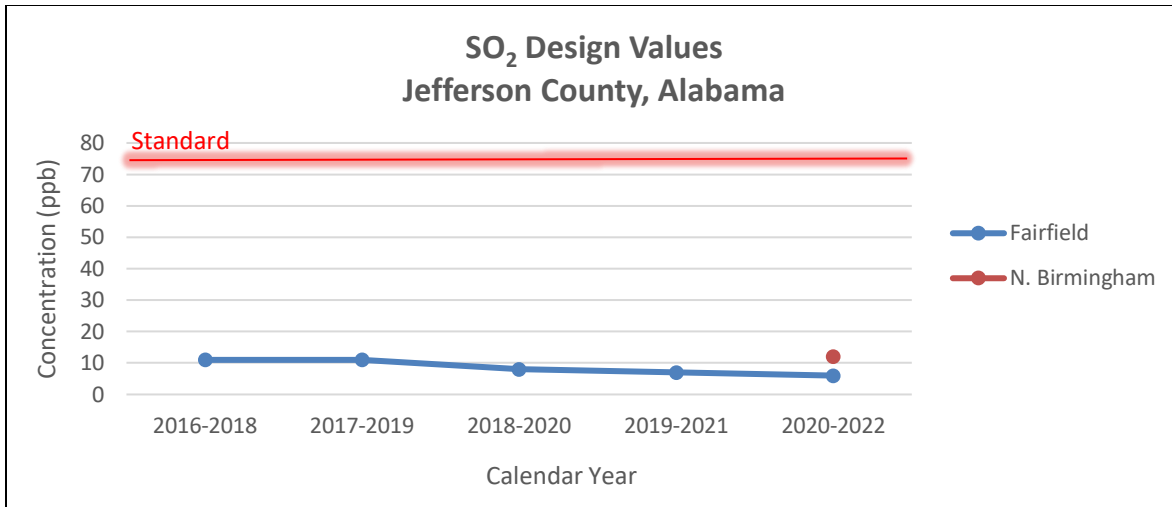


Figure 7: 1-hour SO₂ design values (in ppb). The highlighted red line indicates the NAAQS, which is 75 ppb.

3. **Leeds (01-073-1010)** – JCDH operates one O₃ monitor, one continuous FEM PM₁₀ monitor, one continuous FEM PM_{2.5} monitor, and one manual FRM PM_{2.5} monitor. No changes are proposed at this site at this time.
 - **Site Approval Status:** Site and monitors meet all design criteria for the monitoring network. The sample inlet for the O₃ is approximately 4.6 meters above ground level, the continuous PM₁₀ and PM_{2.5} monitor is approximately 4.8 meters above ground level. No trees or obstacles impact the siting criteria for this site.
4. **McAdory (01-073-1005)** – JCDH operates one O₃ monitor, one continuous FEM PM_{2.5} monitor, and one manual FRM PM_{2.5} monitor. A new shelter will be installed at this site. No other changes are proposed for this site at this time.
 - **Site Approval Status:** Site and monitors meet all design criteria for the monitoring network. The sample inlet for the O₃ is approximately 4.6 meters above ground level, the continuous PM_{2.5} monitor is approximately 4.7 meters above ground level, and the particulate manual monitors are approximately 5 meters above ground. No trees or obstacles impact the siting criteria for this site.
5. **NCore (01-073-0023)** – JCDH operates a NCore site which contains a full complement of instruments that includes: meteorological, IMPROVE, RADNET, and PAMS. The ambient air monitoring parameters currently include one O₃ monitor, one SO₂ monitor, one CO monitor, Nitric Oxides (NO_x and NO_y) monitors, one manual FRM PM_{2.5} monitor, speciated PM_{2.5}, one continuous FEM PM_{2.5}, one continuous FEM PM₁₀ monitor, and one FEM PM_{10-2.5} monitor. Meteorological instruments include: wind speed, wind direction, ambient temperature, barometric pressure, and relative humidity. No changes are proposed for this site.

- **Site Approval Status:** Site and monitors meet all design criteria for the monitoring network. The meteorological tower is approximately 30 meters above ground level. The NO_x, CO, and SO₂ sample inlets are approximately 4.3 meters above ground level. The O₃ sample inlet is approximately 4.6 meters above ground level, and PAMS is approximately 4.7 meters above ground level. The continuous particulate monitor is approximately 4.6 meters above ground level, while the manual particulate monitors and speciated PM_{2.5} monitors are approximately 4 meters above ground level. IMPROVE and RADNET are operated at ground level. No trees or obstacles impact the siting criteria for this site.
- 6. Near Road (01-073-2059)** – JCDH operates one NO_x monitor, one CO monitor, and one manual FRM PM_{2.5} monitor at this site. Meteorological instruments include: wind speed, wind direction, ambient temperature, barometric pressure, and relative humidity. No changes are proposed for this site.
- **Site Approval Status:** Site and monitors meet all design criteria for the monitoring network. The meteorological tower is approximately 30 meters above ground level. The NO_x and CO sample inlets are approximately 4.2 meters above ground level. The manual particulate monitor is approximately 4.8 meters above ground level. A tree is located west of the site, approximately 10.7 meters. There are no other trees or obstacles that would impact the siting criteria for this site.
- 7. Shuttlesworth (01-073-6004)** – JCDH operates one continuous non-FEM PM_{2.5} monitor and one continuous FEM PM₁₀ monitor at this site. JCDH proposes to discontinue all monitoring at this monitoring site. The Shuttlesworth site was originally set up to monitor the near fenceline pollution concentrations of Bluestone Coke and there were no NAAQS violations of PM_{2.5} or PM₁₀ when the facility was operating. In November 2021, Bluestone Coke closed down and no change is expected the rest of 2023 and 2024. Since the closure of Bluestone Coke, the PM₁₀ data at the Shuttlesworth site decreased between 2021 and 2022 (Table 1) and is no longer the highest concentration site in Jefferson County for PM₁₀ (Figure 8). JCDH will keep all equipment in place at this site through 2024 and review the permanent status in the 2024 Network Plan. As part of a settlement with Bluestone Coke, if the facility reopens, the facility has agreed to do fenceline monitoring that JCDH must approve for SO₂. JCDH is committed to monitoring for PM_{2.5} and PM₁₀ if Bluestone resumes coke production. There are currently 2 nearby monitoring sites with the NCore site 2.2 km to the southwest and the Tarrant site 2.6 to the northeast. (Figure 9).
- **Site Approval Status:** The continuous particulate monitors are approximately 4.4 meters above ground level. A tree is located north of the site, at approximately 11 meters. Another tree is located northeast of the site, at approximately 10 meters. There are no other trees or obstacles that would impact the siting criteria for this site.

SHUTTLESWORTH PM ₁₀ DATA				
	1 st Max	2 nd Max	3 rd Max	4 th Max
2021	136	104	88	86
2022	74	58	52	51

Table 1: Highest 24-hour average PM₁₀ concentrations (in µg/m³) at the Shuttlesworth monitoring site before (2021) and after (2022) the Bluestone Coke shutdown.

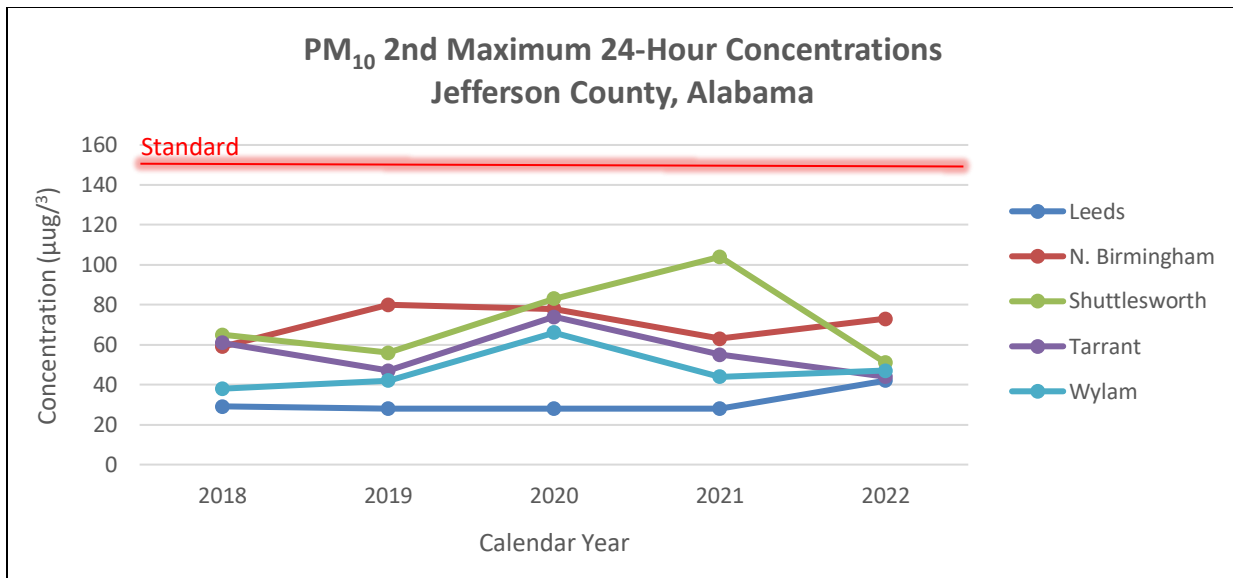


Figure 8: PM₁₀ 2nd maximum 24-hour concentrations (in µg/m³). The highlighted red line indicates the NAAQS, which is 150 µg/m³.



Figure 9: Map showing the distance between Shuttlesworth and the NCore and Tarrant monitoring sites.

8. **Tarrant (01-073-6002)** – JCDH operates one O₃ monitor and one continuous FEM PM₁₀ monitor at this site. JCDH will add one manual FRM PM_{2.5} monitor and one continuous FEM PM_{2.5} monitor to this site. No other changes are proposed for this site at this time.

- **Site Approval Status:** The O₃ monitor sample inlet is approximately 4.3 meters above ground level. The continuous particulate monitor is approximately 4.4 meters above ground level. A tree is located north of the site, at approximately 11 meters. Another tree is located northeast of the site, at approximately 10 meters. No trees or obstacles impact the siting criteria for this site.

9. **Wylam** (01-073-2003) – JCDH operates one continuous FEM PM₁₀ monitor, one continuous FEM PM_{2.5} monitor, two manual FRM PM_{2.5} monitors, and speciated PM_{2.5} at this site. JCDH proposes moving all monitors located at the Fairfield site (one O₃ monitor, one SO₂ monitor, and one CO monitor) to this site. More information on this proposed change is discussed in the section about the Fairfield monitoring site. A site evaluation for Wylam can be found in Appendix E. No other changes are proposed for this site at this time.

- **Site Approval Status:** The sample inlets for the continuous particulate monitors are approximately 4.5 meters above ground level. The manual particulate monitors are approximately 5 meters above ground level, and the sample inlet for the speciated PM_{2.5} is approximately 4.8 meters above ground level. No trees or obstacles impact the siting criteria for this site.

6.0 Monitoring Site Location Coordinates

Site Name	Site ID	Address	Latitude	Longitude
Corner	01-073-5003	10005 Corner School Road, Warrior, AL	33.8006	-86.9416
Fairfield	01-073-1003	5229 Ct B, Fairfield, AL	33.4848	-86.9150
Leeds	01-073-1010	201 Ashville Road, Leeds, AL	33.5394	-86.5518
McAdory	01-073-1005	4821 McAdory School Road, McCalla, AL	33.3316	-87.0001
NCore	01-073-0023	3009 28th Street North, Birmingham, AL	33.5530	-86.8147
Near-Road	01-073-2059	1110 5th Street West, Birmingham, AL	33.5215	-86.8444
Shuttlesworth	01-073-6004	4113 Shuttlesworth Drive, Birmingham, AL	33.5652	-86.7963
Tarrant	01-073-6002	1269 Portland St, Tarrant, AL	33.5783	-86.7738
Wylam	01-073-2003	1242 Jersey St, Birmingham, AL	33.4997	-86.9241

7.0 Monitoring Network Assessment

MONITORING NETWORK ASSESSMENT									
Corner 01-073-5003*									
Parameter	Code	POC	Method	Method Description	Manual/Continuous	Site Type	Siting Scale	Monitor Objective	Monitor Type
O ₃	44201	1	087	UltraViolet Absorption	Continuous	General/Background	Regional	General/Background	SLAMS
PM _{2.5}	88101	1	142	VSCC Gravimetric	Manual	General/Background	Regional	General/Background	SLAMS
PM ₁₀	81102	1	239	Broadband Spectroscopy	Continuous	General/Background	Regional	General/Background	SLAMS
PM _{2.5}	88101	2	238	Broadband Spectroscopy	Continuous	General/Background	Regional	General/Background	SPM
Fairfield 01-073-1003**									
Parameter	Code	POC	Method	Method Description	Manual/Continuous	Site Type	Siting Scale	Monitor Objective	Monitor Type
CO	42101	1	174	NonDispersive Infrared Photometry	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
SO ₂	42401	1	188	UltraViolet Fluorescence	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
O ₃	44201	1	087	UltraViolet Absorption	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
Leeds 01-073-1010									
Parameter	Code	POC	Method	Method Description	Manual/Continuous	Site Type	Siting Scale	Monitor Objective	Monitor Type
O ₃	44201	1	087	UltraViolet Absorption	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM _{2.5}	88101	1	142	VSCC Gravimetric	Manual	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM ₁₀	81102	4	239	Broadband Spectroscopy	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM _{2.5}	88101	3	238	Broadband Spectroscopy	Continuous	Population Oriented	Neighborhood	Population Exposure	SPM
McAdory 01-073-1005									
Parameter	Code	POC	Method	Method Description	Manual/Continuous	Site Type	Siting Scale	Monitor Objective	Monitor Type
O ₃	44201	1	087	UltraViolet Absorption	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM _{2.5}	88101	1	142	VSCC Gravimetric	Manual	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM ₁₀	81102	1	239	Broadband Spectroscopy	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM _{2.5}	88101	2	238	Broadband Spectroscopy	Continuous	Population Oriented	Neighborhood	Population Exposure	SPM

*JCDH proposes discontinuing this site

**JCDH proposes moving all monitoring equipment to the Wylam site

MONITORING NETWORK ASSESSMENT

NCore 01-073-0023

Parameter	Code	POC	Method	Method Description	Manual/Continuous	Site Type	Siting Scale	Monitor Objective	Monitor Type
CO	42101	2	093	Gas Filter Correlation	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
SO ₂	42401	2	100	UltraViolet Fluorescence	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
NO ₂	42602	2	200	Photolytic Chemiluminescence	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
O ₃	44201	1	087	UltraViolet Absorption	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM _{2.5}	88101	1	142	VSCC Gravimetric	Manual	Population Oriented	Neighborhood	Highest Concentration/Pop Exp	SLAMS
PM ₁₀	81102	4	239	Broadband Spectroscopy	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM _{2.5}	88101	3	238	Broadband Spectroscopy	Continuous	Population Oriented	Neighborhood	Highest Concentration/Pop Exp	SPM

Near Road 01-073-2059

Parameter	Code	POC	Method	Method Description	Manual/Continuous	Site Type	Siting Scale	Monitor Objective	Monitor Type
CO	42101	1	093	Gas Filter Correlation	Continuous	Population Oriented	Microscale	Source Oriented	SLAMS
NO ₂	42602	1	200	Photolytic Chemiluminescence	Continuous	Population Oriented	Microscale	Source Oriented	SLAMS
PM _{2.5}	88101	1	142	VSCC Gravimetric	Manual	Population Oriented	Microscale	Source Oriented	SLAMS

Shuttlesworth 01-073-6004*

Parameter	Code	POC	Method	Method Description	Manual/Continuous	Site Type	Siting Scale	Monitor Objective	Monitor Type
PM _{2.5}	88101	1	142	VSCC Gravimetric	Manual	Source Oriented	Microscale	Source Oriented	SLAMS
PM ₁₀	81102	1	239	Broadband Spectroscopy	Continuous	Source Oriented	Microscale	Source Oriented	SLAMS
PM _{2.5}	88101	2	238	Broadband Spectroscopy	Continuous	Source Oriented	Microscale	Source Oriented	SPM

Tarrant 01-073-6002

Parameter	Code	POC	Method	Method Description	Manual/Continuous	Site Type	Siting Scale	Monitor Objective	Monitor Type
O ₃	44201	1	087	UltraViolet Absorption	Continuous	Population Oriented	Neighborhood	Highest Concentration	SLAMS
PM _{2.5}	88101	1	142	VSCC Gravimetric	Manual	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM ₁₀	81102	3	239	Broadband Spectroscopy	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM _{2.5}	88101	2	238	Broadband Spectroscopy	Continuous	Population Oriented	Neighborhood	Population Exposure	SPM

Wylam 01-073-2003**

Parameter	Code	POC	Method	Method Description	Manual/Continuous	Site Type	Siting Scale	Monitor Objective	Monitor Type
PM _{2.5}	88101	1	142	VSCC Gravimetric	Manual	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM _{2.5}	88101	2	142	VSCC Gravimetric	Manual	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM ₁₀	81102	2	239	Broadband Spectroscopy	Continuous	Population Oriented	Neighborhood	Population Exposure	SLAMS
PM _{2.5}	88101	3	238	Broadband Spectroscopy	Continuous	Population Oriented	Neighborhood	Population Exposure	SPM

*JCDH proposes discontinuing this site

**JCDH proposes moving all the monitoring equipment at Fairfield to this site

Appendix A: Monitoring Site Photos and Maps

DRAFT

Corner

Site ID: 01-073-5003



North



South



East



West





Fairfield
Site ID: 01-073-1003



North



South

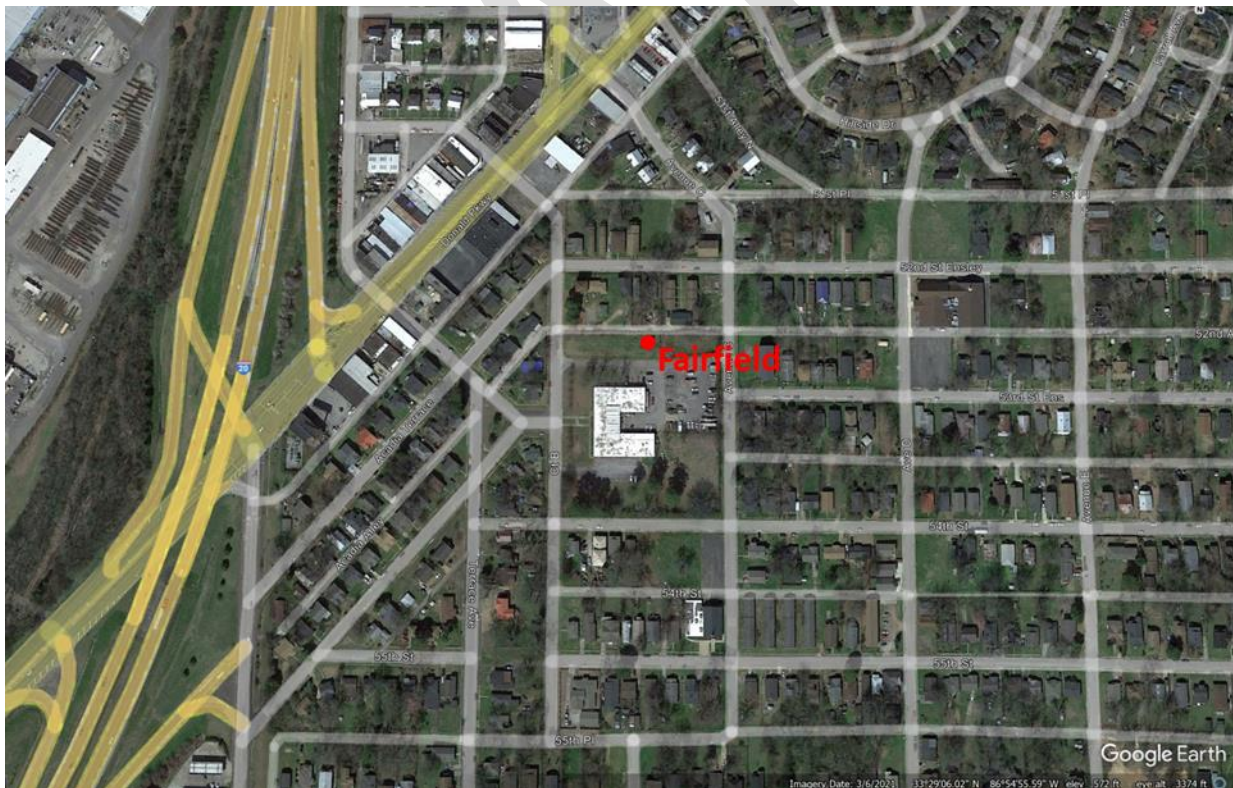


East



West





Leeds

Site ID: 01-073-1010



North



South

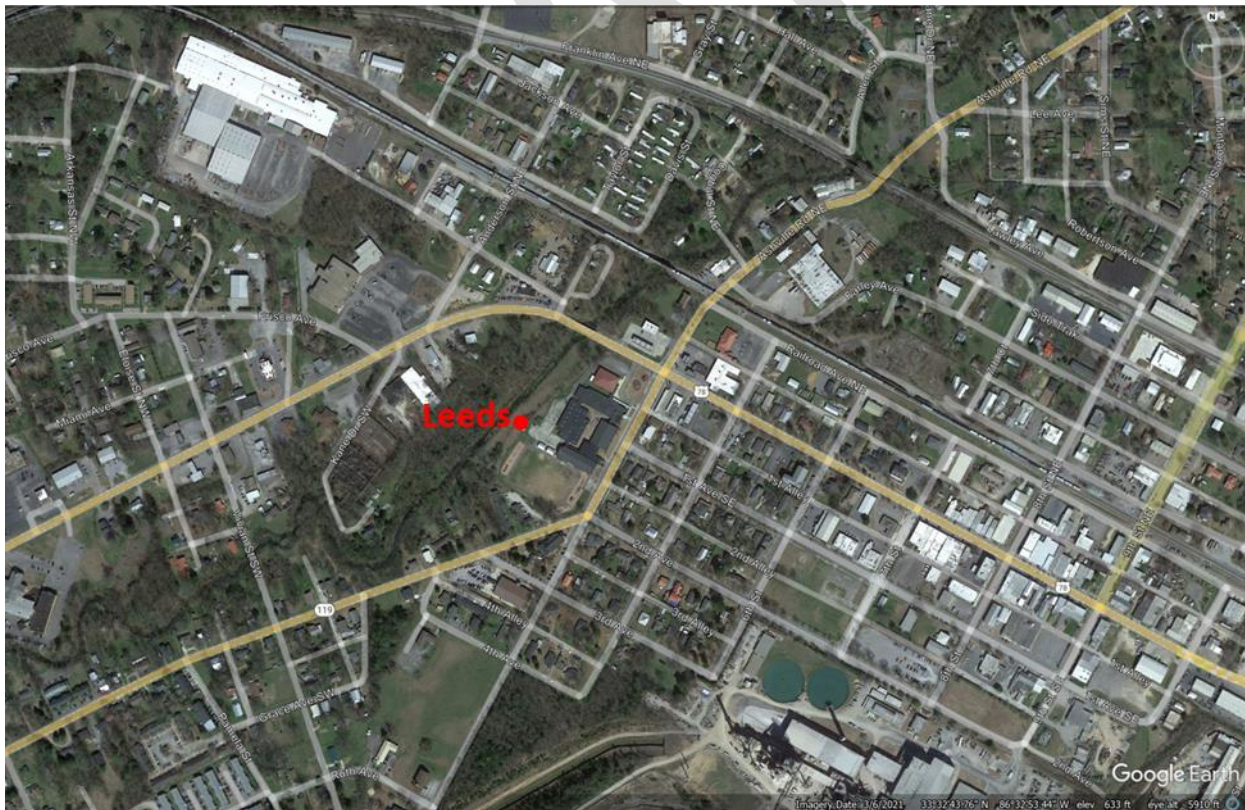


East



West





McAdory
Site ID: 01-073-1005



North



South



East



West





NCore
Site ID: 01-073-0023



North



South

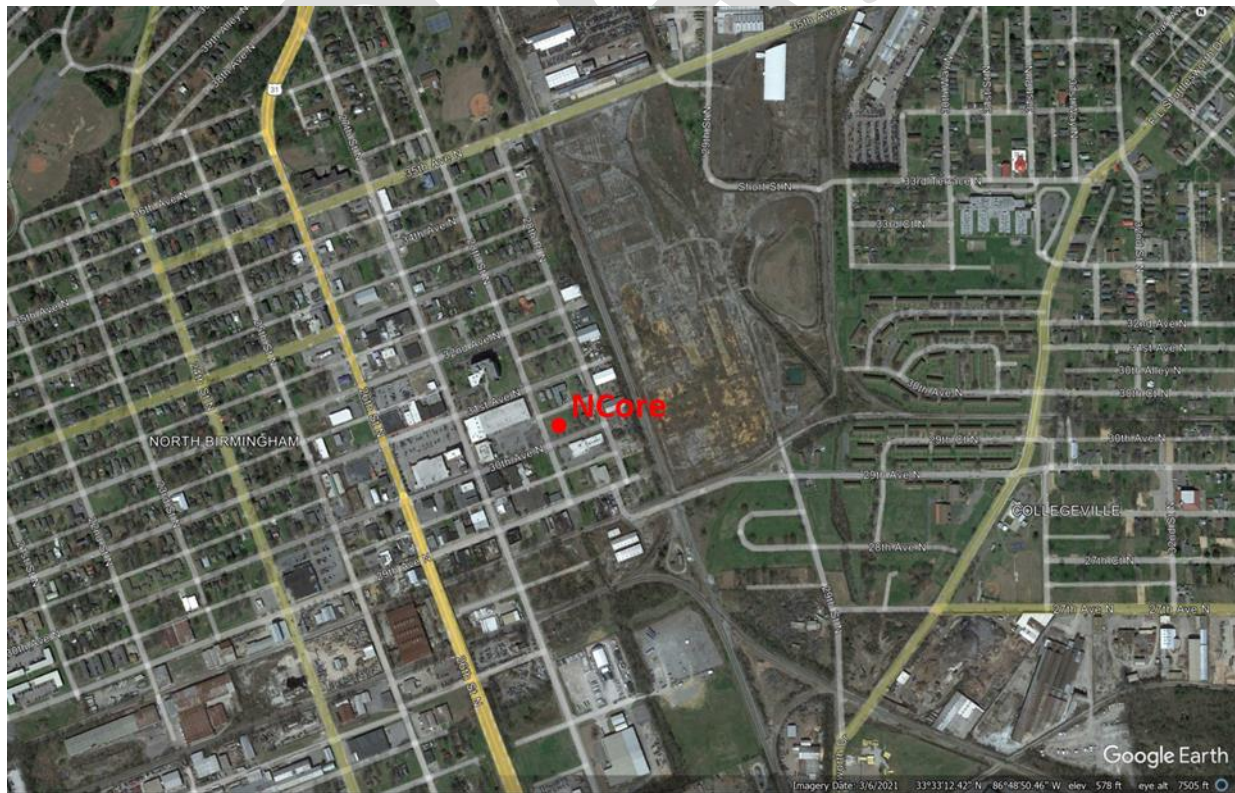
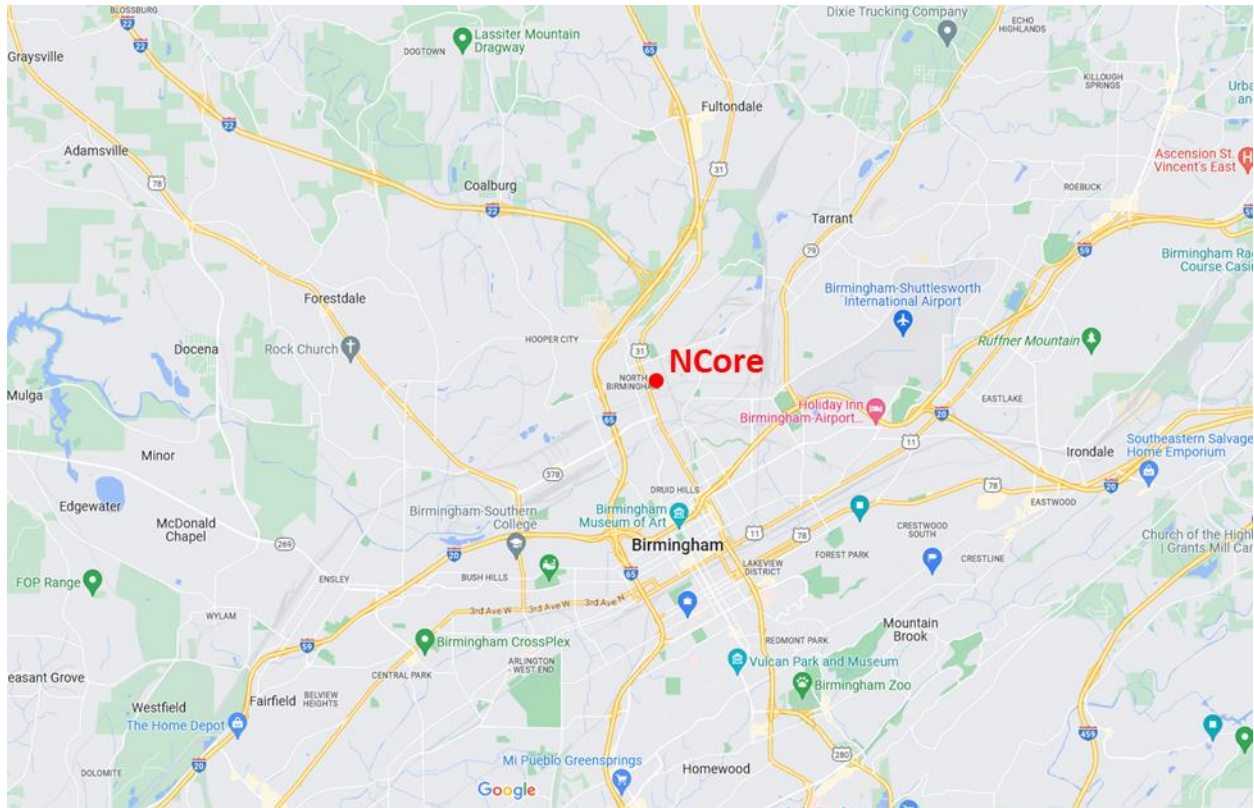


East



West





Near Road
Site ID: 01-073-2059



North



South

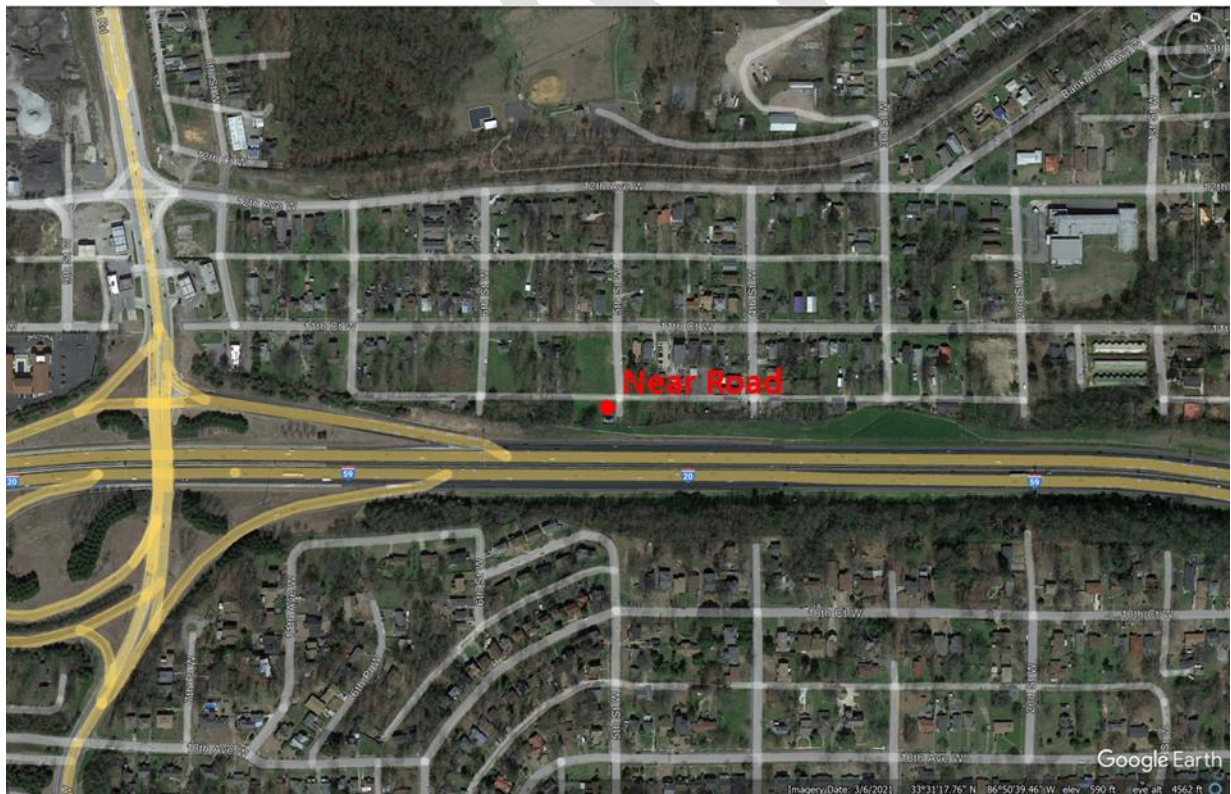
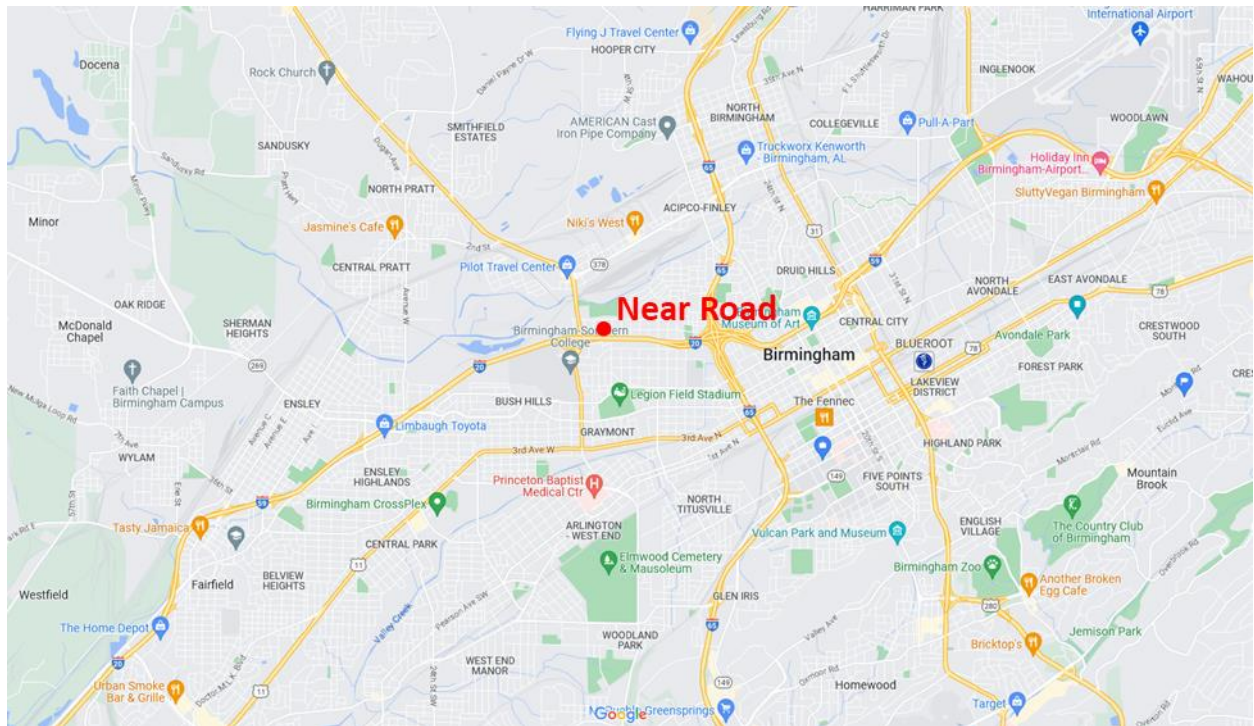


East



West





Shuttlesworth

Site ID: 01-073-6004



North



South

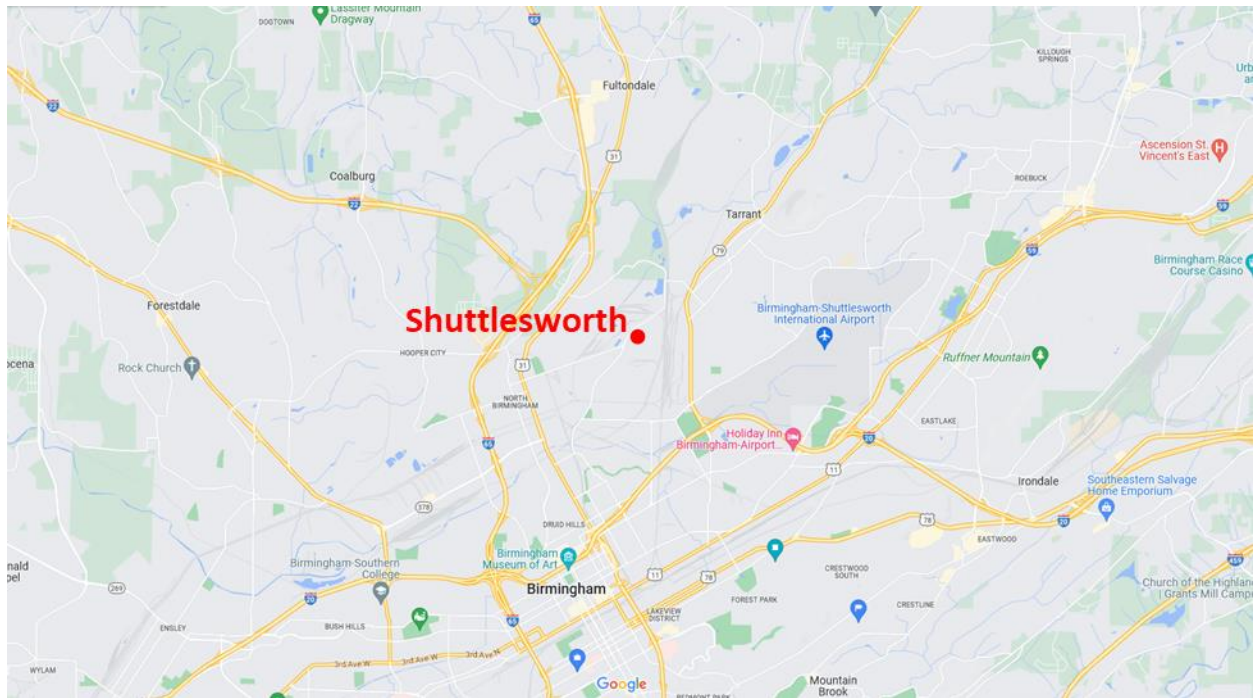


East



West





Tarrant
Site ID: 01-073-6002



North



South

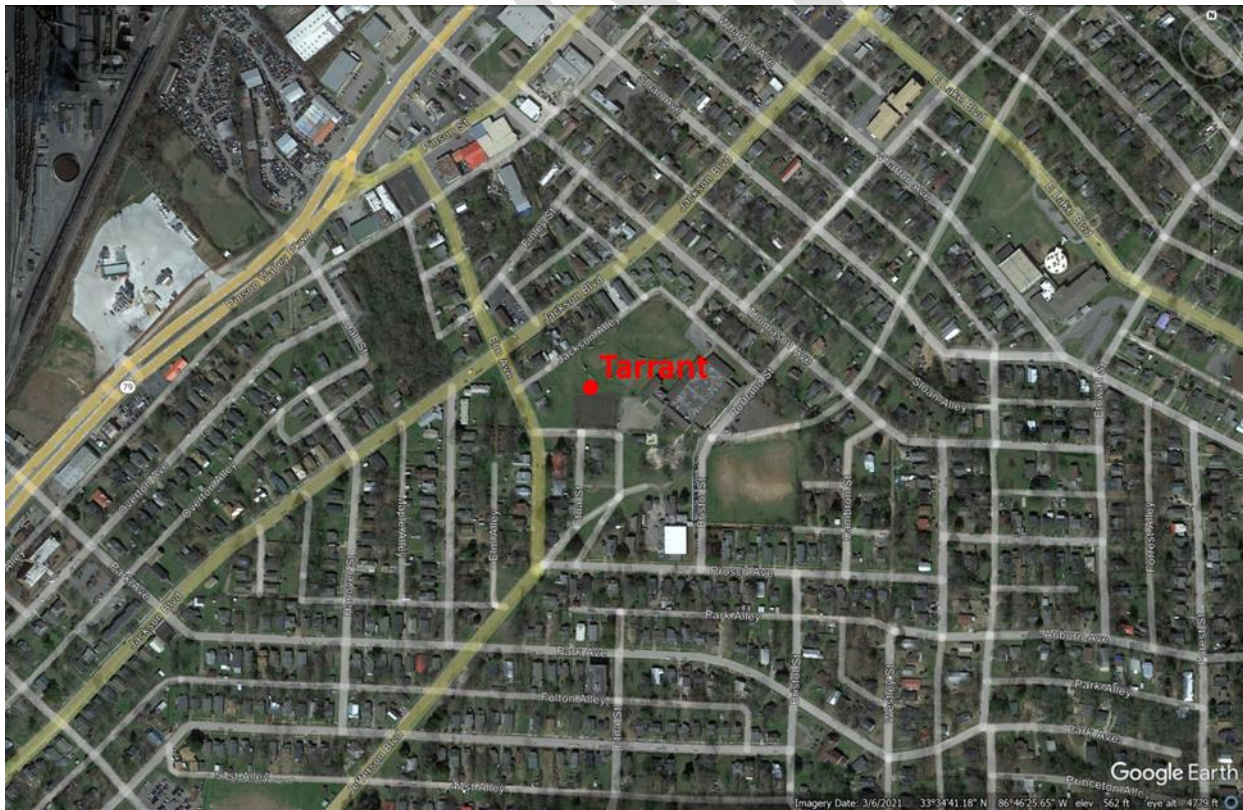
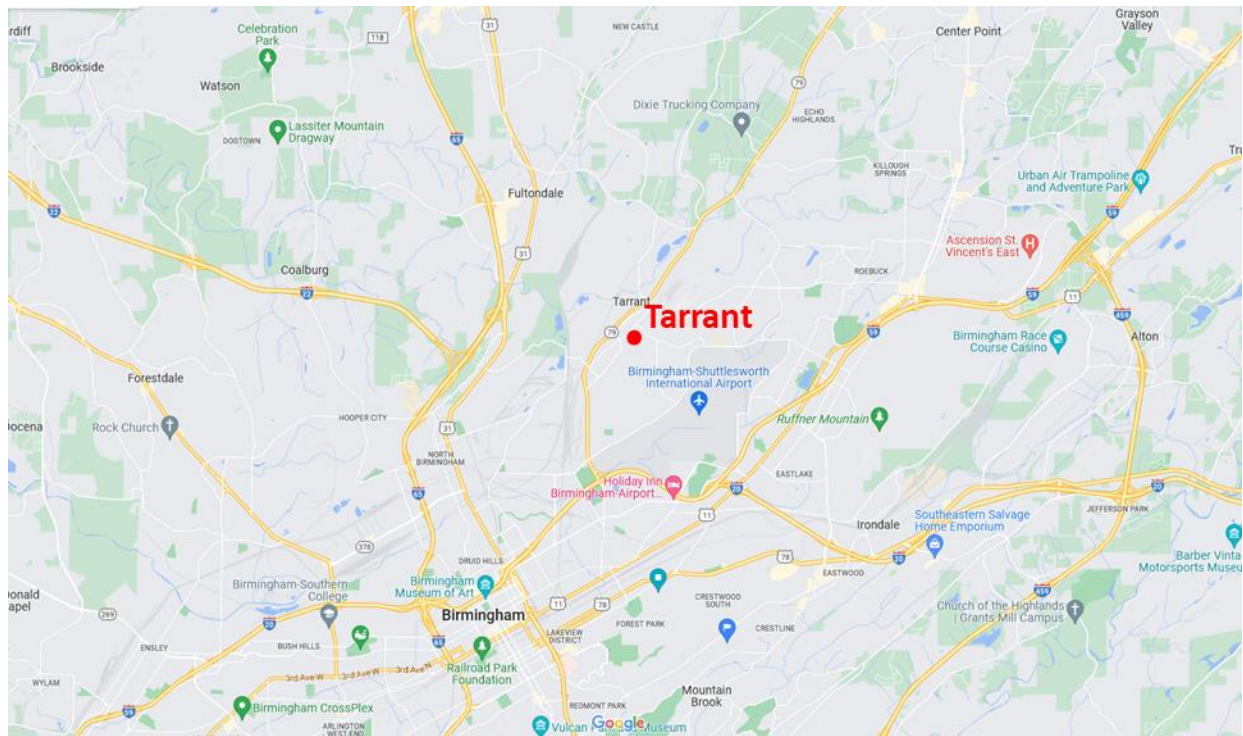


East



West





Wylam

Site ID: 01-073-2003



North



South

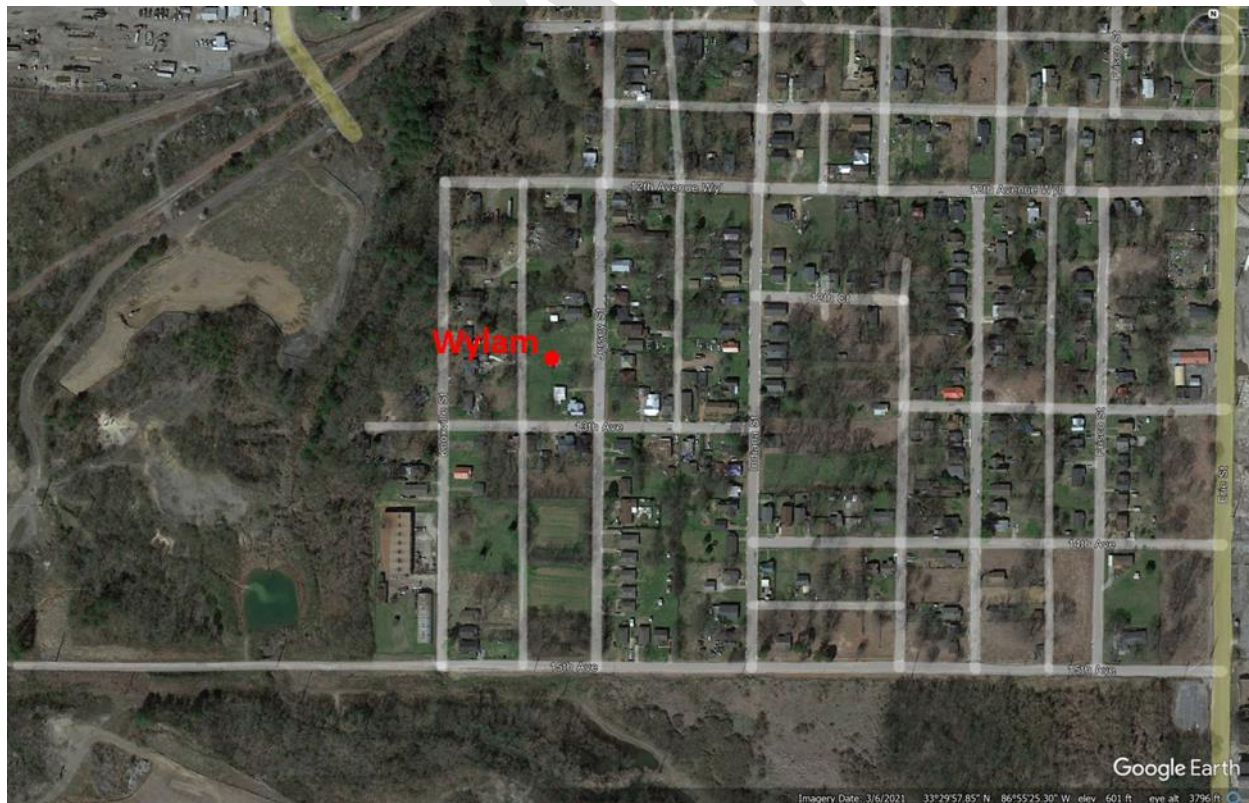
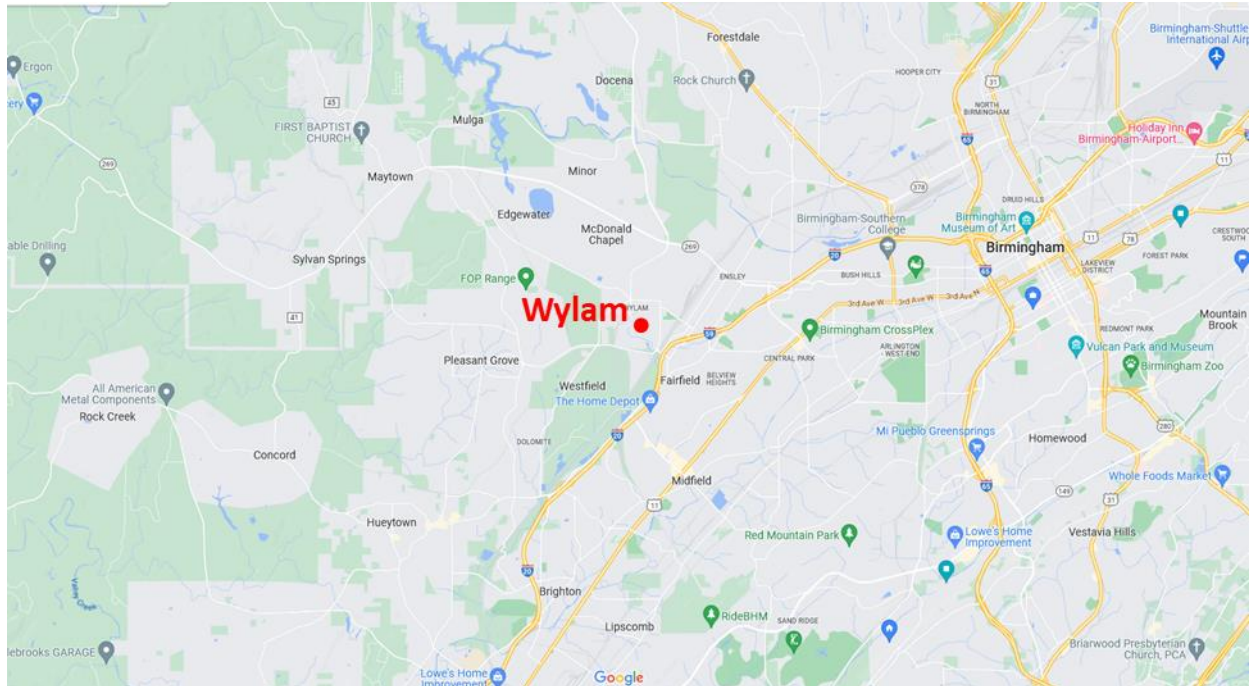


East



West





Appendix B:
Inventory of Monitoring Equipment

DRAFT

Inventory of Monitoring Equipment				
Corner 01-073-5003				
Item Description	Manufacturer	Model	Serial Number	Condition
PM Continuous Instrument	Thermo	1400A	23591	Poor
Ozone Analyzer	Teledyne	T400	6993	Good
Zero Air Generator	Teledyne	701	4658	Good
Calibrator	Teledyne	T703	959	Good
Data Logger	ESC	8872	1016	Good
Fairfield 01-073-1003				
Ozone Analyzer	Teledyne	T400	4285	Good
SO2 Analyzer	EcoTech	Serinus 50	192350	Good
CO Analyzer	Teledyne	T300	3377	Good
Zero Air Generator	Teledyne	T701H	1910	Good
Calibrator	Teledyne	T700U	168	Good
Data Logger	ESC	8872	1267	Good
Leeds 01-073-1010				
PM Manual Instrument	BGI	PQ200	1708A	Good
PM Continuous Instrument	Teledyne	T640x	1278	Good
Ozone Analyzer	Teledyne	T400	6419	Good
Zero Air Generator	Teledyne	701	4657	Good
Calibrator	Teledyne	T703	857	Good
Data Logger	ESC	8872	1018	Good
McAdory 01-073-1005				
PM Manual Instrument	BGI	PQ200	875	Good
PM Continuous Instrument	Thermo	1400A	24935	Poor
Ozone Analyzer	Teledyne	T400	6420	Good
Zero Air Generator	Teledyne	701	5878	Good
Calibrator	Teledyne	703E	99	Good
Data Logger	ESC	8872	1268	Good
NCore 01-073-0023				
PM Manual Instrument	BGI	PQ200	1707A	Good
PM Continuous Instrument	Teledyne	T640x	947	Good
Ozone Analyzer	Teledyne	T400	1803	Good
CO Analyzer	Teledyne	T300U	384	Good
SO2 Analyzer	Teledyne	T100U	318	Good
NOy Analyzer	Teledyne	T200U	288	Good
NOx Analyzer	Teledyne	T200UP	156	Good
Zero Air Generator	Teledyne	701H	1911	Good
Calibrator	Teledyne	T700U	332	Good
Data Logger	ESC	8872	1017	Good
Rain Gauge	MetOne	370	P17785	Good
Ceiliometer	Vaisala	CL51	P1750410	Good

Inventory of Monitoring Equipment				
NCore 01-073-0023				
Item Description	Manufacturer	Model	Serial Number	Condition
Wind Sensor	MetOne	50.5	411556	Good
Temp Sensor	MetOne	597	X11330	Good
Solar Sensor	MetOne	096-2	Py-104698	Good
SASS	MetOne	Super Sass	X22221	Good
URG	MetOne	URG-300N	3N-B0160	Good
PAMS	-	-	-	Good
IMPROVE	-	-	BIRM1	Good
RADNET	HI-a	Hvp-4004 BL-S	16145	Good
Near Road 01-073-2059				
PM Manual Instrument	BGI	PQ200	1497	Good
CO Analyzer	Teledyne	T300U	582	Good
NOx Analyzer	Teledyne	T200UP	83	Good
Zero Air Generator	Teledyne	701H	1909	Good
Calibrator	Teledyne	T700U	169	Good
Data Logger	ESC	8872	1266	Good
Wind Sensor	MetOne	50.5H	P17504	Good
Wind Sensor	MetOne	50.5H	A5384	Good
Solar Sensor	MetOne	LI-2001R	PY40337	Good
Solar Sensor	MetOne	LI-2001R	PY40335	Good
Humidity/Temp Sensor	MetOne	083D-1-35	A4745	Good
Humidity/Temp Sensor	MetOne	083D-1-35	A4749	Good
BP Sensor	MetOne	092	P14411	Good
BP Sensor	MetOne	091	A5484	Good
Rain Gauge	MetOne	370	A5752	Good
Rain Gauge	MetOne	370	A5754	Good
Shuttlesworth 01-073-6004				
PM Continuous Instrument	Thermo	1400A	23655	Poor
PM Continuous Instrument	Thermo	1405	242221809	Good
Data Logger	ESC	8872	1269	Good
Tarrant 01-073-6002				
PM Continuous Instrument	Thermo	1405	240221711	Good
Ozone Analyzer	Teledyne	T400	6994	Good
Zero Air Generator	Teledyne	701	5786	Good
Calibrator	Teledyne	T703	957	Good
Data Logger	ESC	8872	1270	Good

Inventory of Monitoring Equipment				
Wylam 01-073-2003				
Item Description	Manufacturer	Model	Serial Number	Condition
PM Manual Instrument	BGI	PQ200	861A	Fair
PM Manual Instrument	BGI	PQ200	1513B	Good
PM Manual Instrument	BGI	PQ200	422C	Poor
PM Continuous Instrument	Thermo	1405	441607	Good
PM Continuous Instrument	Thermo	1405	242161809	Good
Data Logger	ESC	8872	1265	Good
URG	MetOne	URG-300N	B0454	Good
SASS	MetOne	Super Sass	A3084	Good

Inventory of Backup Monitoring Equipment				
Located at Shop				
Item Description	Manufacturer	Model	Serial Number	Condition
Ozone Analyzer	Teledyne	T400	-	Good
Ozone Analyzer	EcoTech	Serinus 10	-	Fair
Ozone Analyzer	EcoTech	Serinus 10	-	Fair
CO Analyzer	Teledyne	T300U	-	Poor
CO Analyzer	EcoTech	Serinus 30	-	Good
NOx Analyzer	Teledyne	T200UP	-	Good
SO2 Analyzer	Teledyne	T100U	-	Good
SO2 Analyzer	Teledyne	T100U	-	Poor
SO2 Analyzer	EcoTech	Serinus 50	-	Good
PM Continuous Instrument	Teledyne	T640x	-	Good
PM Continuous Instrument	Teledyne	T640x	-	Good
Calibrator	Teledyne	703E	-	Poor
Calibrator	EcoTech	Serinus 3000	-	Fair
Calibrator	Thermo	iQ49	-	Good
Calibrator	Thermo	iQ49	-	Good
Zero Air Generator	Teledyne	701H	-	Good
Zero Air Generator	Teledyne	701	-	Good
Zero Air Generator	Teledyne	701	-	Good

All listed equipment in this Appendix is as of May 2023. JCDH proposes to move all monitoring equipment at the Fairfield site to the Wylam site. JCDH also proposes to discontinue the use of all monitoring equipment at the Corner and Shuttlesworth sites.

Appendix C:
JCDH Request for Exclusion Letter

DRAFT



JEFFERSON COUNTY DEPARTMENT OF HEALTH

1400 SIXTH AVENUE, SOUTH • P.O. BOX 2648 • BIRMINGHAM, AL 35202-2648 • 205.933.9110 • WWW.JCDH.ORG

Environmental Health Services
Jonathan Stanton, P.E., Director

November 28, 2022

Ms. Caroline Y. Freeman, Director
Air and Radiation Division
USEPA – Region IV
Atlanta Federal Center
61 Forsyth Street
Atlanta, Georgia 30303

Dear Ms. Freeman:

Enclosed is the Jefferson County Department of Health Air and Radiation Protection Division's (JCDH) request for exclusion of PM_{2.5} continuous FEM data from comparison to the NAAQS. JCDH has taken all the steps outlined by EPA's OAQPS and is following their EPA's guidance with this submittal. If you have any questions feel free to contact me at 205-930-1284.

Sincerely,

Jason Howanitz, PE
Principal Air Pollution Control Engineer
Air and Radiation Protection Division

JH

Request for Exclusion



Our monitoring program has historically operated PM_{2.5} continuous monitors primarily to support forecasting and reporting of the Air Quality Index (AQI). These monitors supply data every hour to update the AQI on our web site as well as on national web sites such as AIRNow (www.airnow.gov). We have been using these monitors since the early part of the last decade as we implemented the PM_{2.5} monitoring program. Over the last few years, a number of PM_{2.5} continuous monitors have been approved as Federal Equivalent Methods (FEMs). By utilizing an approved FEM, any subsequent data produced from the method may be eligible for comparison to EPA's health based standard known as the NAAQS. The primary advantage of operating a PM_{2.5} continuous FEM is that it can support both the AQI, while also supplying data that are eligible for comparison to the NAAQS. Thus, a network utilizing PM_{2.5} continuous FEMs can minimize the number of filter-based FRMs operated in the network, which are primarily used for comparison to the NAAQS. These filter-based FRMs are resource intensive in that they require field operations as well as pre- and post-sampling laboratory analysis which results in data not being available for approximately 2-4 weeks after sample collection.

Our monitoring program has been working with PM_{2.5} continuous FEMs including deployment at a few sites to evaluate their performance. Although the PM_{2.5} continuous FEMs are automated methods, these methods still require careful attention in their set-up, operation, and validation of data. Once we were able to collect enough data we began to evaluate the performance of these methods compared to collocated FRMs. That evaluation is explained further below and includes our recommendations on the use of the data from these methods.

Request for Exclusion of PM_{2.5} Continuous FEM data from Comparison to the NAAQS:

In accordance with the PM NAAQS rule published on January 15th, 2013 (78 FR 3086) and specific to the provisions detailed in §58.10 (b)(13) and §58.11 (e) we are requesting that data from the following monitors be set aside for comparison to the NAAQS. While our agency is working to optimize the monitoring instrumentation we use to meet all of our monitoring objectives, we are not yet at a point where the comparability of the PM_{2.5} continuous FEMs operated in our network compared to collocated FRMs is acceptable such that we are comfortable using the continuous FEM data for comparison to the NAAQS. After assessing the comparability of the PM_{2.5} FEMs to the collocated FRMs for our network, we have determined that the sites listed below do not meet the comparability requirements. Detailed one-page assessments from which the information described below was obtained are included at the end of this section.

Table – Request for Exclusion of PM_{2.5} Continuous FEM Data

Site Name	City	Site ID	Cont PDC	Method Description	PM _{2.5} Cont. Begin Date	PM _{2.5} Cont End Date	Continuous/ FRM Sampler pairs per season	Slope (m)	Intercept (y)	Meets bias requirement	Correlation (r)
<i>Sites with PM_{2.5} continuous FEMs that are collocated with FRMs:</i>											
<u>North Birmingham</u>	<u>Birmingham</u>	<u>01-073-0023</u>	<u>3</u>	<u>T640x @16.67 LPM</u>	<u>12/07/2018</u>	<u>12/1/2022</u>	Winter = 1 Spring = 1 Summer = 1 Fall = 1 Total = 4	<u>1.09</u>	<u>1.54</u>	<u>*No</u>	<u>.93</u>

*Bias is not acceptable for NAAQS comparability

Period of Exclusion of Data from the PM_{2.5} Continuous FEMs:

The above table details the period of available data by monitor for which we are basing our recommendation to exclude PM_{2.5} continuous FEM data. Per EPA Regional Office approval, we will load or move as necessary these data to EPA's AQS database in a manner where the data are only used for the appropriate monitoring objective(s) (i.e., use data for both the NAAQS and AQI, just the AQI, or neither the NAAQS or AQI). Additionally, we will continue to load any new data generated for the next 18 months in the same manner or until such time as we request and receive approval from the EPA Region IV Office to change the monitoring objectives that the data from the PM_{2.5} continuous FEMs can support.

PM_{2.5} Continuous FEM data for Reporting the AQI:

While we are requesting the monitors above not be used for comparison to the NAAQS, we do believe that the data are of sufficient comparability to collocated FRMs that they be used in AQI reporting. Therefore, with EPA Regional Office approval we will report these data on our web site and to AIRNow (www.airnow.gov). Additionally, we intend to store the data in EPA's AQS database that is used for "acceptable AQI" reporting (i.e., parameter code 88502) so that data users will know that these data are appropriate for use in AQI calculations.

Continued Operation of PM_{2.5} Monitors to Support NAAQS and AQI Reporting

While we are requesting that data from the monitors listed above be set aside for comparison to the NAAQS, we will continue to operate PM_{2.5} FRMs to support the objective of comparison to the NAAQS. We will also operate our PM_{2.5} continuous monitors for use in AQI reporting. Each of these FRM and PM_{2.5} continuous monitors will be operated at the locations previously described in this plan and at the locations that meet the objectives of the Network Design Criteria for Ambient Air Quality Monitoring described in Appendix D to Part 58.

Assessments:

The following one-page assessments are locations where our agency has collocated PM_{2.5} FRM and continuous FEM monitors. Each of these assessments is represented in the "Table – Request for Exclusion of PM_{2.5} Continuous FEM Data" above.

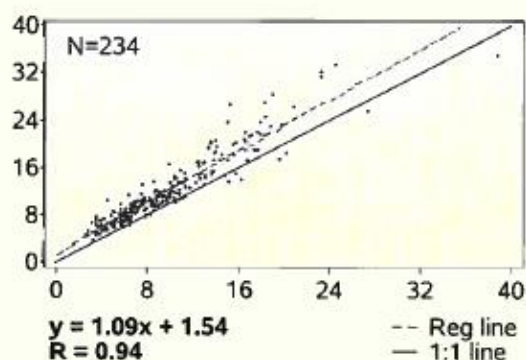
PM_{2.5} Continuous Monitor Comparability Assessment

Site 01-073-0023: Birmingham, AL

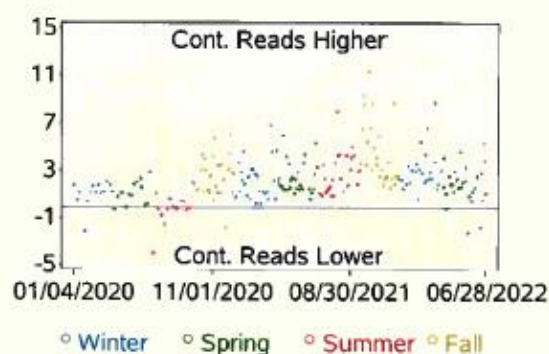
FRM: BGI Models PQ200-VSCC or PQ200A-VSCC - Gravimetric (116,142), PM2.5 - Local Conditions (88101), POC=1,2

Cont: Teledyne T640X at 16.67 LPM - Broadband spectroscopy (238), PM2.5 - Local Conditions (88101), POC=3

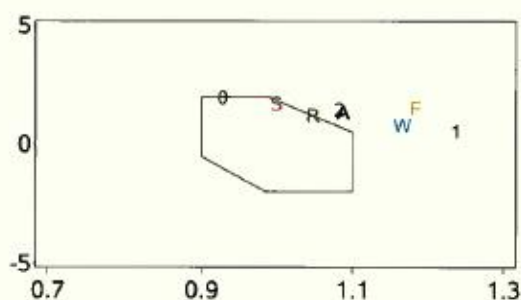
Cont. (y) vs. FRM (x) ($\mu\text{g}/\text{m}^3$)



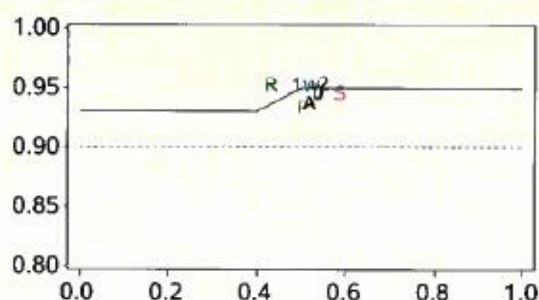
Cont. minus FRM ($\mu\text{g}/\text{m}^3$)



Additive (y) vs. Multiplicative (x) Bias



R (y) vs. FRM CCV (x)



Mean Concentration ($\mu\text{g}/\text{m}^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	234	9.8	12.2	1.24
Winter	62	8.3	10.6	1.28
Spring	72	10.0	11.9	1.19
Summer	45	10.9	12.8	1.17
Fall	55	10.2	13.7	1.35
2020	72	10.0	11.5	1.14
2021	110	9.6	12.6	1.31
2022	52	9.8	12.3	1.25

Appendix A Statistics

Dataset	N (all observations)	Bias	N (only $\geq 3 \mu\text{g}/\text{m}^3$)	Bias
AllData	234	28.8	232	28.3
Winter	62	32.5	60	30.9
Spring	72	20.8	72	20.8
Summer	45	21.2	45	21.2
Fall	55	41.1	55	41.1
2020	72	18.0	72	18.0
2021	110	34.7	110	34.7
2022	52	30.9	50	29.1

Data Source: EPA AQS Data Mart

Generated: October 26, 2022

Appendix D:
EPA Response to Request for Exclusion Letter

DRAFT

Jason,

This is in response to your November 28, 2022, letter to EPA requesting exclusion of T640x PM_{2.5} continuous FEM data from comparison to the NAAQS. As part of the 2013 revisions to the PM_{2.5} NAAQS, the EPA created new procedures for handling data collected using continuous PM_{2.5} FEMs. These procedures are found at 40 CFR § 58.10(e). If an agency can demonstrate that the FEM data are not of sufficient comparability to data from a collocated FRM, then the monitoring agency may request that the FEM data not be used in comparison to the NAAQS.

The Jefferson County Department of Health (JCDH) submitted a demonstration that the T640x PM_{2.5} continuous FEM at the North Birmingham site (AQS ID 01-073-0023) does not produce data that is of sufficient comparability to data from the collocated FRM. The EPA concurs with the demonstration's findings and approves the request to have the T640x FEM monitor data not considered comparable to the PM_{2.5} NAAQS.

Please report the data from this T640x monitor to the AQS parameter code 88502. This approval also includes the historical data collected by this monitor. The historical concentration and QA data can be reassigned to parameter code 88502, or our office can simply place a NAAQS Exclusion concurrence flag on the historical data currently reported to parameter code 88101. JCDH should continue to evaluate the comparison of this continuous PM_{2.5} method with the collocated FRM method. If the T640x comparability to the FRM sufficiently meets requirements with future data, JCDH and the EPA will re-consider the NAAQS comparability of this measurement. At a minimum, a comprehensive examination of the methods used in the network should be evaluated as part of the upcoming five-year network assessment due by July 1, 2025.

The EPA requests that JCDH include the comparability assessment in its 2023 Annual Network Plan which will be made available for public review. At that time, the EPA will provide its formal approval. The EPA notes the minimum PM_{2.5} monitoring requirements for the Birmingham MSA will continue to be met even if the T640x continuous monitor is not counted towards meeting those requirements.

Please let us know if you or your staff have additional questions or concerns.

Darren Palmer

USEPA - Region 4 | Air & Radiation Division | Air Data & Analysis Section
(404) 562-9052 | <https://epa.gov/region4>

Appendix E: Wylam Site Evaluation

DRAFT

MONITORING SITE EVALUATION FORM

Local Site Name: Wylam Initials: MW Date: 5/10/23

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

Arrival Time: 9:30 Departure Time: 10:35 Primary Operator: Brian Mayomi

Observer(s): Mark Watson / Parker Wilson

NETWORK(s): [☒Criteria / ☐NCore / ☐Near Road / ☐IMPROVE / ☐CASTNet / ☐NATTS / ☐PAMS / ☐Toxics]

SITE

[Y/N]-Security Fence [Y/N]-Razor/Barb Wire [Y/N/NA] Grass/Shrubs Cut [Y/N/NA] Bare Soil Area

[Y/N] Vandalism – [☐Inside / ☐Outside] Date: _____ [Y/N] Police Report Filed

Issues: _____

SHELTER - Interior

Arrival Temperature: 25.81 °C (from data logger) Operator Site Visits: 3 per (week / month / _____)

[Y/N] Leaking Roof [Damaged: ☐Ceiling / ☐Floor / ☐Walls] [Y/N] Clean / Neat [Y/N] Fire Extinguisher

[Y/N] Insect / Wildlife Issues [Y/N] Thermometer (min/max) [Y/N] Gasoline (inside shelter)

Issues: _____

MONITOR(s):

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

Monitor(s)	Manufacturer	Model	Serial Number
CPM 2.5	Thermo	1405	441607
CPM 10	Thermo	1405	242161809
Manual PM2.5	BGI	PQ200	864
Manual PM2.5	BGI	PQ200	1513
Manual PM2.5	BGI	PQ200	422
Speciation	MetOne	SASS	A3075
Carbon	URG		B0454

MET: [☐Sonic / ☒Analog] - [☒WS / ☒WD / ☒Temp / ☒RH / Other: _____ Make: MetOne ☐Not Present

CALIBRATOR(s): ☒Not Present

[Y/N] Are QA/QC Check Gases Vented Outside Shelter?

QA/QC	Make	Model	Serial Number	Certification Date	Expiration Date

Is any analyzer sampling shelter air through its calibration line? [Y/N] If yes, photo, document and notify agency mgr.

All Gas Standards Pass thru all Filters during: [Y/N] Calibrations [Y/N] Precision Checks [Y/N] Audits

Issues: _____

1 of 4

CYLINDER GAS STANDARDS:

☒ Not Present

VENDOR:

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

QA /QC	Gas Standard	PSI Reading	Expiration Date	Standard Concentration	Serial Number

Issues: _____

SUPPORTING INSTRUMENTATION: Internal

☒ Temperature Sensor ☒ Uninterruptable Power Supply ☒ On-Site ComputerZero Air System: Commercial System (Make / Model): NACartridge System: ☐ Silica Gel ☐ Pink ☐ Blue ☐ Charcoal ☐ Purafil ☐ Disposable / Other: _____☐ Needs Service Last Service Date: _____ Condition: _____

Issues: _____

Data Logger: ☐ 8816 / ☐ 8832 / ☒ 8872 / Other: _____Instrument(s) to Logger: ☐ Analog ☐ Digital ☒ Mixed Communications: ☐ Cell Modem ☒ DSL ☐ Dial upStrip Chart: ☒ Electronic ☐ Paper ☐ Both ☐ No Access ☒ Operator Proficiency ☒ Time Accurate
(Examine on chart: last calibration / precision check / audit – look for stability, concentration level, comments, etc.)

Issues: _____

Probe Line(s): ☐ Replaced ☐ Cleaned – Frequency: NA Last Service Date: NA☐ Clean ☐ Heated ☐ Insulated ☐ Moisture ☐ Retractable ☐ Old / Unused Lines☐ Lo Flo Manifold -> ☐ Any Open Ports? -> How many analyzers using manifold? _____Issues: NA

RECORDS – At Site

Documents Available: ☐ Hardcopy ☒ Electronic – ☒ QAPP(s) ☐ SOP(s) ☒ Instrument Manual(s)

Issues: _____

Logbooks: ☒ Hardcopy ☐ Electronic - ☒ Site Log ☒ Instrument Log / Other(s): _____

(Entries well documented?): _____

Charts / Papers on Walls: What do they Track, Up-to-date? NASHELTER – Exterior ☐ Not PresentType: ☐ Freezer ☐ Wood Building ☐ Brick-Block / Other: CAS☒ Needs Maintenance (specify) ☒ Tied Down ☒ Electrically Grounded ☒ Roof Railing

7.44

Roof Access: [Stairs] (Interior/Exterior) / Ladder (attached/removable) / ☐ Not Present [Y/N] Loose Decking (Trip Hazard)

Issues: _____

OUTDOOR SAMPLERS

☐ Not Present

[Y/N] Locked [Y/N] Electrically Grounded [Y/N] Stabilized [Y/N] Clean Inside [Y/N] Head/Separator Clean

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

Issue(s): _____

COLLOCATED SAMPLERS:

☐ Not Present

(39.4 inches = 1 meter)

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

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

PROBE SYSTEM(s): External ☒ Not Present

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

Funnel(s): ☐ Rain Shield / ☐ Part of Probe Funnel Material: ☐ Teflon® / ☐ Glass / ☐ Stainless Steel / Other: _____

Probe Line(s): ☐ Teflon® / Other: _____ Probe Fitting(s): ☐ Teflon® / Other: _____ / ☐ Not Present

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

Issue(s): _____

Pollutant(s)	Inlet Height (meters)	Inlet Location (Side of Shelter, Ground, Roof)	Horizontal Distance (meters) If Applicable	Vertical Distance (meters) If Applicable	Monitoring SCALE	
					AQS	Annual Network Plan
CPM 10	4.6	Roof				
CPM 2.5	4.6	Roof				
SASS	4.9	Roof				
URG	4.9	Roof				

FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O₃, CO, SO₂, NO₂) & (2 meters for PM, Pb)

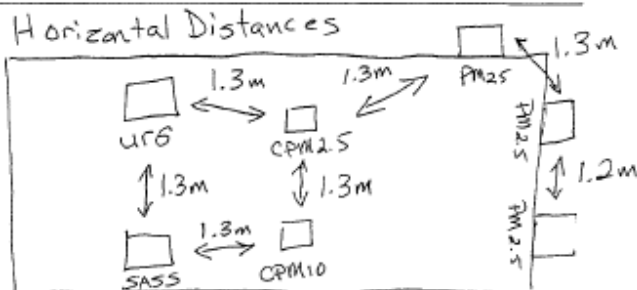
When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Height of Roof: 2.7 meters Roofing Material: Aluminum

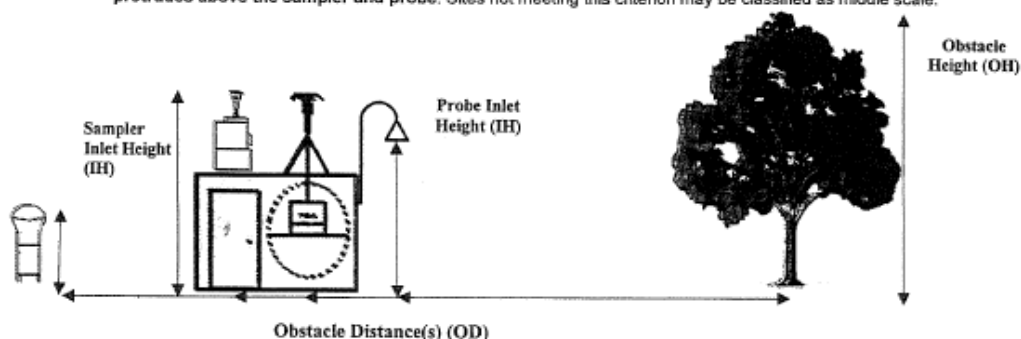
Issues: NONE

→ BGI Manual PM_{2.5} x3
Inlet Height - All - 4.9m

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



All distances in meters

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

Obstacle(s)	Obstacle Height (OH)	Sampler/Probe Inlet Height (IH)	$[2 \times (OH - IH)]$	Obstacle Distance (OD)
Tree	14m	5m	22m	12m

Please identify each of these obstacles in the SITE DRAWING (next page)

TREE DRIPLINE(s): _____ inches = _____ meters (nearest inlet to dripline) ☐ No Trees Present

(39.4 inches = 1 meter)

_____ inches = _____ meters (nearest inlet to dripline) ☐ Not Present

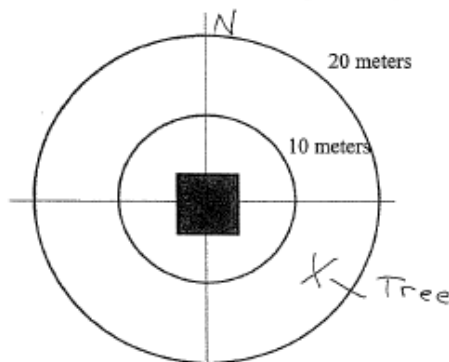
_____ inches = _____ meters (nearest inlet to dripline) ☐ Not Present

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

Issues: _____

UNRESTRICTED AIR FLOW: 360 ° Estimated Degrees of Clearance

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



* see previous page for probe placements

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

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

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