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

Table of Contents

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 Justic
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 (O_3), continuous Particulate Matter (PM_{10} and $PM_{2.5}$), Nitrogen Dioxide (NO_2), Sulfur Dioxide (SO_2), 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 (NOx) 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 O_3 monitor, one SO_2 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 O_3 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 O_3 concentrations and has been in attainment of the NAAQS (Figure 1). The most recent design value (2020-2022) for O_3 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.

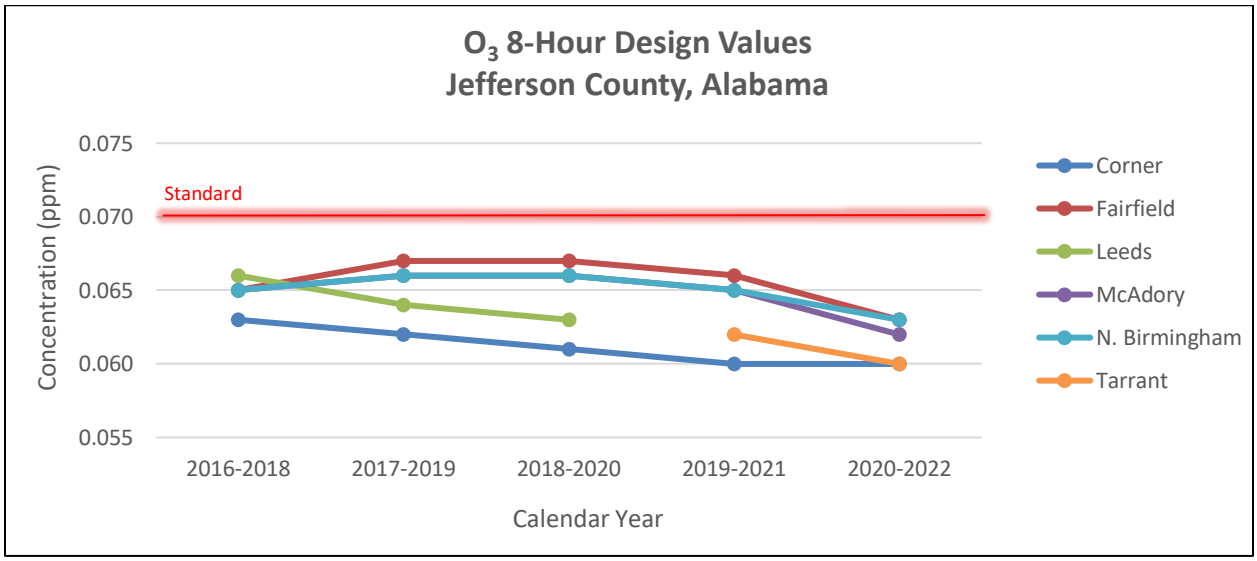


Figure 1: 8-hour O_3 design values (in ppm). The highlighted red line indicates the NAAQS, which is 0.070 ppm.

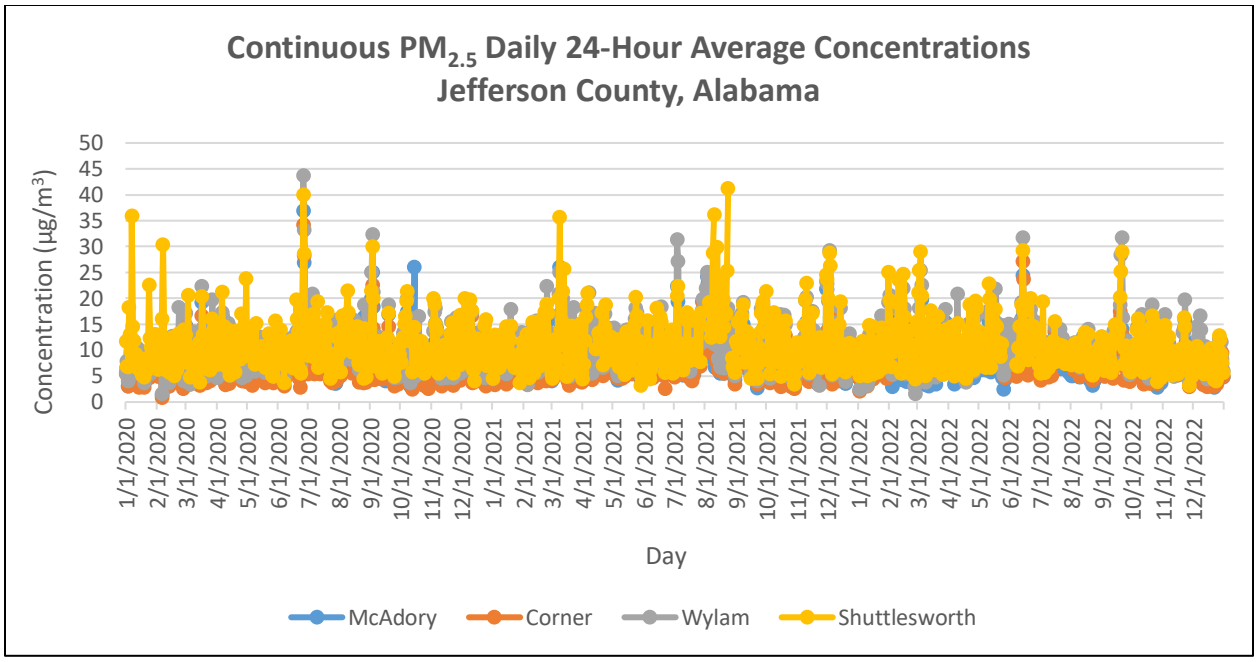


Figure 2: 24-hour average continuous $PM_{2.5}$ concentrations (in $\mu g/m^3$).

2. **Fairfield** (01-073-1003) – JCDH operates one O_3 monitor, one SO_2 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 O_3 (Figure 1), CO, (Figures 5 and 6), and SO_2 (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.

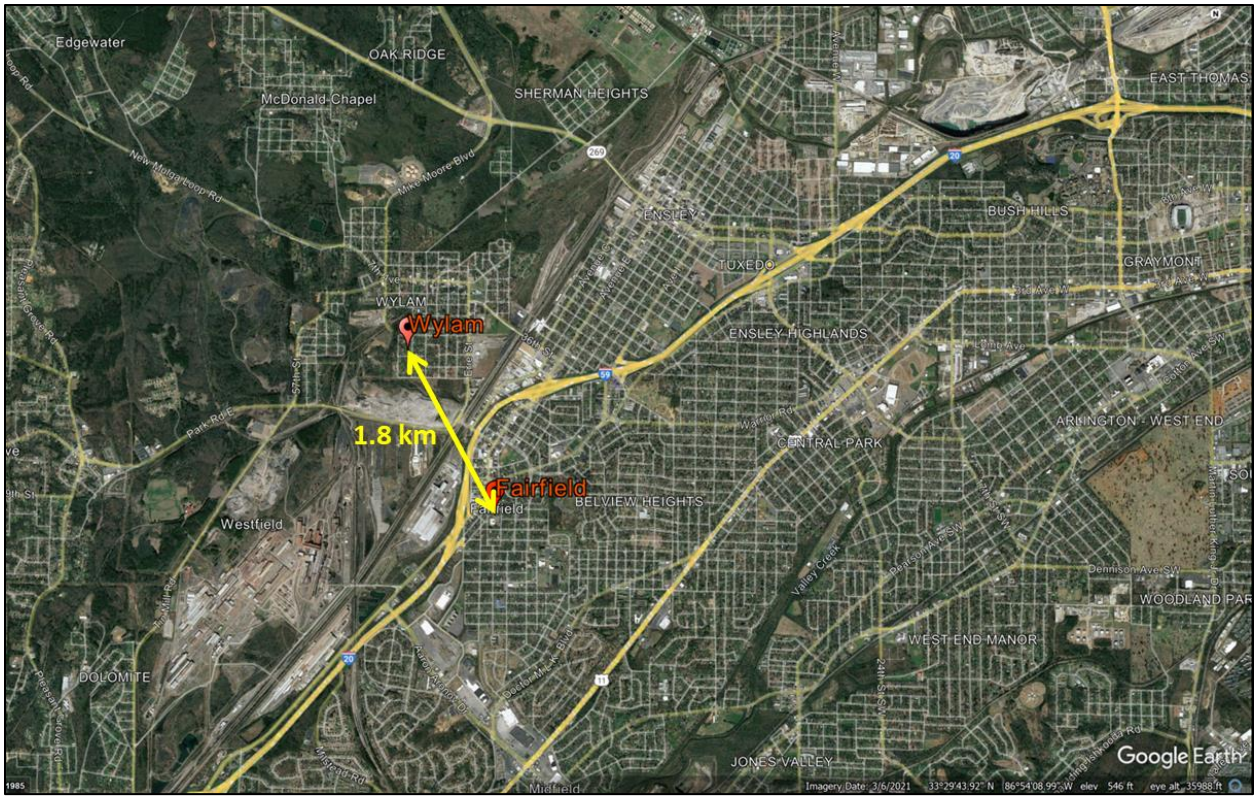


Figure 3: Map showing the distance between the Fairfield and Wylam monitoring sites.

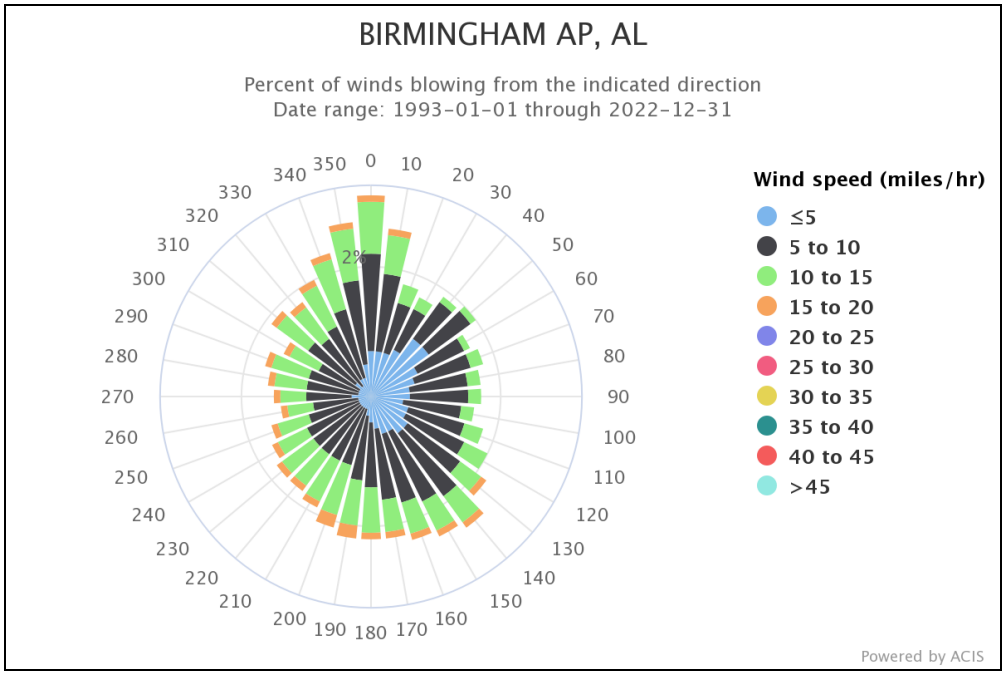


Figure 4: Wind rose showing data from the nearby Birmingham Airport for the most recent 30-year period (1993-2022).

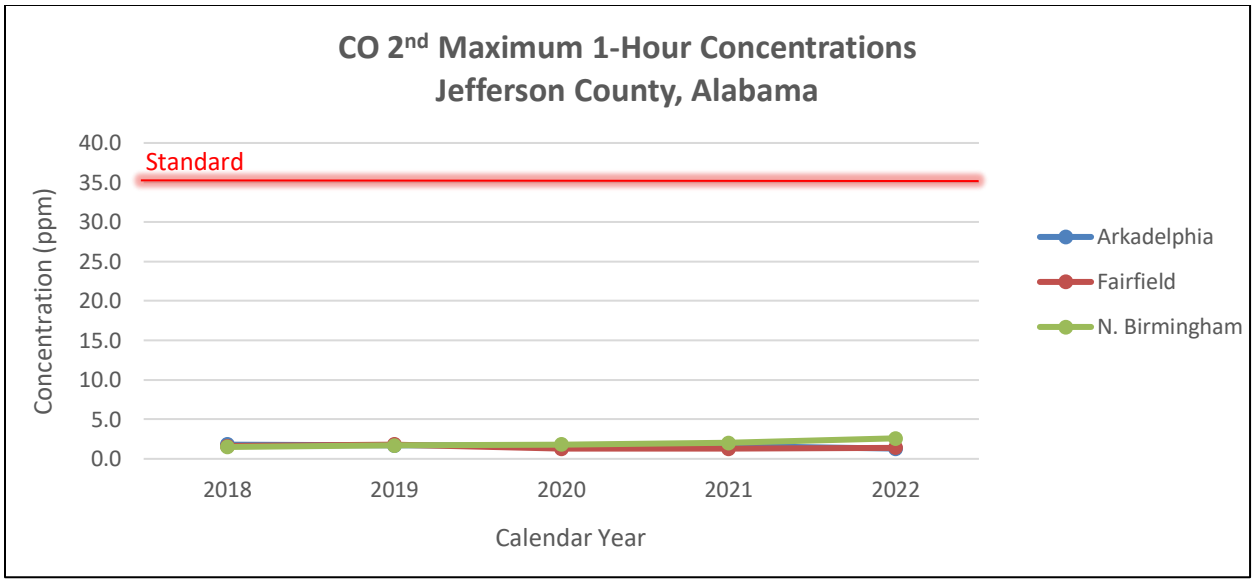


Figure 5: CO 2nd maximum 1-hour average concentrations (in ppm). The highlighted red line indicates the NAAQS, which is 35 ppm.

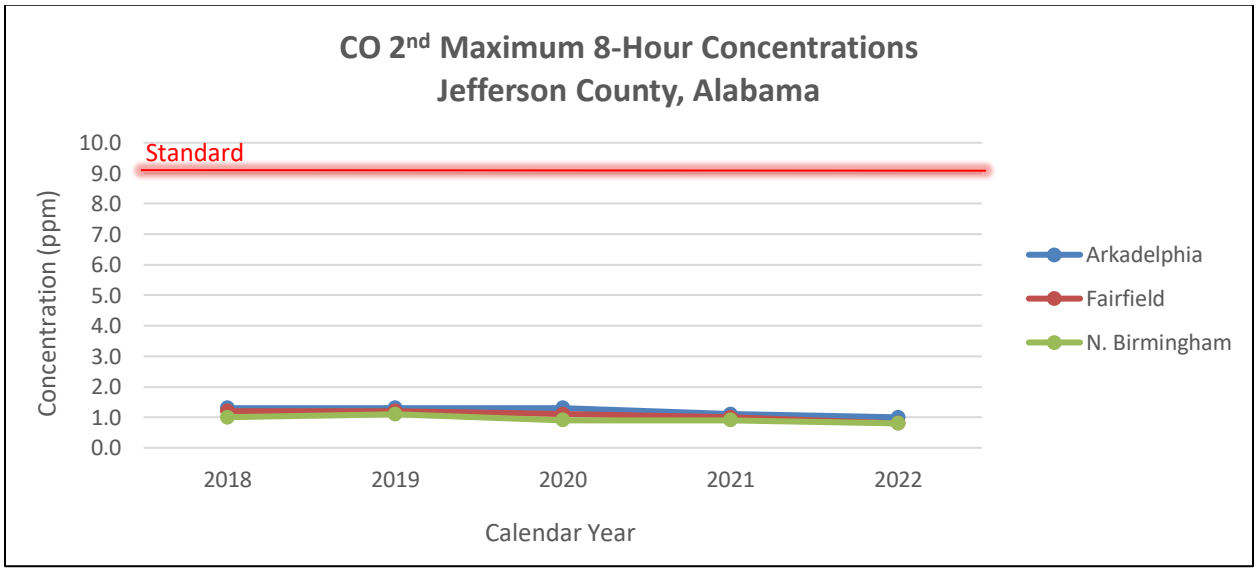


Figure 6: CO 2nd maximum 8-hour average concentrations (in ppm). The highlighted red line indicates the NAAQS, which is 9 ppm.

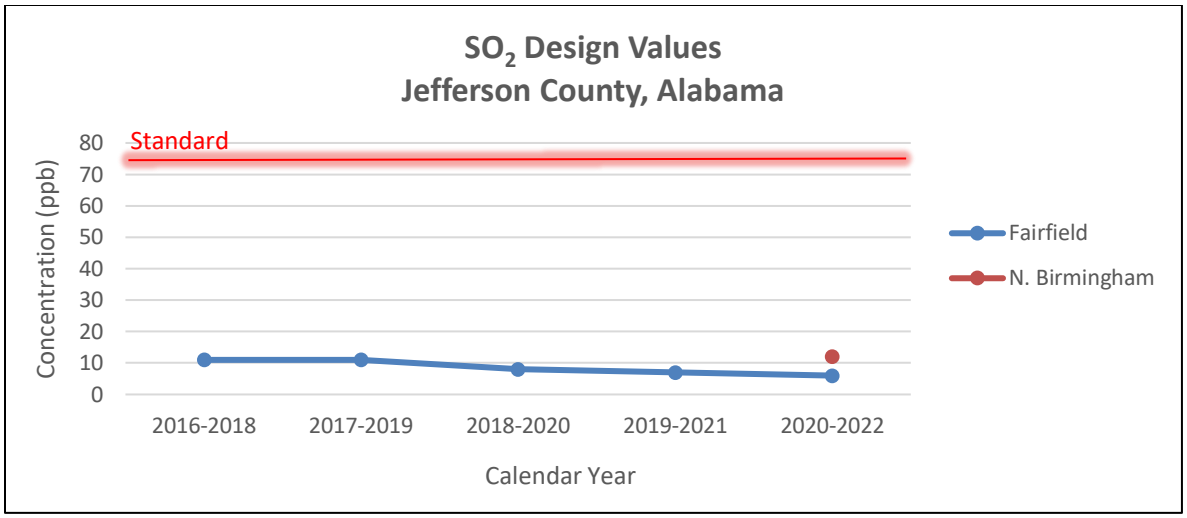


Figure 7: 1-hour SO_2 design values (in ppb). The highlighted red line indicates the NAAQS, which is 75 ppb.

3. **Leeds** (01-073-1010) – JCDH operates one O_3 monitor, one continuous FEM PM_{10} 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 O_3 is approximately 4.6 meters above ground level, the continuous PM_{10} 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 O_3 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 O_3 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 O_3 monitor, one SO_2 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 PM_{10} 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 SO_2 sample inlets are approximately 4.3 meters above ground level. The O_3 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 PM_{10} 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 PM_{10} 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 PM_{10} data at the Shuttlesworth site decreased between 2021 and 2022 (Table 1) and is no longer the highest concentration site in Jefferson County for PM_{10} (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 SO_2. JCDH is committed to monitoring for $PM_{2.5}$ and PM_{10} 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				
	1st Max	2nd Max	3rd Max	4th Max
2021	136	104	88	86
2022	74	58	52	51

Table 1: Highest 24-hour average PM_{10} concentrations (in $\mu g/m^3$) at the Shuttlesworth monitoring site before (2021) and after (2022) the Bluestone Coke shutdown.

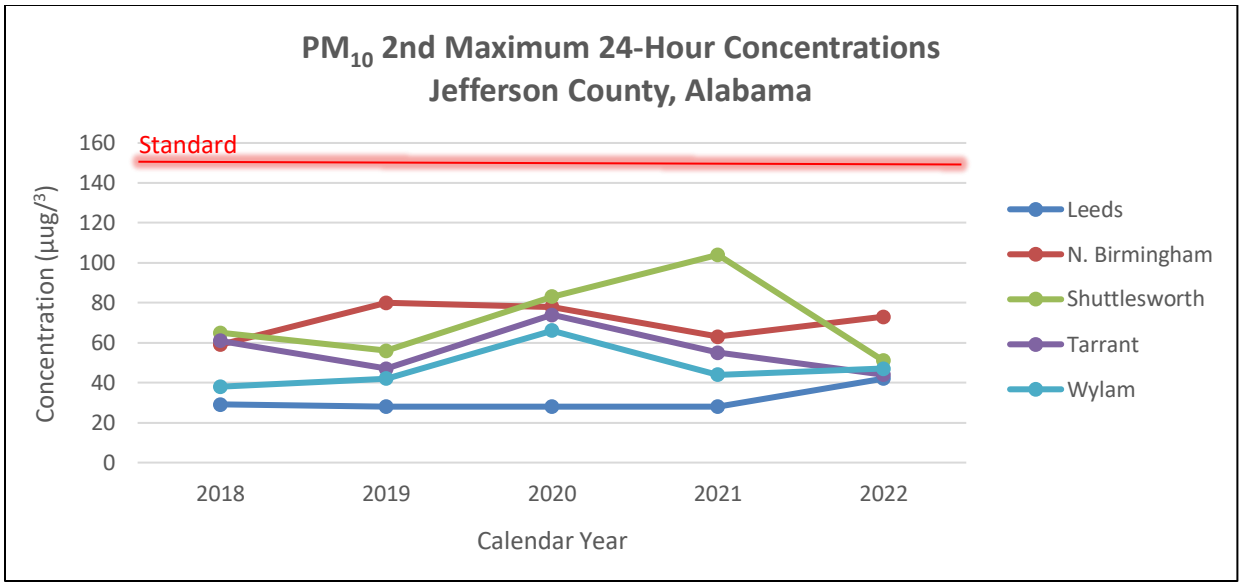


Figure 8: PM_{10} 2nd maximum 24-hour concentrations (in µg/m^3). The highlighted red line indicates the NAAQS, which is 150 µg/m^3.

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

8. **Tarrant** (01-073-6002) – JCDH operates one O_3 monitor and one continuous FEM PM_{10} monitor at this site. JCDH will add one manual FRM $PM_{2.5}$ monitor and one continuous FEM $PM_{2.5}$ monitor to this this site. No other changes are proposed for this site at this time.

- **Site Approval Status:** The O_3 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 PM_{10} 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 O_3 monitor, one SO_2 monitor, and one CO monitor) to this site. More information on this proposed changed 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

Corner

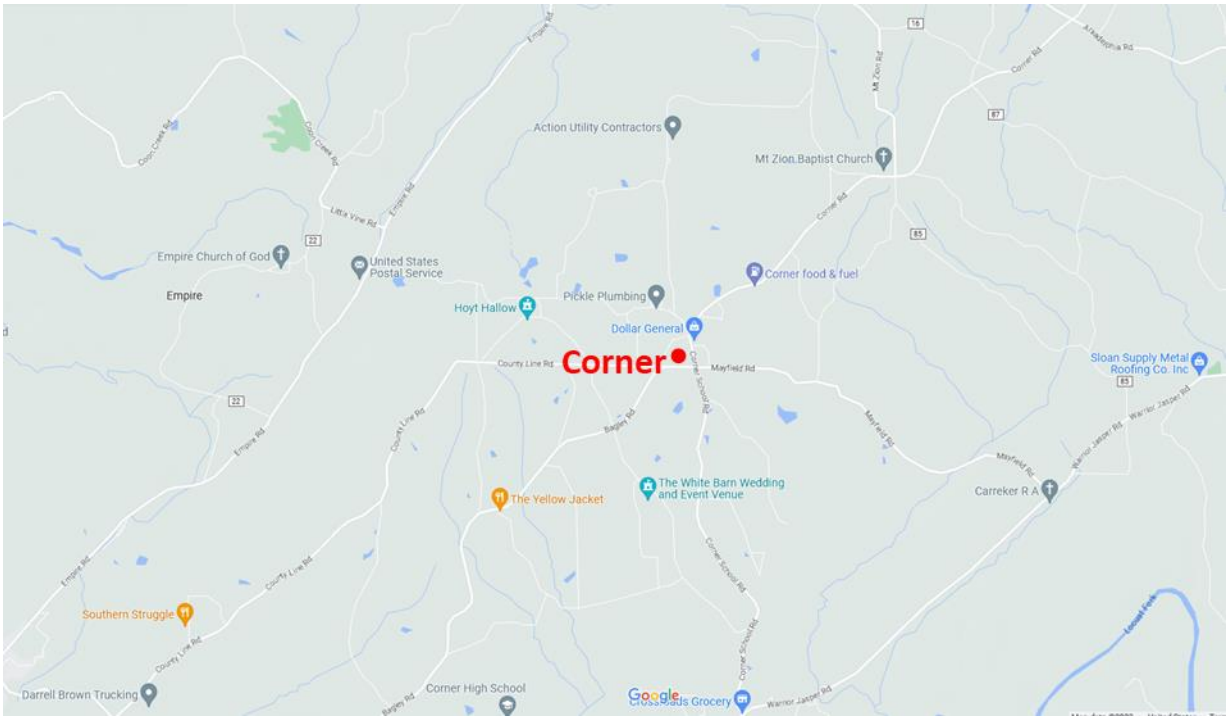
Site ID: 01-073-5003

North

South

East

West


Action Utility Contractors
Mt Zion Baptist Church
Empire Church of God
United States Postal Service
Empire
Corner food & fuel
Pickle Plumbing
Hoyt Hallow
Dollar General
Corner
Sloan Supply Metal Roofing Co. Inc
The White Barn Wedding and Event Venue
The Yellow Jacket
Carreker R A
Southern Struggle
Darrell Brown Trucking
Corner High School
Corner Schools Grocery
Google


Corner
County Line Rd
Bagley Rd
Mayfield Rd
Google Earth

Fairfield

Site ID: 01-073-1003

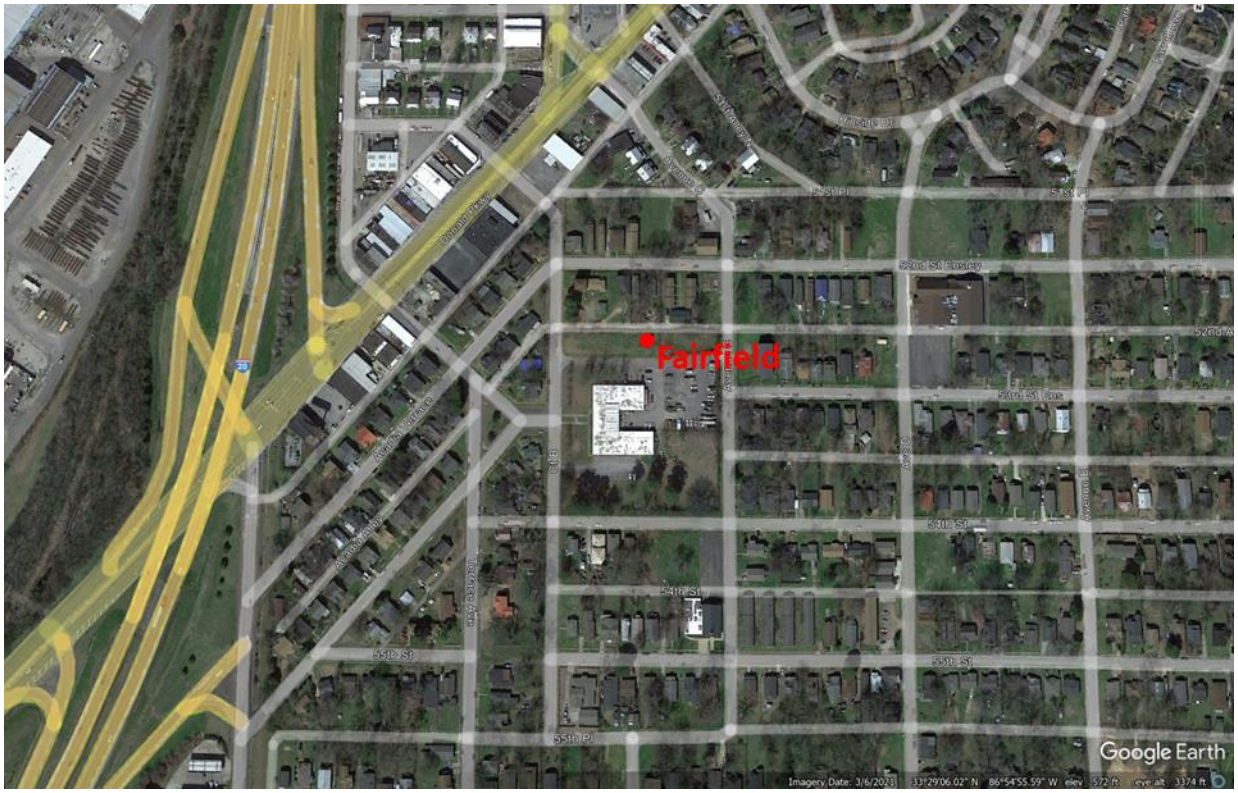
North

South

East

West


Maytown
Minor
Edgewater
McDonald Chapel
Sylvan Springs
FOP Range
Birmingham-Southern College
Birmingham Museum of Art
Birmingham
Birmingham CrossPlex
Pleasant Grove
Westfield
Fairfield
The Home Depot
Fairfield
Vulcan Park and
Mi'Pueblo Greensprings
Homewood
Concord
Midfield
Hueytown
Red Mountain Park
Lowe's Home Improvement
Vestavia Hills
Brighton
Lipscomb
RideBHM
RTJ Golf Trail at Oxmoor Valley
Google


Fairfield
Google Earth

Leeds

Site ID: 01-073-1010

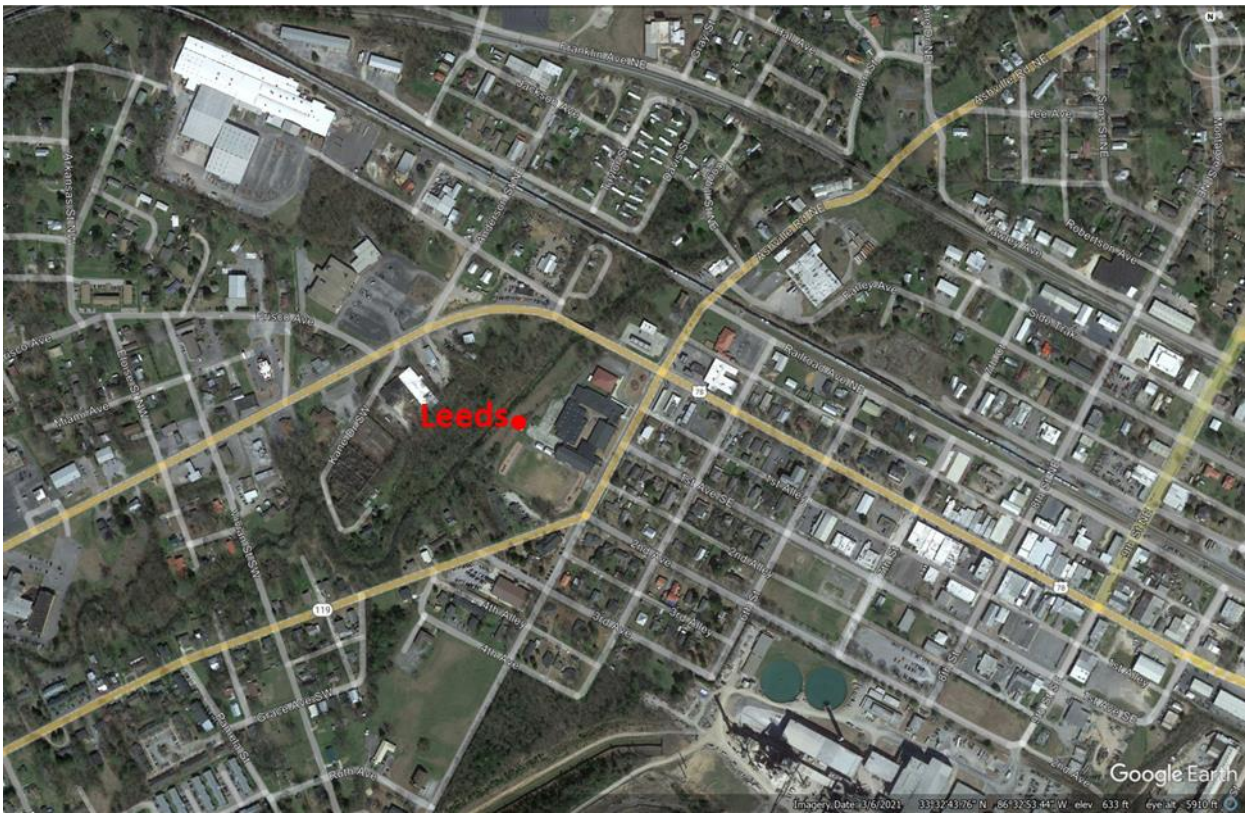
North

South

East

West


Trussville Country Club
WHITES CHAPEL
Moody
Alton
Publix Super Market at The Village at Moody
Leeds
Leeds
JEFFERSON PARK
Leeds Memorial Park
Barber Vintage Motorsports Museum
OVERTON
Vandiver Church of God


Leeds
Google Earth

McAdory

Site ID: 01-073-1005

North

South

East

West


McAdory
Middlebrooks GARAGE
Lowe's Home Improvement
Aux Home Services
Bessemer
Lipscomb
Shannon
Hoover
Alabama Adventure & Splash Adventure
Temporarily closed
Riverchase Galleria
Adger
Dogwood Grove Baptist Church
North Johns
Ebenezer Missionary Baptist
Old Blue Creek Church
McCalla
Hoover Metropolitan Complex
Bent Brook
Drummond Mining - Mr. Tom
Publix Super Market at Morgan Road Plaza
Helena
Pelham
Abernant
Lake View
Shiloh Missionary Baptist Church
Mc Calla
Tannehill Ironworks Historical State Park
Mareno Construction
Cahaba River WMA Shooting Range
Alabaster
Google


McAdory
McAdory School Rd
Google Earth

NCore

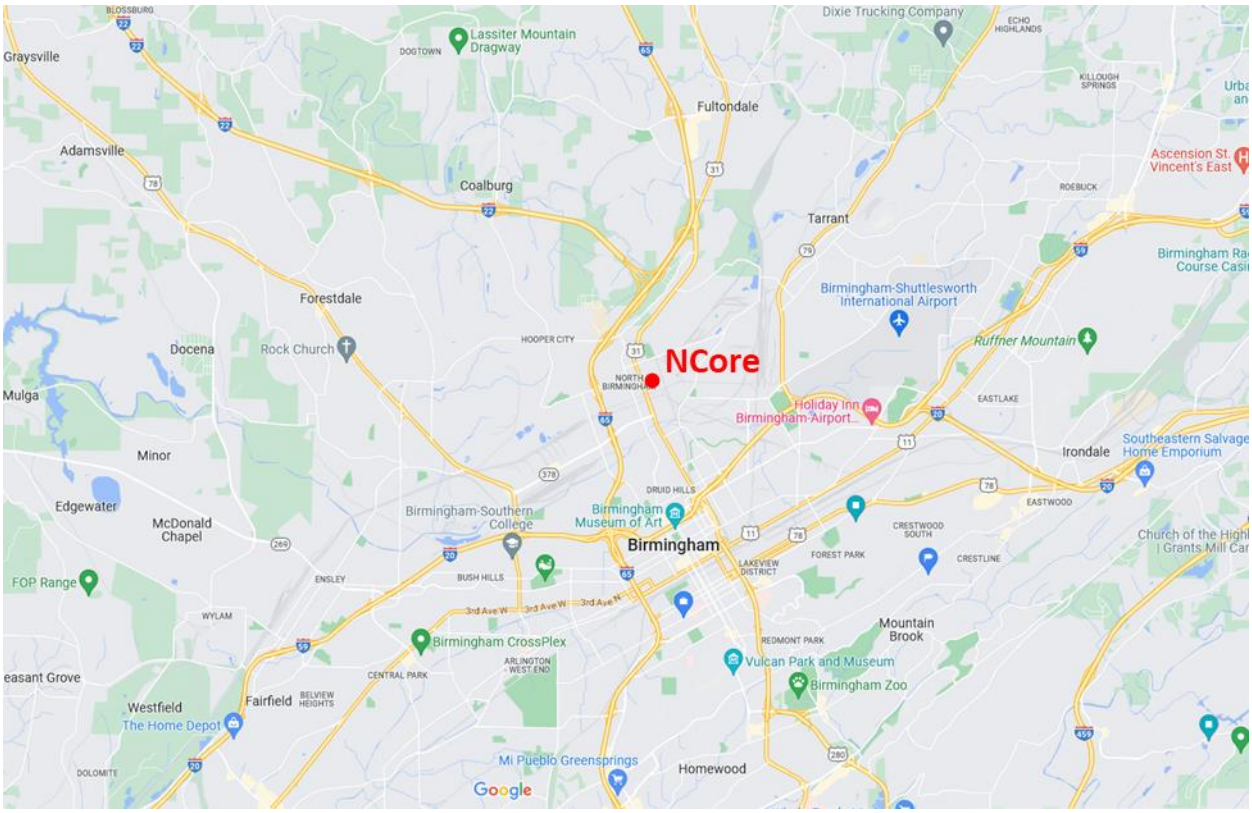
Site ID: 01-073-0023

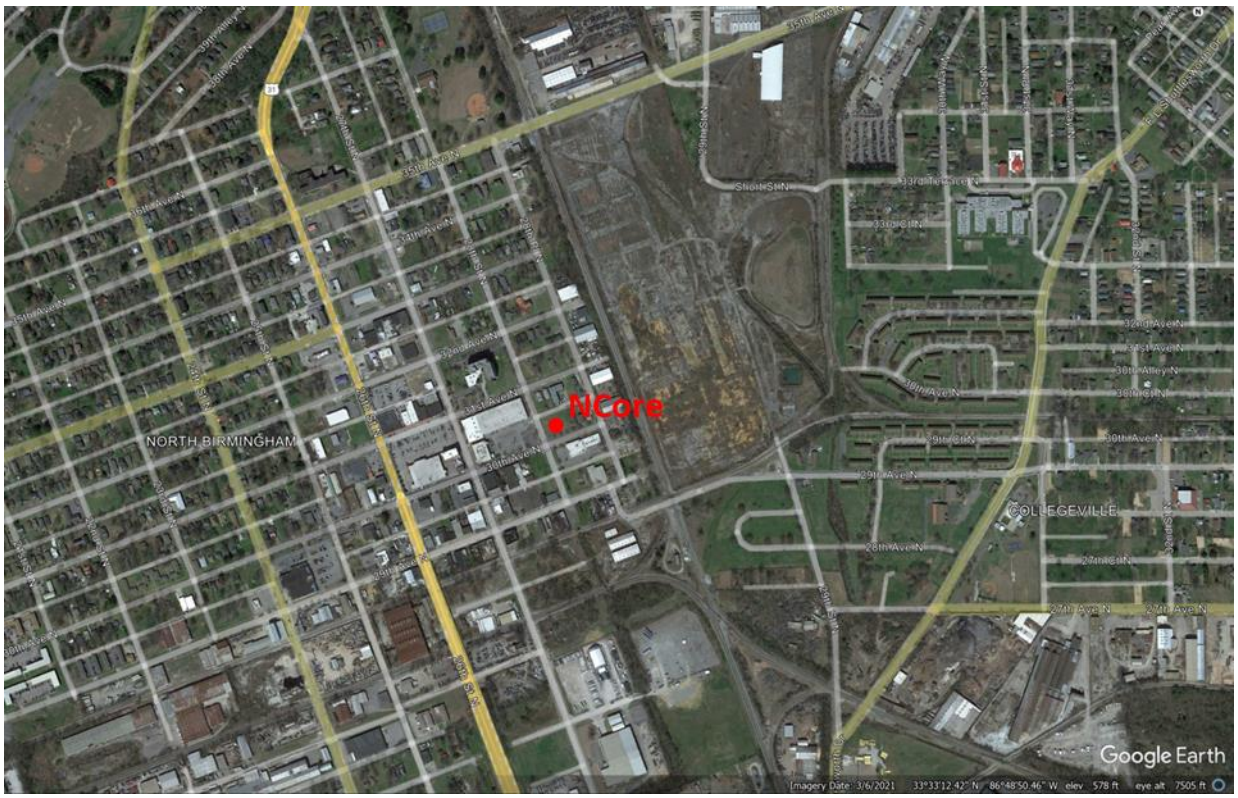
North

South

East

West


NCore
Graysville
Adamsville
Coalburg
Fultondale
Dixie Trucking Company
Lassiter Mountain Dragway
Ascension St. Vincent's East
Tarrant
Birmingham-Shuttlesworth International Airport
Forestdale
Docena
Rock Church
Mulga
Minor
Edgewater
McDonald Chapel
Ruffner Mountain
Holiday Inn Birmingham-Airport
Irondale
Southeastern Salvage Home Emporium
Birmingham-Southern College
Birmingham Museum of Art
Birmingham
Church of the Highl
Grants Mill Car
FOP Range
Birmingham CrossPlex
Mountain Brook
Vulcan Park and Museum
Birmingham Zoo
Westfield
The Home Depot
Fairfield
Mi Pueblo Greensprings
Homewood
Google


NCore
NORTH BIRMINGHAM
COLLEGEVILLE
Google Earth

Near Road

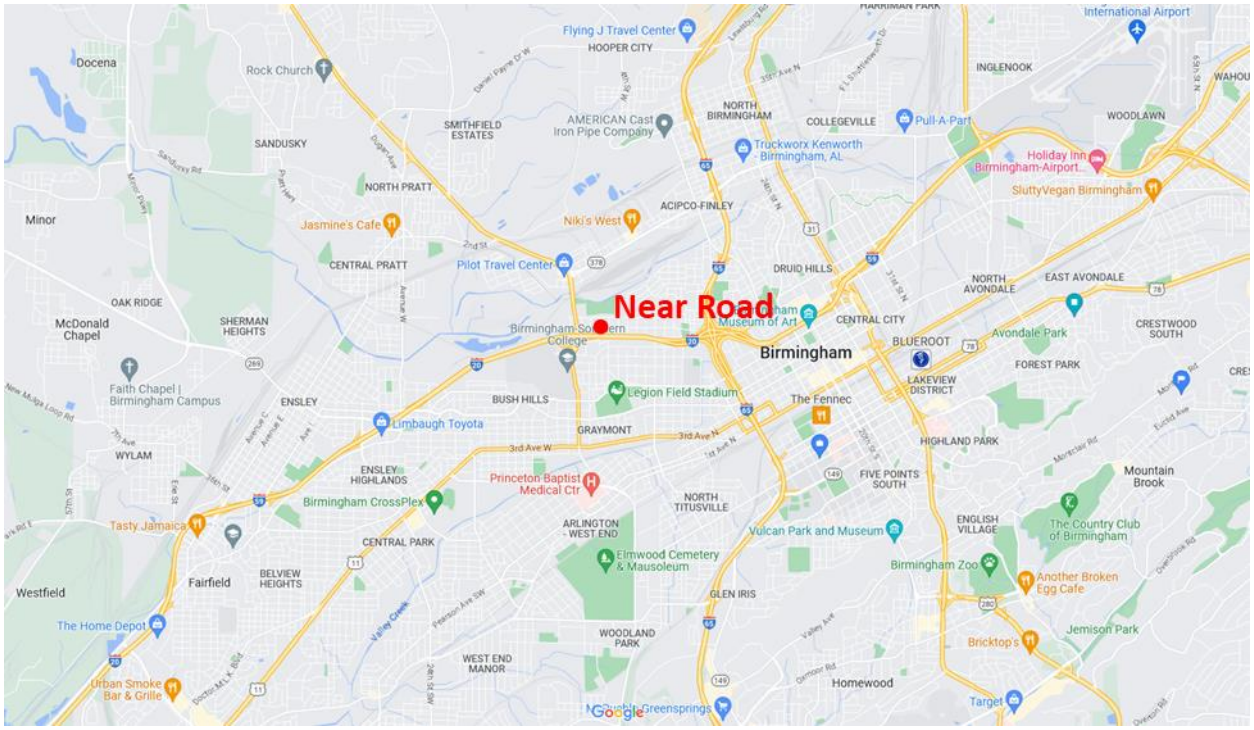
Site ID: 01-073-2059

North

South

East

West


Near Road
Birmingham
Docena
Rock Church
Flying J Travel Center
HOOPER CITY
International Airport
INGLENOOK
SMITHFIELD ESTATES
AMERICAN Cast Iron Pipe Company
NORTH BIRMINGHAM
COLLEGEVILLE
Pull-A-Part
WOODLAWN
SANDUSKY
Truckworx Kenworth - Birmingham, AL
Holiday Inn Birmingham-Airport...
SluttyVegan Birmingham
NORTH PRATT
Minor
Jasmine's Cafe
Niki's West
ACIPCO-FINLEY
CENTRAL PRATT
Pilot Travel Center
DRUID HILLS
NORTH AVONDALE
EAST AVONDALE
OAK RIDGE
McDonald Chapel
SHERMAN HEIGHTS
Birmingham Southern College
Museum of Art
CENTRAL CITY
Avondale Park
CRESTWOOD SOUTH
BLUEROOT
FOREST PARK
Faith Chapel | Birmingham Campus
ENSLEY
BUSH HILLS
Legion Field Stadium
LAKEVIEW DISTRICT
The Fennec
Limbaugh Toyota
GRAYMONT
WYLAM
HIGHLAND PARK
ENSLEY HIGHLANDS
Princeton Baptist Medical Ctr
FIVE POINTS SOUTH
Mountain Brook
Birmingham CrossPlex
NORTH TITUSVILLE
Tasty Jamaica
ARLINGTON - WEST END
Vulcan Park and Museum
ENGLISH VILLAGE
The Country Club of Birmingham
CENTRAL PARK
Elmwood Cemetery & Mausoleum
Birmingham Zoo
Another Broken Egg Cafe
Fairfield
BELVIEW HEIGHTS
Westfield
GLEN IRIS
The Home Depot
WOODLAND PARK
Jemison Park
Bricktop's
WEST END MANOR
Homewood
Urban Smoke Bar & Grille
Target
Google


Near Road
Google Earth

Shuttlesworth

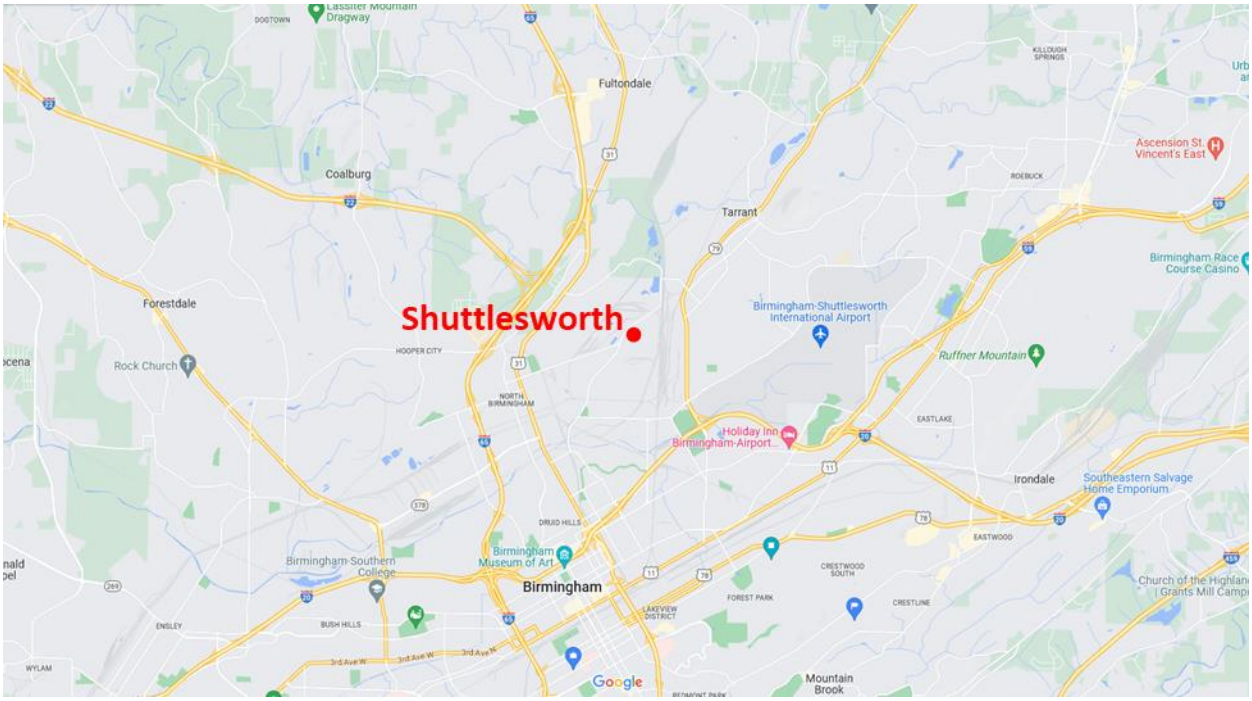
Site ID: 01-073-6004

North

South

East

West


Shuttlesworth
Fultondale
Coalburg
Tarrant
Forestdale
Rock Church
Birmingham-Shuttlesworth International Airport
Ruffner Mountain
Holiday Inn Birmingham-Airport...
Irondale
Southeastern Salvage Home Emporium
Birmingham Museum of Art
Birmingham
Birmingham-Southern College
Ascension St. Vincent's East
Birmingham Race Course Casino
Mountain Brook
Google


Shuttlesworth
41st Ave N
42nd Ave N
43rd Ave N
44th Ave N
45th Ave N
N 56th St
N 57th St
Google Earth

Tarrant

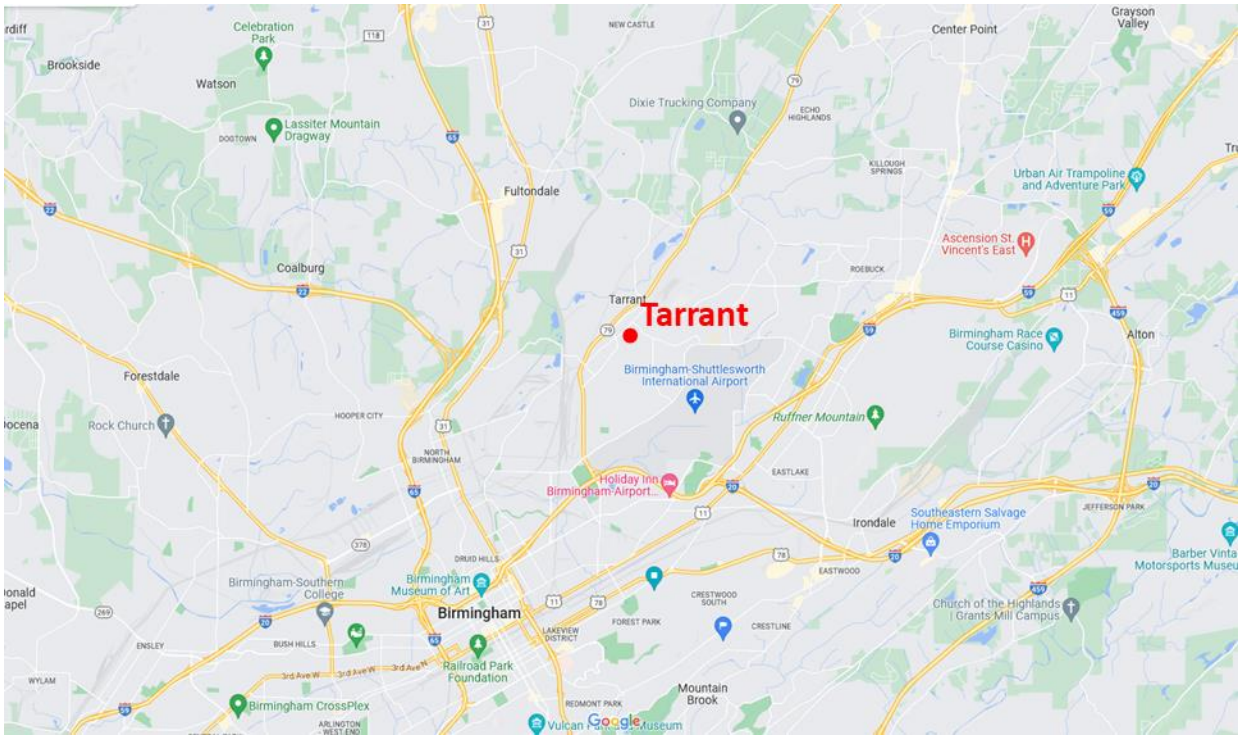
Site ID: 01-073-6002

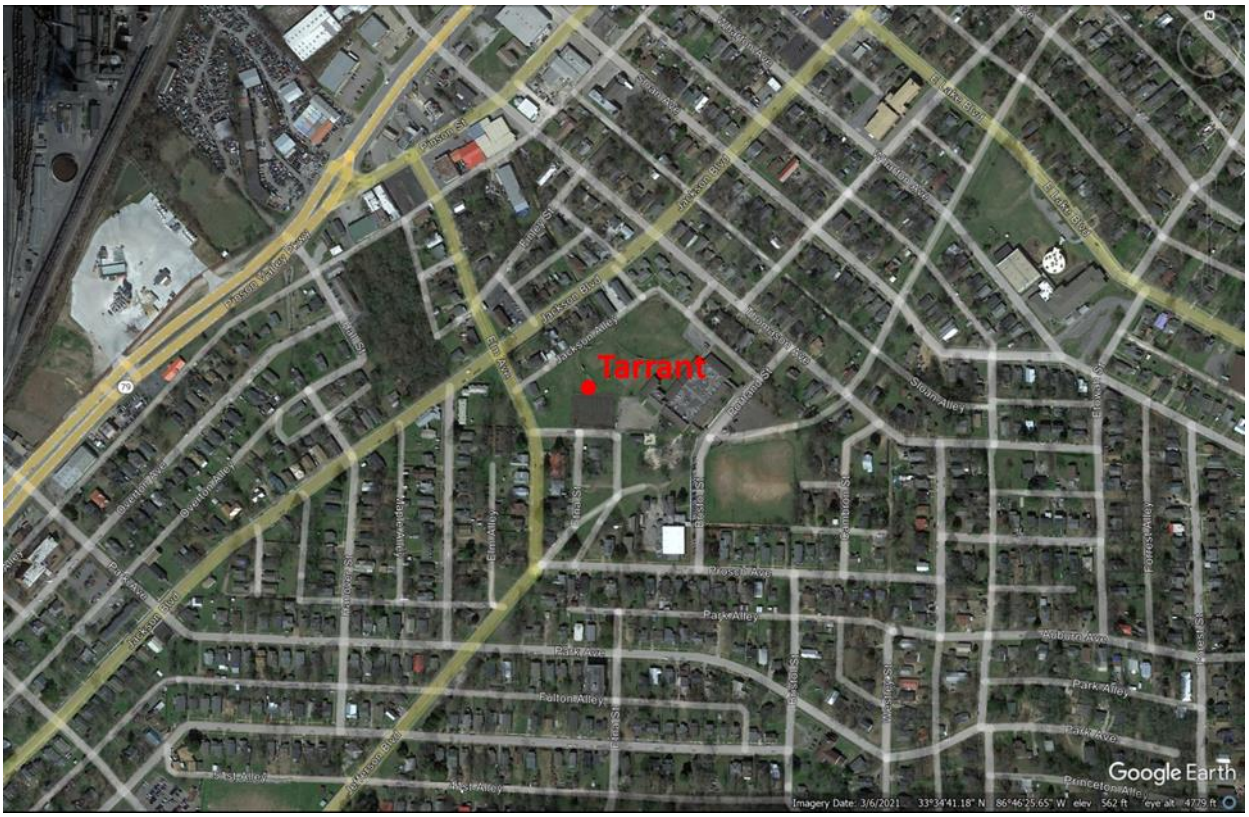
North

South

East

West


Tarrant
Celebration Park
Brookside
Watson
Lassiter Mountain Dragway
Dixie Trucking Company
Center Point
Grayson Valley
Fultondale
Urban Air Trampoline and Adventure Park
Ascension St Vincent's East
Coalburg
Tarrant
Birmingham Race Course Casino
Alton
Forestdale
Birmingham-Shuttlesworth International Airport
Rock Church
Ruffner Mountain
Holiday Inn Birmingham-Airport
Irondale
Southeastern Salvage Home Emporium
Birmingham-Southern College
Birmingham Museum of Art
Birmingham
Railroad Park Foundation
Church of the Highlands Grants Mill Campus
Birmingham CrossPlex
Mountain Brook
Google


Tarrant
Google Earth

Wylam

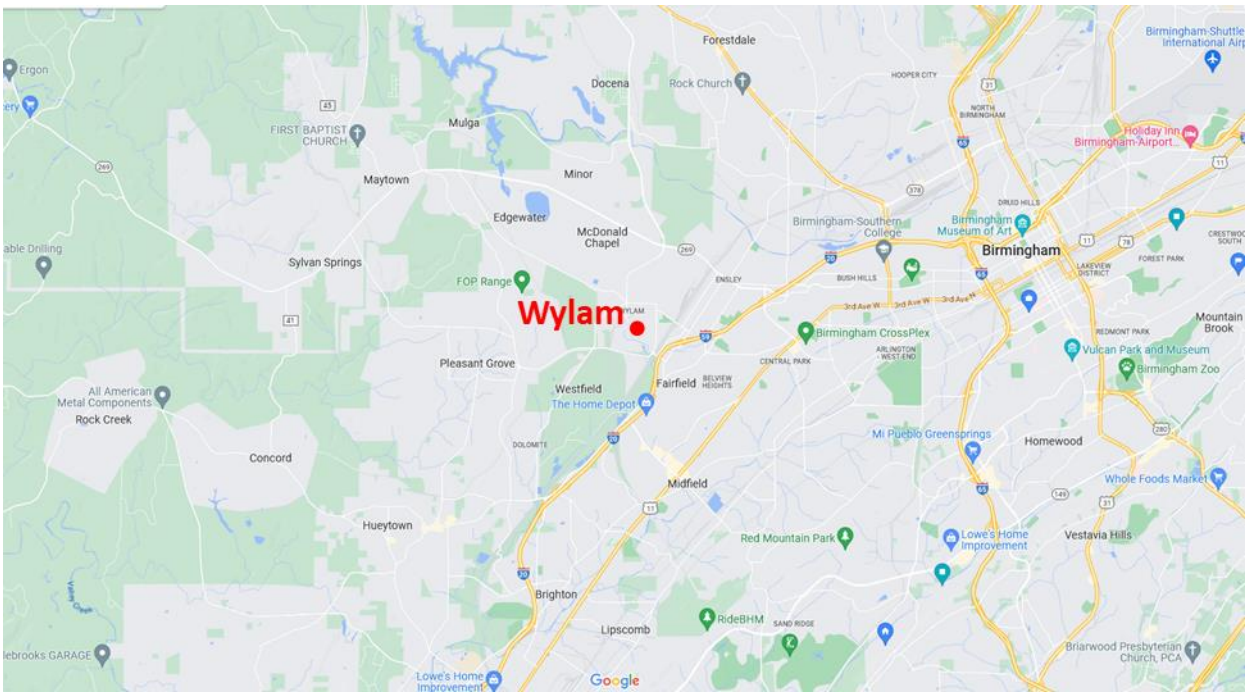
Site ID: 01-073-2003

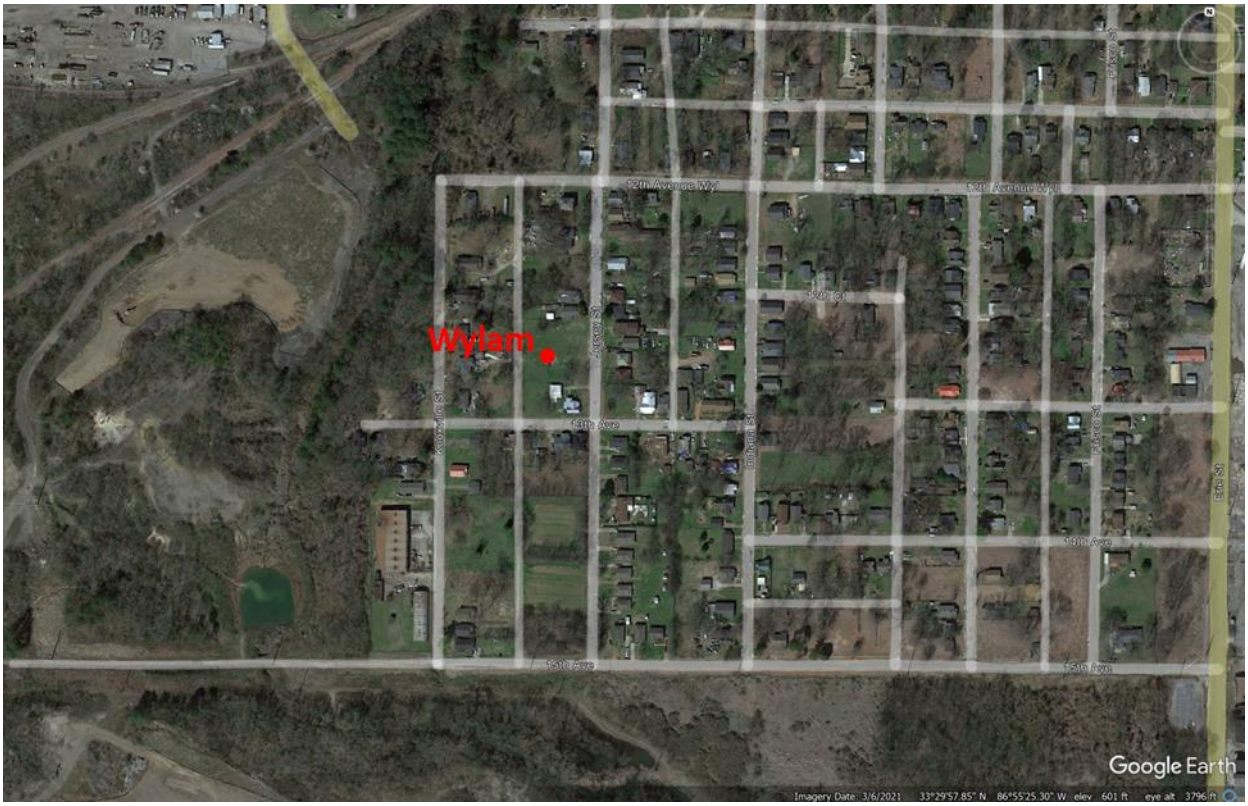
North

South

East

West


Wylam
Forestdale
Docena
Rock Church
Mulga
FIRST BAPTIST CHURCH
Maytown
Minor
Edgewater
McDonald Chapel
Sylvan Springs
FOP Range
Pleasant Grove
Westfield
The Home Depot
Fairfield
All American Metal Components
Rock Creek
Concord
Midfield
Hueytown
Red Mountain Park
Brighton
Lipscomb
RideBHM
Birmingham-Southern College
Birmingham Museum of Art
Birmingham
Birmingham CrossPlex
Vulcan Park and Museum
Birmingham Zoo
Mi Pueblo Greensprings
Homewood
Whole Foods Market
Lowe's Home Improvement
Vestavia Hills
Briarwood Presbyterian Church, PCA
Google


Wylam
Google Earth

Appendix B:
Inventory of Monitoring Equipment

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

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 POC	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)
Sites with $PM_{2.5}$ continuous FEMs that are collocated with FRMs:											
North Birmingham	**Birmingham**	**01-073-0023**	**3**	**T640x @16.67 LPM**	**12/07/2018**	**12/1/2022**	Winter = 1 Spring = 1 Summer = 1 Fall = 1 Total = 4	**1.09**	**1.54**	***No**	**.93**

*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:

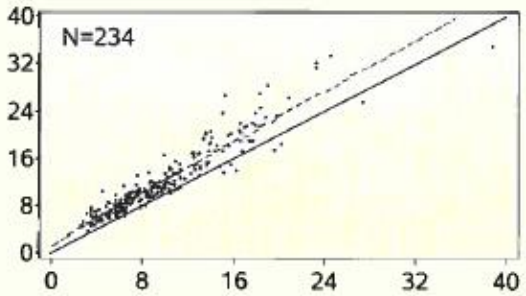
The following one-page assessments are locations where our agency has collocated $PM_{2.5}$ FRM and continuous FEM monitors. Each of these assessments is represented in the **"Table – Request for Exclusion of $PM_{2.5}$ Continuous FEM Data"** above.

$PM_{2.5}$ 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

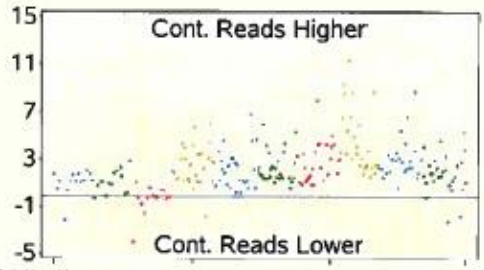
Cont. (y) vs. FRM (x) ($\mu g/m^3$)



y = 1.09x + 1.54
R = 0.94

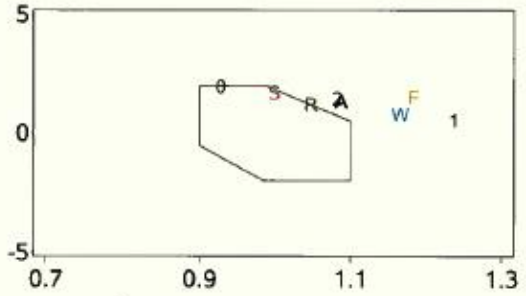
-- Reg line
— 1:1 line

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



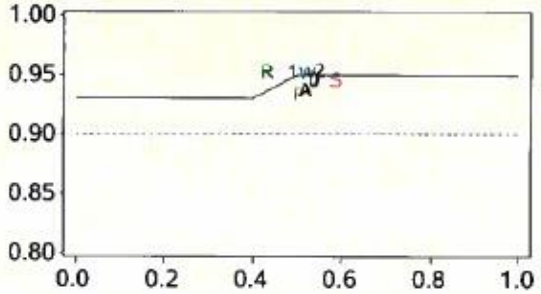
° Winter ° Spring ° Summer ° Fall

Additive (y) vs. Multiplicative (x) Bias



A=AllData, 0=2020, 1=2021, 2=2022
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 0=2020, 1=2021, 2=2022
W=Winter, R=Spring, S=Summer, F=Fall

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

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 >= 3 ug/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

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

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 Mayoni

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 PM25	BGI	PQ200	864
Manual PM2.5	BGI	PQ200	1513
Manual PM25	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

[Y/N] **Temperature Sensor** [Y/N] **Uninterruptable Power Supply** [Y/N] **On-Site Computer**

Zero Air System: Commercial System (Make / Model): NA

Cartridge System: [□**Silica Gel** [□Pink / □**Blue**] / □**Charcoal** / □**Purafil** / □Hopcalite / **Other:** _____]

[Y/N] **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 up**]

Strip Chart: [☑**Electronic** / □**Paper** / □**Both** / □**No Access**] [Y/N] **Operator Proficiency** [Y/N] **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

[Y/N] **Clean** [Y/N] **Heated** [Y/N] **Insulated** [Y/N] **Moisture** [Y/N] **Retractable** [Y/N] **Old / Unused Lines**

[Y/N] **Lo Flo Manifold -> [Y/N] 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? NA

SHELTER – Exterior □ **Not Present**

Type: [□**Freezer** / □**Wood Building** / □**Brick-Block** / **Other:** CAS]

[Y/N] **Needs Maintenance** (specify) [Y/N] **Tied Down** [Y/N] **Electrically Grounded** [Y/N] **Roof Railing**

3 of 4

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 **PM_{10} 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				

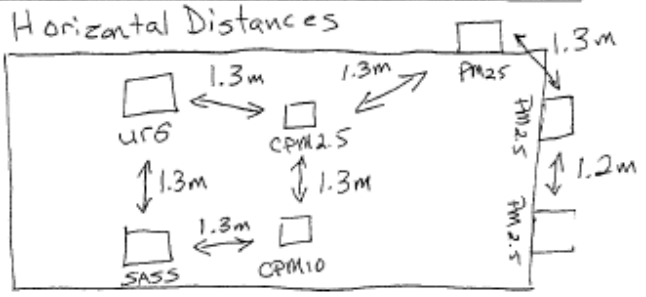
FOR Horizontal and Vertical Distances: Separation Distance = (1 meter for O_3, CO, SO_2, NO_2) & (2 meters for PM, Pb)
When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

Height of Roof: 2.7 meters **Roofing Material:** Aluminum

Issues: NONE

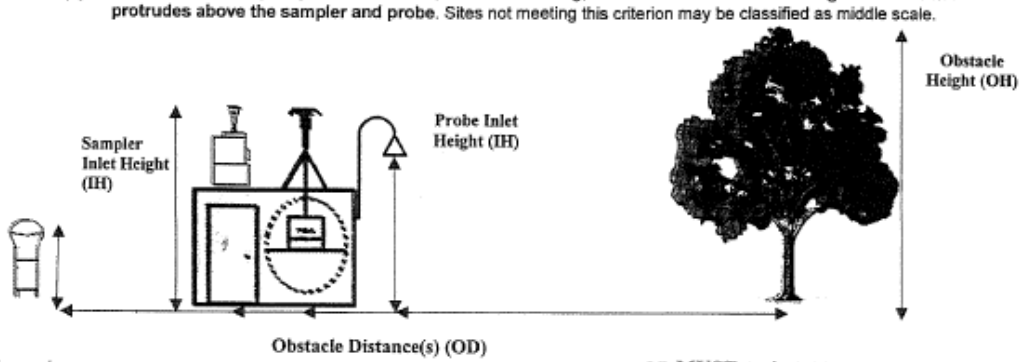
→ BBI Manual PM2.5 x3
Inlet Height - All - 4.9m

Horizontal Distances



3 of 4

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 ≥ [2*(OH-IH)]**

Obstacle(s)	Obstacle Height (OH)	Sampler/Probe Inlet Height (IH)	[2*(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

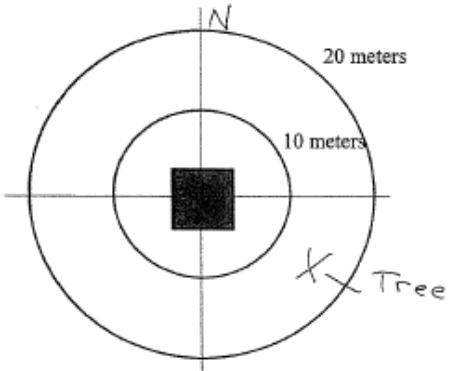
_____ inches = _____ **meters** (nearest inlet to dripline) ☐ Not Present

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

4 of 4