

What It Takes to Effectively Management an Air Quality Program

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September 27, 2018

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WHY ARE WE HERE?

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Who We Are

~ Proudly Celebrating 110 Years of Environmental Stewardship ~

Founded in 1907, the Air & Waste Management Association (A&WMA) is a nonprofit, nonpartisan professional organization enhancing knowledge and expertise by providing a neutral forum for information exchange, professional development, networking opportunities, public education, and outreach to more than 5,000 environmental professionals in 65 countries. A&WMA promotes global environmental responsibility and increases the effectiveness of organizations to make critical decisions that benefit society.

The **Mission** of A&WMA is to assist in the professional development and critical environmental decision-making of our members to benefit society.

The **Core Purpose** of A&WMA is to improve environmental knowledge and decisions by providing a neutral forum for exchanging information.

With 34 Sections and 65 Chapters worldwide, the Association also serves members at a local level. A&WMA's Sections and Chapters are local member units that provide members with environmental leadership, region-specific programming, and networking opportunities close to home.

A&WMA has two monthly publications, *The Journal of the Air & Waste Management Association*, one of the oldest continuously published, peer-reviewed, technical environmental journals in the world, and *EM*, the magazine for environmental managers. These publications help members meet their professional goals by providing timely and reliable environmental information.

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The **Mission** of A&WMA is to assist in the professional development and critical environmental decision-making of our members to benefit society.

The **Core Purpose** of A&WMA is to improve environmental knowledge and decisions by providing a neutral forum for exchanging information.

Industry - to Make a Product

Regulators – to Make Sure that While Industry
Makes a Product that Air Quality Is Not
Significantly Impacted or Impairs

*Common Goal – Industry and Regulators Must
Work Together to Promote a Viable Economy While,
at the same time, Ensuring that Air Quality Is Not
Adversely Impacted*

*This is How Things Look When Industry
Operated Unabated*





This is How Things Look When Industry and Regulators Work Together



Air Quality Improves as America Grows

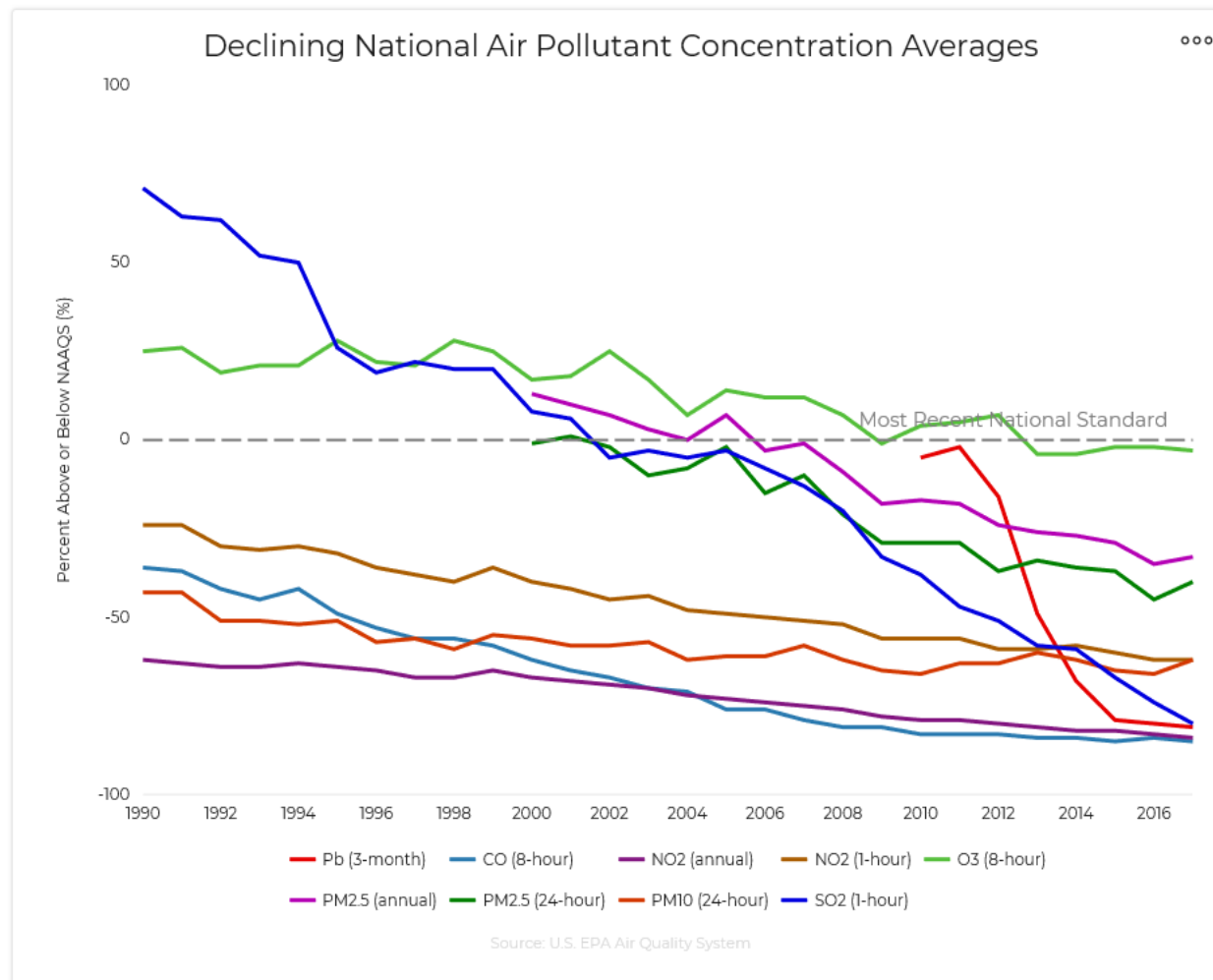
Nationally, concentrations of air pollutants have dropped significantly since 1990:

- Carbon Monoxide (CO) 8-Hour, ↓ 77%
- Lead (Pb) 3-Month Average, ↓ 80%
- Nitrogen Dioxide (NO₂) Annual, ↓ 56%
- Nitrogen Dioxide (NO₂) 1-Hour, ↓ 50%
- Ozone (O₃) 8-Hour, ↓ 22%
- Particulate Matter 10 microns (PM₁₀) 24-Hour, ↓ 34%
- Particulate Matter 2.5 microns (PM_{2.5}) Annual, ↓ 41%
- Particulate Matter 2.5 microns (PM_{2.5}) 24-Hour, ↓ 40%
- Sulfur Dioxide (SO₂) 1-Hour, ↓ 88%
- Numerous air toxics have declined with percentages varying by pollutant

During this same period, the U.S. economy continued to grow, Americans drove more miles and population and energy use increased.

TIP Click pollutant names in the chart legend to hide or include trend lines, and hover over any line to display percentages above or below the most recent standard. Click the emission trends button below to open a popup window.

EMISSION TRENDS



History of the Clean Air Act

Congress designed the Clean Air Act to combat a variety of air pollution problems, and to tackle emerging pollution threats.

EPA is the designated authority by Congress to carryout the mandates of the Clean Air Act

Role of State, Local, Tribal, and Federal Government

The Clean Air Act calls for state, local, tribal and federal governments to work in partnership to with the EPA to clean the air.

Role of State, Local, Tribal, and Federal Government

Pass through monies (i.e., grants) to state, local and tribal agencies to carry out EPA mandates in accordance with the legislative requirements of the CAA

Top (*initial*) priorities –

- implementation of controls and work-practices standards on culpable industrial facilities
- ambient air monitoring

Many state and local programs existed prior to the Clean Air Act and/or EPA because of looming health threats from Air Pollution





Must Typically Have Legal Authority

Jefferson County Department of Health Authority

Chapter 28 - ALABAMA AIR POLLUTION CONTROL ACT, Section 22-28-23 - Local air pollution control programs.

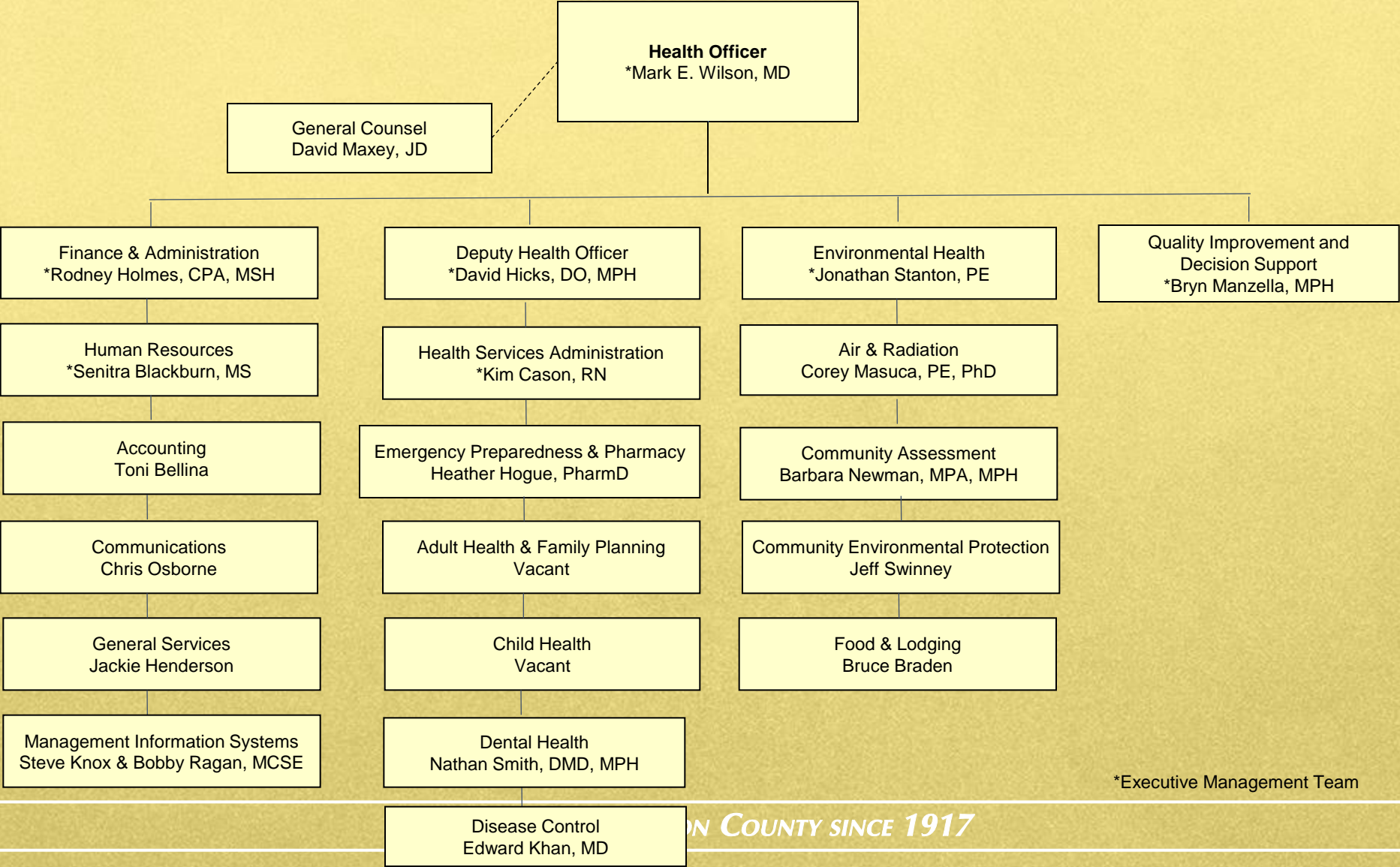
Jefferson County Department of Health Authority

Title V Operating Permit Program Approval – April 1995

Must Typically Have Goals

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		Primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead (Pb)		Primary and Secondary	Rolling 3 month average	0.15 µg/m³ ⁽¹⁾	Not to be exceeded
Nitrogen Dioxide (NO₂)		Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		Primary and Secondary	Annual	53 ppb ⁽²⁾	Annual mean
Ozone (O₃)		Primary and Secondary	8-hour	0.070 ppm ⁽³⁾	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution (PM)	PM _{2.5}	Primary	Annual	12.0 µg/m³	Annual mean, averaged over 3 years
		Secondary	Annual	15.0 µg/m³	Annual mean, averaged over 3 years
		Primary and Secondary	24-hour	35 µg/m³	98th percentile, averaged over 3 years
	PM ₁₀	Primary and Secondary	24-hour	150 µg/m³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO₂)		Primary	1-hour	75 ppb ⁽⁴⁾	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Jefferson County Department of Health



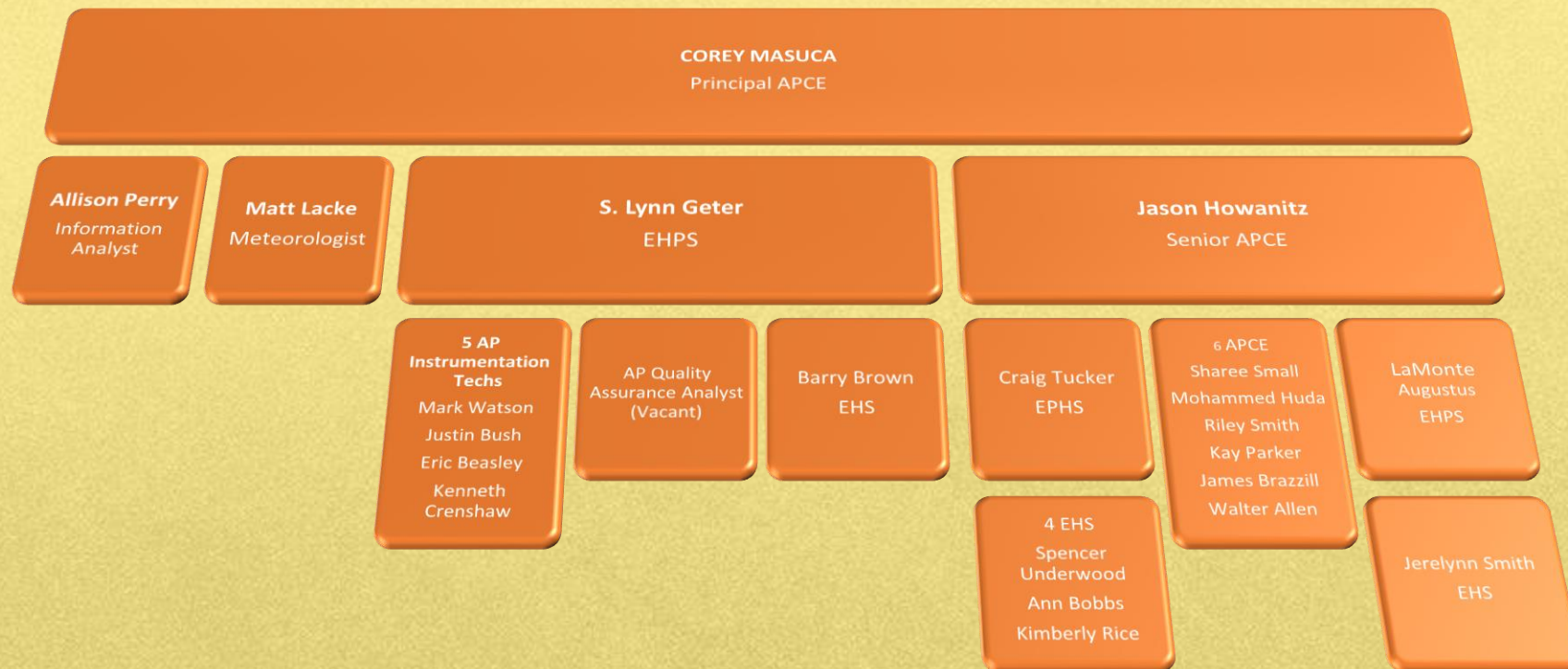
*Executive Management Team

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JEFFERSON COUNTY DEPARTMENT OF HEALTH

Environmental Health Services
Air and Radiation Protection Division
June 2017



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Two Big Things (Again)

- Control of Emissions from Multiple Sources
- Monitoring of Ambient Air Pollutant Concentrations

Control of Emissions from Multiple Sources

- Industrial Sources
 - Permitting
 - Inspection
 - Compliance
 - Enforcement
 - Database Reporting for
 - Emissions
 - Stack Tests
 - Compliance
 - FCE (and Inspection) Completion

Jefferson County, AL County-Wide Emission Trends/Reductions from Industrial Sources			
Pollutant	Year	Emissions (tpy)	Percentage Reduction (%)
NOx	1996	55,449	
	2017	12,906	76
TSP/PM	1996	11,554	
	2017	4,349	62
PM2.5	2002	4,771	
	2017	1,303	73
VOC	1996	8,254	
	2017	3,088	62
SO2	1996	90,955	
	2017	4,362	95
CO	1996	60,987	
	2017	9,597	84

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Control of Emissions from Multiple Sources

-Area Sources

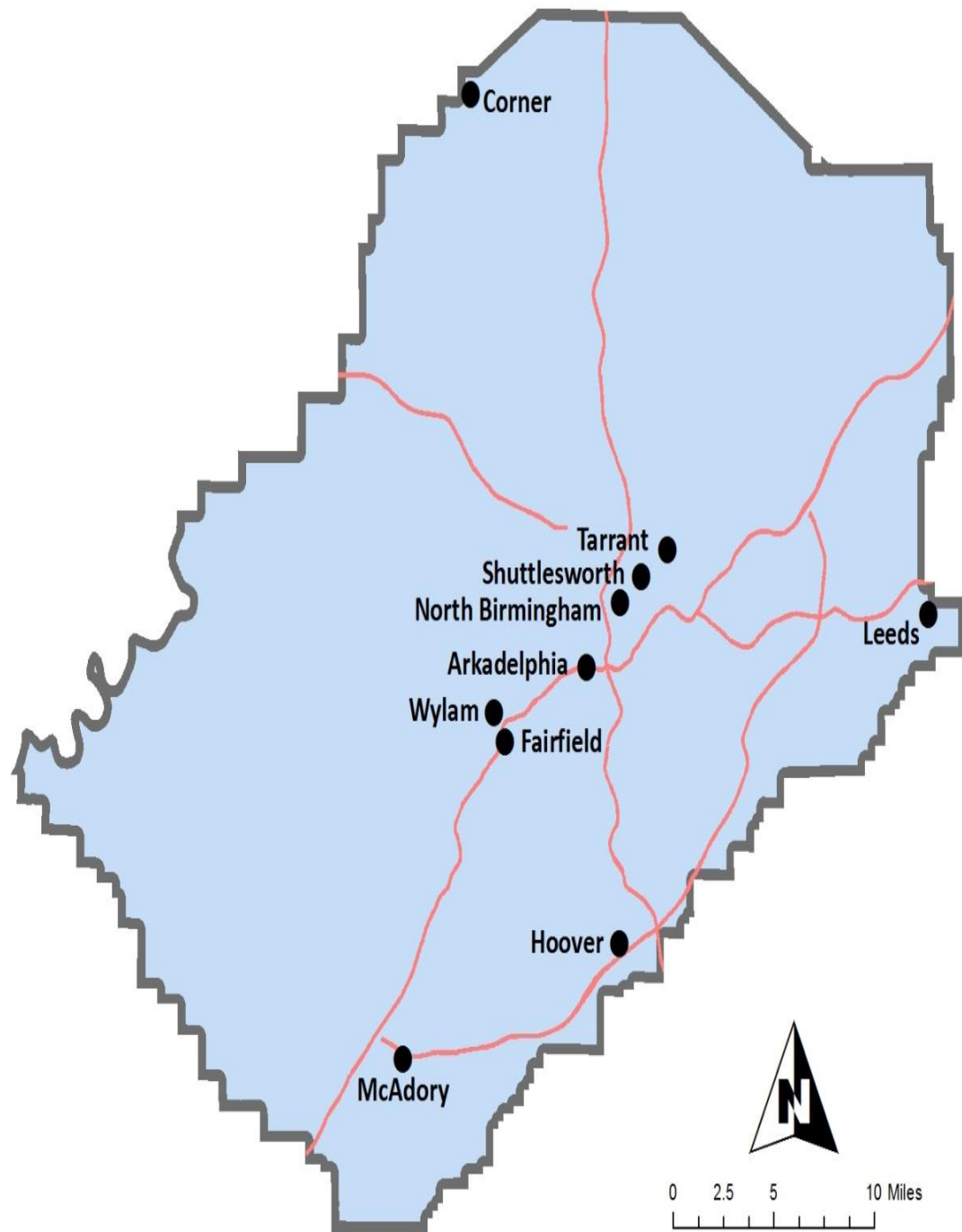
- Open Burning
- Asbestos Demolition
- Dry Cleaners
- Auto body Shops
- Gasoline Stations
- Gasoline Tanker Trucks

Monitoring of Ambient Air Pollutant Concentrations

- Equipment
 - Precision/Accuracy Checks; Drift/Span
 - Flow Checks
 - Calibration
 - Malfunctioning Equipment (Constant; Perpetual Machine)
 - Particulate Matter Sample Collections (PM-Manual; Gravimetric)
 - Building and Structure Integrity (Safety)

Monitoring of Ambient Air Pollutant Concentrations

- Data
 - Monitoring of Data Everyday for Spikes and Anomalies
 - QA/QC Processes for Data Accuracy and Completeness
 - Determination of Compliance with NAAQS and/or Special Air Toxics Studies
 - Database Entry and Reporting to EPA



Site Name	Site ID	CO	NO ₂	O ₃	PM _{2.5}	PM ₁₀	SO ₂
Arkadelphia	01-073-2059	●	●		●		
Corner	01-073-5003			●			
Fairfield	01-073-1003	●		●			●
Hoover	01-073-2006			●			
Leeds	01-073-1010			●	●	●	
McAdory	01-073-1005			●	●		
North Birmingham	01-073-0023	●	●	●	●	●	●
Shuttlesworth	01-073-6004	●				●	
Tarrant	01-073-6002			●		●	
Wylam	01-073-2003				●	●	



N. Birmingham



N. Birmingham

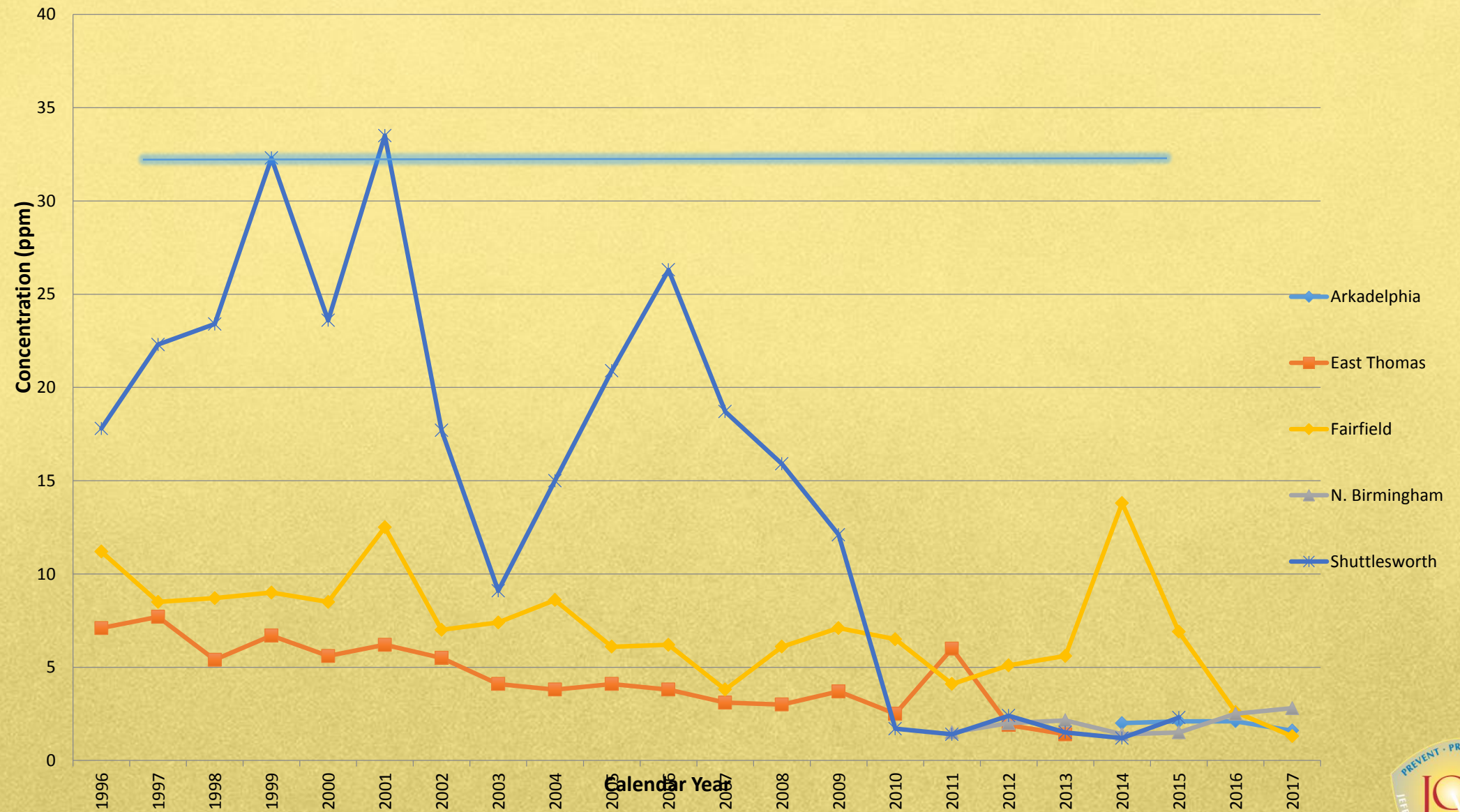
• McAdory



- Leeds



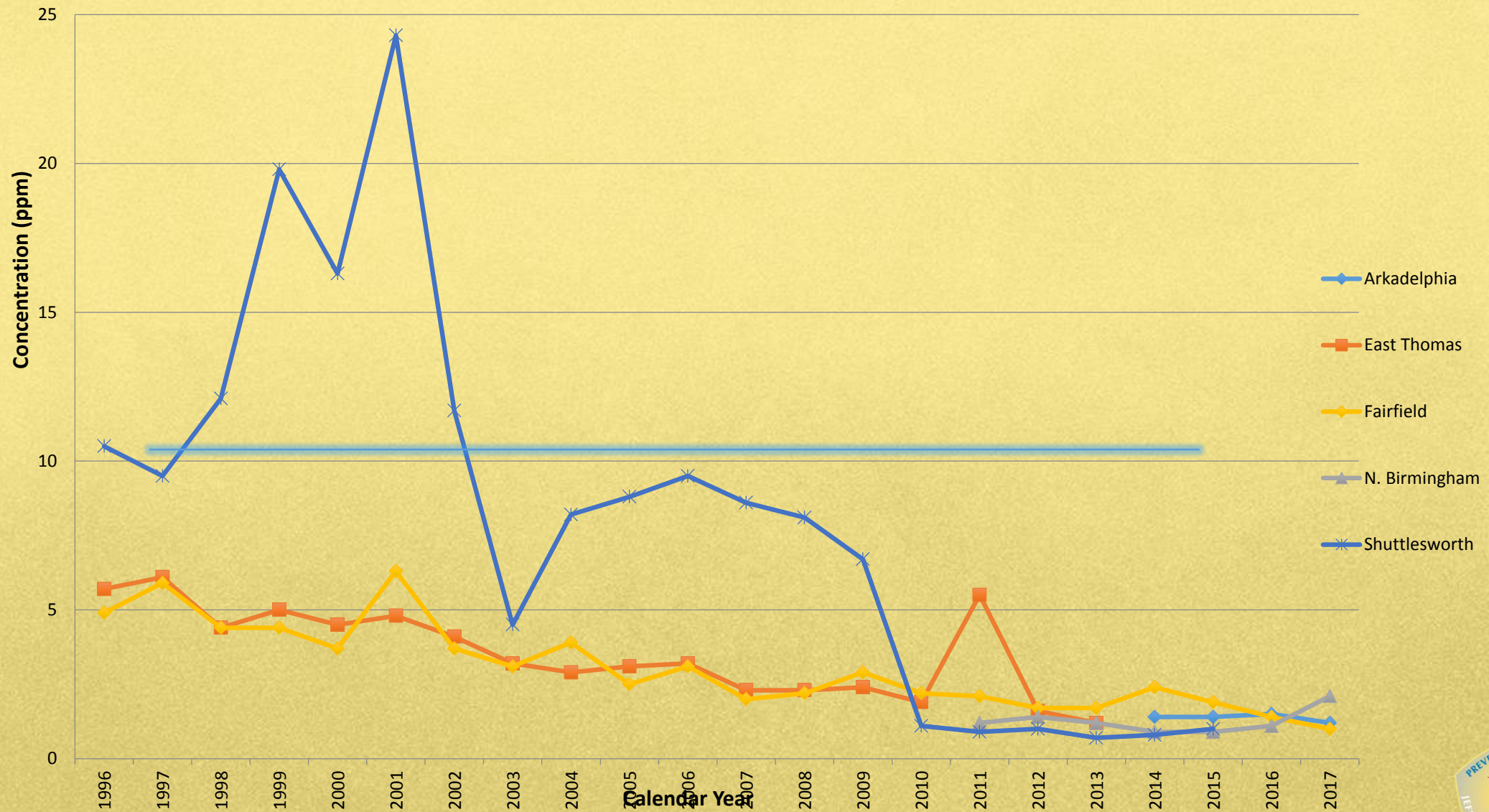
CO Second Maximum 1-Hour Concentrations



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CO Second Maximum 8-Hour Concentrations



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Table 4.2: Highest 1-Hour Average NO₂ Concentrations (in ppb), the 98th Percentile of 1-Hour Average NO₂ Concentrations (in ppb), and Annual Mean of 1-Hour NO₂ Concentrations (in ppb) for 2017.

Site Name	Site ID	1st Max	2nd Max	98th Percentile	Annual Mean
Arkadelphia*	01-073-2059	50.8	44.4	43.2	11
North Birmingham	01-073-0023	40.8	40.6	38.0	9

*Annual values for this year do not meet completeness criteria.

O₃ 8-Hour Design Values

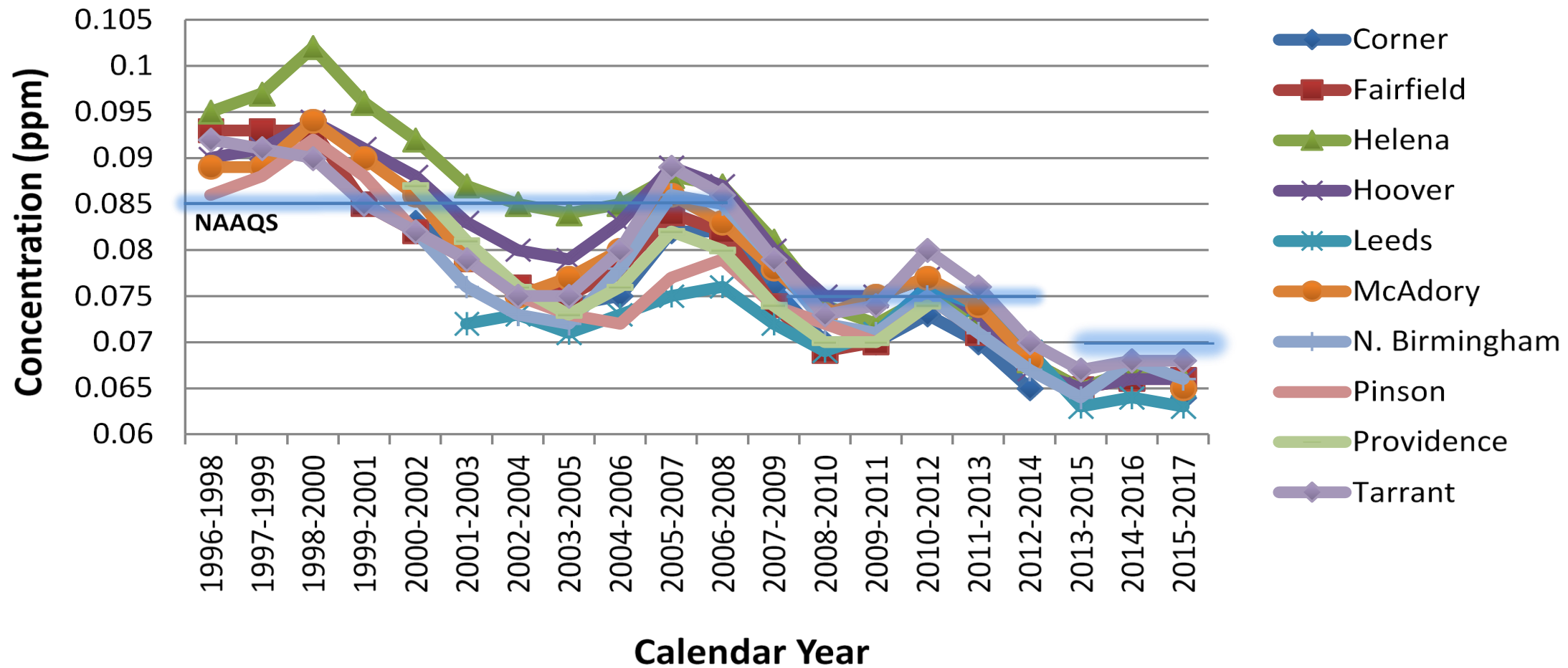


Figure 4.6: 8-hour ozone design values (in ppm) for 1996-2017. The highlighted blue line indicates the NAAQS, which is 0.070 ppm (previously set at 0.085 ppm, in which 0.084 ppm rounded to 0.080 ppm, and at 0.075 ppm).

PM_{2.5} Annual Design Values

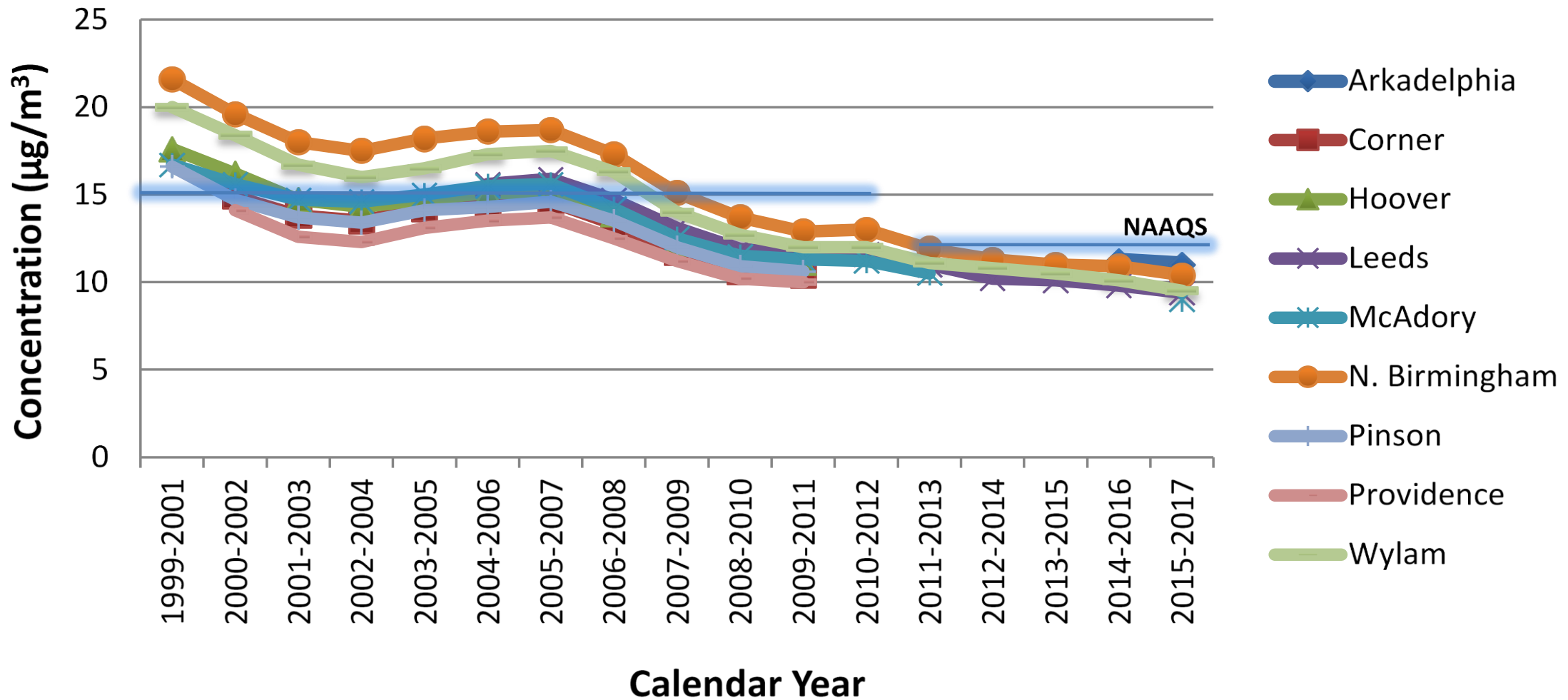


Figure 4.9: Annual PM_{2.5} design values (in $\mu\text{g}/\text{m}^3$) for 1999-2017. The highlighted blue line indicates the NAAQS, which is 12 $\mu\text{g}/\text{m}^3$ (previously set at 15 $\mu\text{g}/\text{m}^3$).

PM_{2.5} 24-Hour Design Values

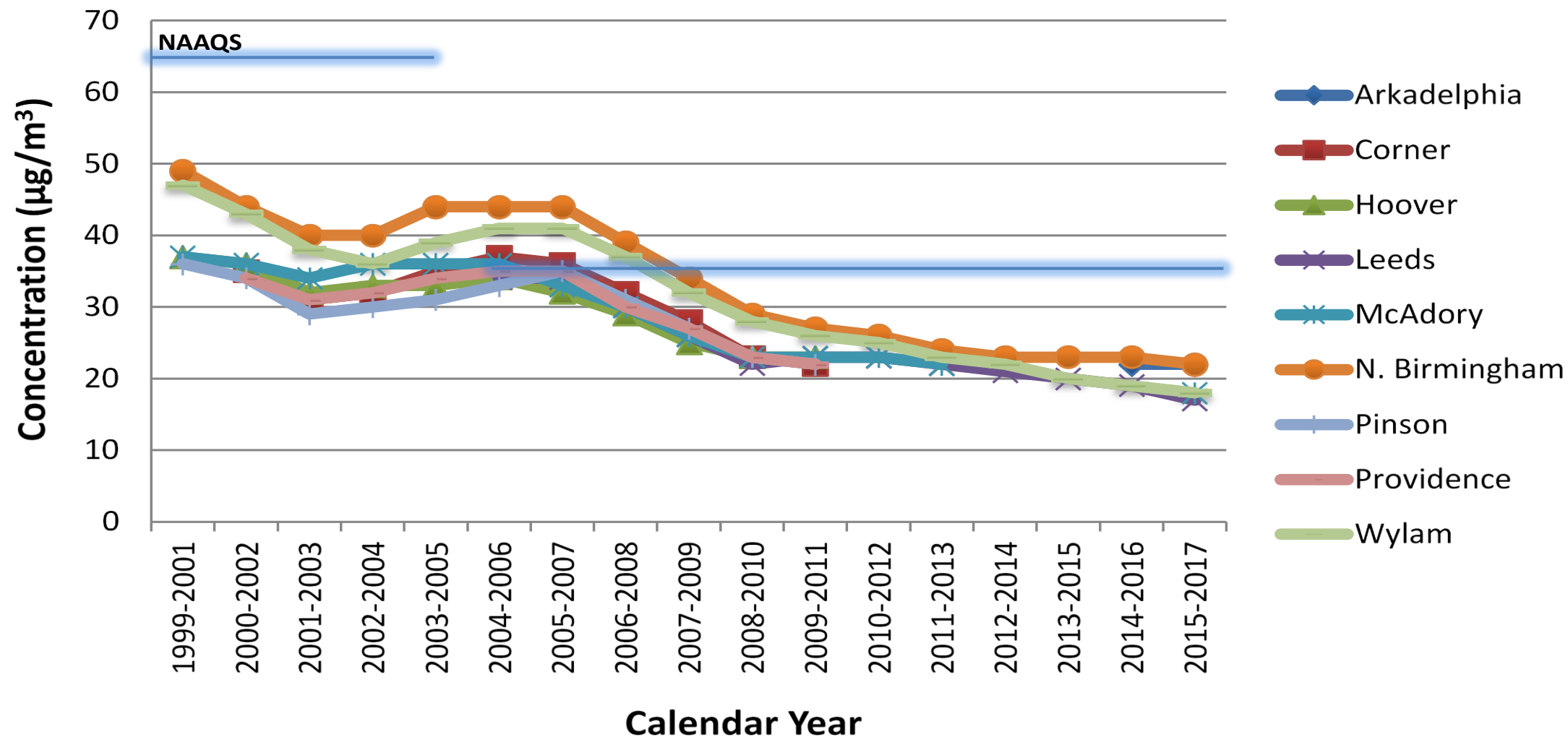


Figure 4.10: 24-hour PM_{2.5} design values (in µg/m³) for 1999-2017. The highlighted blue line indicates the NAAQS, which is 35 µg/m³ (previously set at 65 µg/m³).

PM₁₀ Second Maximum 24-Hour Concentrations

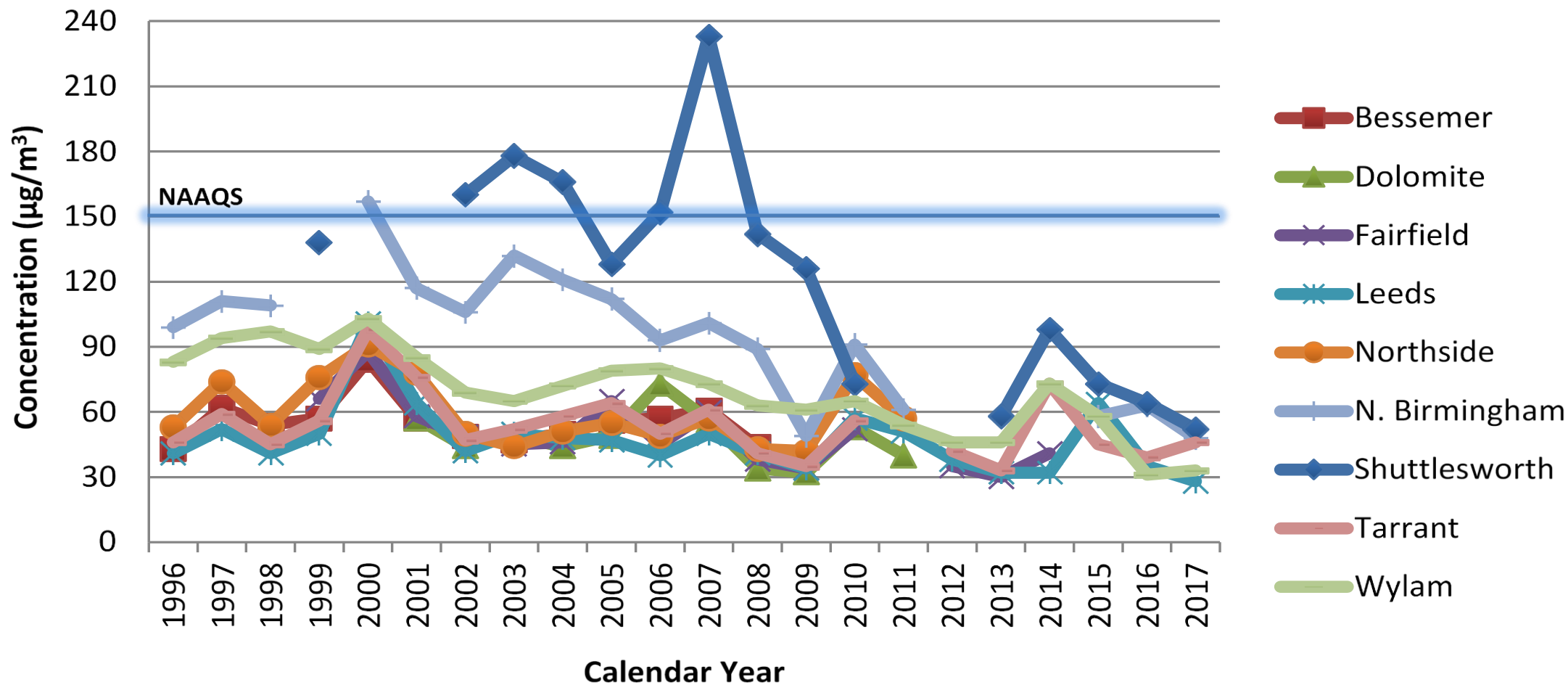


Figure 4.11: The second maximum 24-hour average concentrations of PM₁₀ for 1996-2017. The highlighted blue line indicates the NAAQS, which is 150 $\mu\text{g}/\text{m}^3$.

SO₂ 1-Hour Design Values

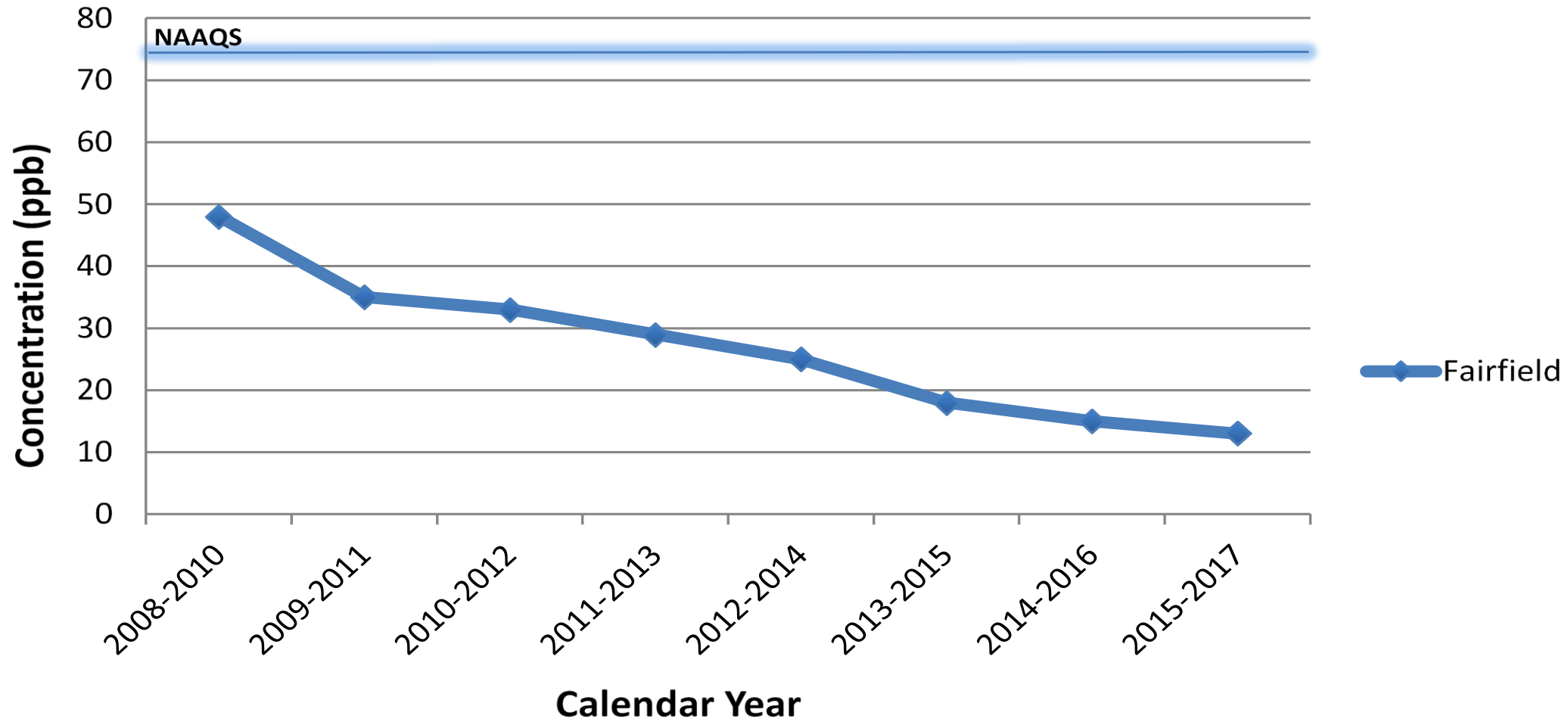
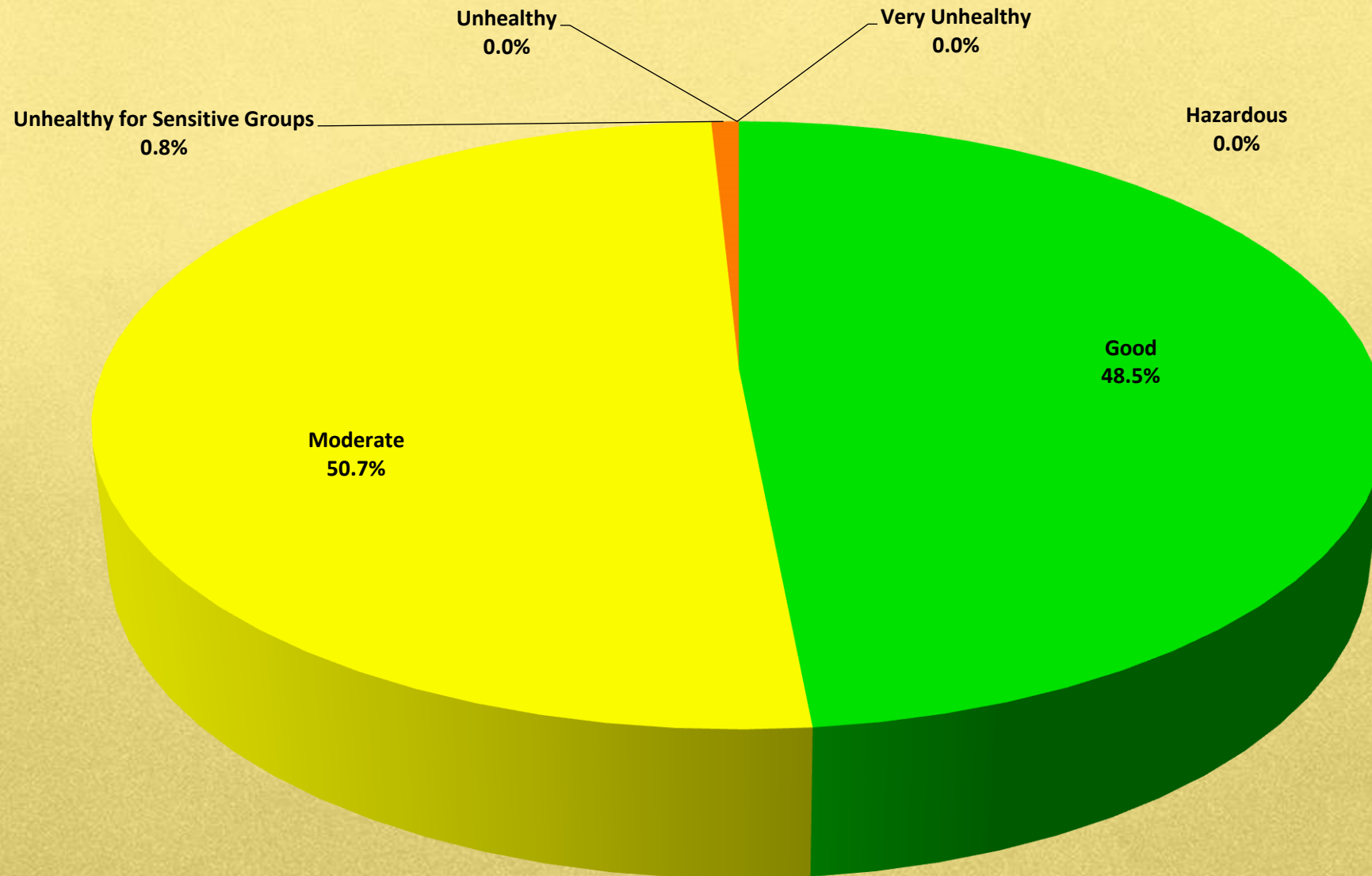


Figure 4.13: 1-hour sulfur dioxide design values (in ppb) for 2008-2017. The highlighted blue line indicates the NAAQS, which is 75 ppb.

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0-50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51-100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101-150	Members of sensitive groups (children, older adults, and those with lung or heart disease) may experience health effects. The general public is not likely to be affected.
Unhealthy	151-200	Everyone may begin to experience health effects. Members of sensitive groups may experience more serious health effects.
Very Unhealthy	201-300	Everyone may experience more serious health effects.
Hazardous	301-500	The entire population is more likely to be affected.

2017 AQI Summary for the Birmingham Area



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Other Important Things

- Modeling
 - Industrial Source Modifications for Criteria and Air Toxics Increases in Emissions
 - Transportation Conformity
 - Public Outreach of Air Quality Conditions
 - Forecasting
 - Issuance of Daily Air Quality Index (AQI) including Alerts
 - Planning including State Implementation Planning (work closely with ADEM)

Must Typically Have Financial Resources

Budget

Fund	Revenue	Expenses
General Fund	----	\$768,909
Section 105 Grant	----	\$695,401
Title V Fund	Approx. \$900,000	Approx. \$900,000
Section 103-PM 2.5 Grant ⁺	\$280,000	\$280,000
CMAQ Grant	\$57,592	\$72,000

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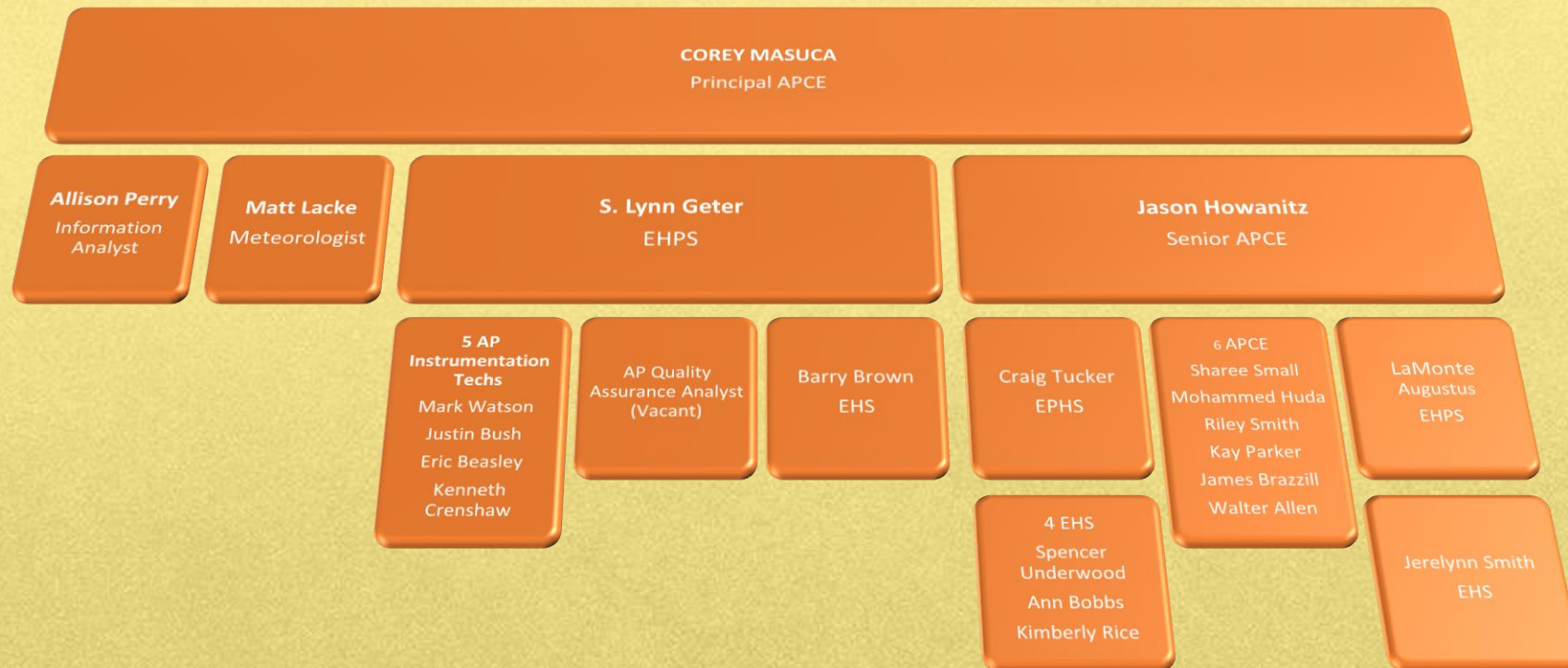
Applying for Grants Including Submit of Application



Must Typically Have Collaboration

JEFFERSON COUNTY DEPARTMENT OF HEALTH

Environmental Health Services
Air and Radiation Protection Division
June 2017



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ADEM

Alabama Department of Environmental Management



JEFFERSON COUNTY
EMERGENCY MANAGEMENT AGENCY

alabama
partners
for
clean air



Metro 4/SESARM
Southeastern Air Pollution Control Agencies



Regional Planning Commission
of Greater Birmingham



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JCDH MONITOR STATIONS V2

Questions????