AIR QUALITY REPORT

2006

Environmental Health Services
Jefferson County Department of Health
Birmingham, Alabama

Foreword

The Air Pollution Control Program (APCP) of the Jefferson County Department of Health (JCDH) prepares this report annually. It analyzes the results of air monitoring stations located throughout Jefferson County for the purpose of measuring the outdoor concentrations of those pollutants for which the U. S. Environmental Protection Agency has established ambient air quality standards (with the exception of nitrogen dioxide, which is not necessary in an urban area the size of Birmingham):

- Carbon Monoxide
- Ozone
- Lead (not currently monitored by JCDH)
- Particulate Matter
- Sulfur Dioxide

This report includes general discussions of the background information, possible sources, and health effects of each pollutant, along with any occurrences of exceedances of air quality standards. Also included is a summary of compliance and enforcement activities. An effective field enforcement program contributes directly to improved air quality and pollutant level measurements within acceptable limits.

Table of Contents

Page

Foreword i

List of Graphs and Tables iii

List of Acronyms and Symbols iv

Executive Summary 1

1.0 Introduction 2

2.0 Ambient Air Quality Standards 3

3.0 Monitoring Network Types 4

4.0 Description of Pollutants 5

4.1 Carbon Monoxide 5
4.2 Ozone 5
4.3 Particulates *5*
4.4 Sulfur Dioxide 6

5.0 Monitoring Results 7

5.1 Carbon Monoxide 7
5.2 Ozone 7
5.3 Particulate Matter 7
5.4 Sulfur Dioxide 8
5.5 Graphs and Tables 9

6.0 Exceedances of the Ambient Air Quality Standards 20

7.0 Compliance and Enforcement Activities 21

7.1 Industrial and Commercial Facilities 21
7.2 Open Burning 21
7.3 Other Programs 22
7.3.1 *Gasoline Dispensing Facilities and Tanker Trucks* 22
7.3.2 *Asbestos Abatement* 22
7.3.3 *Indoor Air Quality* 22
7.3.4 *Dry Cleaners* 22

8.0 Air Pollution Source Permitting 23

List of Graphs and Tables

Page

Table 2.1 National Ambient Air Quality Standards 3

Table 3.1 Jefferson County Air Monitoring Network (2006) 4

Graphs 5.5.1 Carbon Monoxide Design Values (1-Hour and 8-Hour) 1996-2006 9

Tables 5.5.1 Carbon Monoxide Design Values and 2nd Maximum Values 1996-2006..... 10

Graphs 5.5.2 Ozone Design Values 1996-2006..... 11

Tables 5.5.2 Ozone Design Values and 4th Highest 8-Hour Values 1996-2006..... 12

Graphs 5.5.3(a) PM10 Design Values (Annual) 1996-2006 13

Tables 5.5.3(a) PM10 Design Values and Annual Averages 1996-2006 14

Graphs 5.5.3(b) PM10 99th Percentile Design Values (24-Hour) 1996-2006 15

Tables 5.5.3(b) PM10 99th Percentile Design Values (24-Hour) and 99th Percentiles 1996-2006 16

Graph 5.5.3(c) PM2.5 Annual Means-Design Values 1999-2006……..... 17

Tables 5.5.3(c) PM2.5 Design Values - Annual Averages 1999-2006……..... 17

Graph 5.5.3(d) PM 2.5 98th Percentile Values (24-Hour) 1999-2006……. 18

Tables 5.5.3(d) PM 2.5 98th Percentile Design Values and 98th Percentiles (24-Hour)…….. 18

Graphs 5.5.4 Sulfur Dioxide - Annual Means and 24-Hour / 3-Hour Averages 1996-2006 19

Table 5.5.4 Sulfur Dioxide – Annual Means and 24-Hour / 3-Hour Averages 1996-2006……..... 19

Table 8.1 Sources and Number of Permits Issued in 2006……..... 23

List of Acronyms and Symbols

CO	carbon monoxide
EPA	Environmental Protection Agency
NAAQS	National Ambient Air Quality Standards
NAMS	National Air Monitoring Station
NO_x	oxides of nitrogen
O_3	ozone
Pb	lead
PM2.5	particulate matter of size 2.5 microns or less in diameter
PM10	particulate matter of size 10 microns or less in diameter
ppm	parts per million
SLAMS	State and Local Air Monitoring Station
SMOPs	Synthetic Minor Operating Permits
SO_2	sulfur dioxide
SPM	Special Purpose Monitoring
TSP	total suspended particulates
$\mu g/m^3$	micrograms per cubic meter
VOCs	volatile organic compounds

Executive Summary

The uniform air quality index was created for use as a standard measure of overall air quality. It is a national index that was designed to meet the needs of all citizens. The daily index report is based on the uniform pollutants' standards index structure that includes the pollutants for which primary short term National Ambient Air Quality Standards have been established: particulate matter (PM2.5 and PM10), sulfur dioxide (SO_2), carbon monoxide (CO), and ozone (O_3) (see Table 2.1).

As shown below, the air quality index of each pollutant is scaled on a range from 0 to 500 with 100 corresponding to the National Ambient Air Quality Standard level at which the pollutant is considered unhealthful.

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 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	Health alert: everyone may experience more serious health effects.
Hazardous	> 300	Health warnings of emergency conditions. The entire population is more likely to be affected.

The air quality index is available daily, Monday through Friday, by dialing (205) 933-0583. Or one can view the air quality index report on the internet at http://www.jcdh.org. The following table was extracted from the Environmental Protection Agency's Air Quality System and summarizes the measurements of overall air quality in Jefferson County for 2006:

Air Quality Description	Number of Days
Good (1 - 50)	112
Moderate (51 - 100)	222
Unhealthy for Sensitive Groups (101 - 150)	30
Unhealthy (151 - 200)	1
Very Unhealthy (Alert) (201-300)	0
Hazardous (> 300)	0
Total Number of Days	365

There were 31 days the air quality description exceeded an AQI of 101 or greater, representing 8.5% of the time air quality was unhealthy for sensitive groups or unhealthy in Jefferson County, Alabama, in 2006.

1.0 Introduction

The Jefferson County Department of Health operates an air pollution control program with its goal to ensure that citizens of Jefferson County have access to air which meets the health standards as established by the Environmental Protection Agency (EPA). A significant portion of air pollution control resources is devoted to monitoring pollutant levels in the ambient air (that portion of the atmosphere to which the general public has access). Also, information received from the monitoring network concerning pollutant levels is used as the basis for developing any control strategies necessary to ensure that health standards are attained and maintained.

2.0 Ambient Air Quality Standards

The Environmental Protection Agency (EPA) has established two national ambient air quality standards--primary and secondary. The primary standards are designed to protect public health with an adequate margin of safety. The secondary standards are designed to protect public welfare-related values (such as property, materials, plants and animal life). The Air and Radiation Protection Division of the Jefferson County Department of Health Air Pollution Control Program utilizes the following standards established by the EPA:

Table 2.1
National Ambient Air Quality Standards

	Standard (mean levels)	
Pollutant and Time Period	**Primary**	**Secondary**
PM10 (inhalable particulates)		
(Micrograms per cubic meter)		
Annual mean level[a]	50	50
24-hour average[b]	150	150
PM2.5 (inhalable particulates)		
(Micrograms per cubic meter)		
Annual mean level[a]	15	15
24-hour average[c]	35	35
Sulfur Dioxide		
(Parts per million)		
Annual mean level[d]	0.03	
24-hour average[e]	0.14	
3-hour average[e]		0.5
Nitrogen Dioxide		
(not currently monitored by JCDH)		
(Parts per million)		
Annual mean level	0.053	0.053
Carbon Monoxide		
(Parts per million)		
8-hour average[e]	9	None
1-hour average[e]	35	None
Ozone		
(Parts per million)		
1-hour average[f]	0.12	0.12
8-hour average[g]	0.08	0.08
Lead		
(not currently monitored by JCDH)		
(Micrograms per cubic meter)		
3-month mean level	1.5	1.5

[a] A 3-year average of annual means determines compliance with the NAAQS.
[b] A 3-year average concentration, based on 99th percentile, determines compliance with the NAAQS.
[c] A 3-year average concentration, based on 98th percentile, determines compliance with the NAAQS.
[d] Annual standards are maximum permissible mean-level concentrations not to be exceeded in a calendar year.
[e] Short-term standards (24-hour and less) are not to be exceeded more than once a year.
[f] Not to be exceeded more than three times in three consecutive years. The 1-hour standard was revoked on June 15, 2004, for the Birmingham area since the area showed compliance with the standard.
[g] 3-year average of annual 4th highest daily maximum 8-hour concentrations.

3.0 Monitoring Network Types

Data provided through a complex network of air monitoring stations located throughout Jefferson County determine the quality of ambient air in the county. The network consisted of 16 monitoring sites with 50 air monitors and 10 collocated monitors (see Table 3.1). The air pollutants monitored at these sites were ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), particulates 2.5 microns (PM2.5 and less in size), and particulates 10 microns (PM10 and less in size). In 2001 three PM2.5 speciation monitors were added to the network as part of the National Speciation Trends Network to assess the chemical composition of fine particles. Nitrogen dioxide is not monitored because the county population is less than one million, and monitoring is therefore not required. Each air monitor was classified as one of the following: State and Local Air Monitoring Station (SLAMS), National Air Monitoring Station (NAMS), or Special Purpose Monitoring (SPM) based on the general monitoring objectives.

The objective of the SLAMS network is to collect data that provide an overview of the state's air quality used in the development of statewide control strategies.

The primary objective of the NAMS network is to monitor in areas where the pollutant concentration levels and population exposures are likely to be high. EPA uses the data to develop nationwide control strategies.

The objective of the SPM network is to provide data for the development and refinement of local control strategies. The data also verify maintenance of air standards in areas not monitored by either the SLAMS or NAMS networks.

Table 3.1
Jefferson County Air Monitoring Network
January 1, 2006 - December 31, 2006

		Monitoring Type		
Site Location	**Pollutants**	**SLAMS**	**NAMS**	**SPM**
Bessemer	PM10	1	0	0
Corner	O3, PM2.5, PM10	1	0	3
Dolomite	PM10	1	0	0
East Thomas	CO	0	1	0
Fairfield	CO, O3, PM10, SO2	2	2	0
Hoover	O3, PM2.5, PM10	1	0	3
Leeds, Elementary School	O3, PM2.5 PM10	3	0	2
McAdory High School	O3, PM2.5, PM10	1	0	3
North Birmingham, Sloss	CO, PM10	0	0	2
North Birmingham, Southern Railroad	O3, PM2.5, PM10, PM2.5 Speciation	3	1	2
Northside School	PM10	1	0	0
Pinson High School	O3, PM2.5, PM10	2	1	1
Providence	O3, PM2.5, PM10, PM2.5 Speciation	1	0	4
Tarrant ABC Coke	PM10	0	0	1
Tarrant, Elementary School	PM10, O3	1	1	0
Wylam	PM10, PM2.5, PM2.5 Speciation	2	1	2

4.0 Description of Pollutants

4.1 Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless and tasteless gas. It is emitted into the atmosphere by natural and man-made sources. Globally, total emissions of CO are greater than emissions of any other air pollutant, due to the widespread extent of low-level emissions from natural sources.

The major natural source of CO is the spontaneous oxidation of naturally occurring methane. Other natural sources include the oceans, plant growth and decay, terpene oxidation, and forest fires. Globally, natural sources account for nearly 90 percent of CO emissions.

The major man-made source of CO is the incomplete combustion of carbon-based fuels. Gasoline motor vehicles--primarily automobiles and light duty trucks--are the most common source. Other sources include industrial process losses, open burning and industrial or utility boilers.

CO poses a threat to human health because of its ability to react with hemoglobin that carries oxygen to cell tissue. Hemoglobin preferentially absorbs CO, thus reducing the amount of oxygen transported throughout the body. Most people will experience symptoms including dizziness and headaches when exposed to high levels of CO. Eliminating exposure causes blood to return to normal levels of oxygen.

4.2 Ozone

Ozone is a highly reactive oxidant gas with a pungent odor and a faint bluish color. Ozone is photochemically produced in the atmosphere when volatile organic compounds (VOCs) combine with oxides of nitrogen (NOx) and carbon monoxide (CO) in the presence of sunlight. In the lower atmosphere, ozone is the predominant component of photochemical smog and is most likely to reach high concentration levels on hot, dry, summer days when sunlight is intense and wind movement is low.

In urban areas, emissions of nitrogen oxides and VOCs lead to the formation of ozone in the lower atmosphere. Nitrogen oxides are primarily emitted from combustion sources such as motor vehicles and boilers. Primary sources of VOCs include motor vehicle exhaust, gasoline evaporation from storage facilities or tanker trucks, paint, and industrial use of solvents or coatings.

Ozone is a pulmonary irritant. Symptoms include irritation of the eyes, nose, throat and lungs as well as reduced lung function, asthma, stuffy nose, reduced resistance to colds and other infections. Ozone also damages plants, trees, rubber and fabrics.

4.3 Particulate Matter

Particulate matter consists of airborne particles ranging from about 0.001 to 500 micrometers in diameter. Particulate matter includes dust, soot and other tiny bits of materials (solids and aerosols) released into and moving around in the air. PM2.5 consists of particles less than or equal to 2.5 micrometers in diameter, and PM10 consists of particles less than or equal to 10 micrometers in

diameter. These are used as the basis for the ambient air quality standard. PM10 and PM2.5 are both subsets of the total airborne particles in the air.

Particulate matter has many sources, including burning of diesel fuels by trucks, buses and other diesel engines; incineration of garbage; mixing and application of fertilizers and pesticides; road construction; vehicular tire wear and exhaust; operation of fireplaces and wood stoves; and industrial processes (such as steel making and mining operations).

Exposure to high concentrations of particulate pollution causes eye, nose and throat irritation, aggravation of chronic lung disease, and symptoms of heart and respiratory problems. Particulates are the main source of haze that reduces visibility.

4.4 Sulfur Dioxide

Sulfur dioxide is a colorless, nonflammable gas formed during combustion of sulfur-containing fuels such as coal and oil. Partly converted by photochemical and catalytic reactions in the atmosphere, sulfur dioxide becomes sulfur trioxide, sulfuric acid, and various sulfate particles that can also have adverse health and welfare effects.

Globally, emissions from human activities account for one-third of total emissions of sulfur compounds in the atmosphere. Of the natural emissions, most are hydrogen sulfide released from the decay of organic matter or sulfate particles released in sea spray. The combustion of sulfur-containing coal and oil in utility and industrial boilers is the major man-made source of sulfur dioxide emissions.

Sulfur dioxide is an irritant to the pulmonary system, primarily affecting the upper respiratory system. Damage to lungs occurs with deep inhalation of particles absorbing sulfur dioxide. Sulfur dioxide plays an important role in the production of acid rain (acid aerosols), which damages trees and lakes. Acid aerosols also erode stone used in buildings, statues, and monuments.

5.0 Monitoring Results

5.1 Carbon Monoxide

The carbon monoxide monitoring network consists of 3 monitors (2 NAMS and 1 SPM) strategically located within Jefferson County (see Table 3.1). Carbon monoxide was not responsible for the air quality index on any day in 2006. Refer to Graphs 5.5.1 and Tables 5.5.1 for 1-hour and 8-hour concentrations. There was one violation of the 8-hour NAAQS for the 2005-2006 reporting period at the Sloss monitoring site which is considered a special pupose site and therefore not used for attainment designation or Air Quality Index puposes.

5.2 Ozone

The ozone monitoring network consists of 9 monitors (7 SLAMS and 2 NAMS) strategically located throughout Jefferson County. All of the ozone monitors are operated from March 1 through October 31, except the North Birmingham monitor which operates year round. Ozone was the responsible pollutant 43 times, or 11.8% of the days for the air quality index in 2006. Refer to Graphs 5.5.2 and Tables 5.5.2 for ozone concentrations which show attainment of the NAAQS during the 2004-2006 reporting period for all monitoring sites, except at Helena which averaged 0.085 ppm for the three-year period.

Note that ADEM's Contingency Plan will address the issue of the three-year exceedance at the Helena monitor, but action is not expected until 2007. Section 175A(d) of the Clean Air Act Amendments requires the inclusion of contingency provisions that would be implemented by the State to correct any future violation of the NAAQS in areas that had been redesignated as attainment of the NAAQS.

In 2005 the Jefferson and Shelby County area was designated "basic" nonattainment for 8-hour ozone. On November 16, 2005, the Alabama Department of Environmental Management submitted a request to the EPA to redesignate the Birmingham area to attainment of the 8-hour ozone NAAQS, based on acceptable data of 2003-2005 at all ozone monitors in the two-county nonattainment area (Jefferson and Shelby Counties). On May 12, 2006, the EPA redesignated the area to attainment for the 8-hour ozone NAAQS (*Federal Register*, May 12, 2006, Vol. 71, No. 92, pp. 27631-27636).

An Air Quality Action Program has been underway in Jefferson and Shelby Counties since May 1996 to educate citizens about the health and economic effects of ozone nonattainment. In addition, the program is designed to encourage citizens to take voluntary actions to help decrease ozone levels.

5.3 Particulate Matter

The particulate matter (PM10) monitoring network consists of PM10 monitors (10 SLAMS, 2 NAMS and 6 SPM) and PM2.5 monitors (3 SLAMS, and 16 SPM) strategically located throughout Jefferson County (see Table 3.1). PM10 was the responsible pollutant 2 times, or 0.5% of the days for the air quality index in 2006. PM2.5 was the responsible pollutant 320 times, or 87.7% of the days for the air quality index in 2006. Refer to the following graphs and tables for concentrations of particulate matter:

- Graphs 5.5.3(a) – PM10 Design Values (Annual)
- Tables 5.5.3(a) – PM10 Design Values and Annual Averages

- Graphs 5.5.3(b) – PM10 99th Percentile Design Values
- Tables 5.5.3(b) – PM10 99th Percentile Design Values and 99th Percentiles (24-Hour)
- Graph 5.5.3(c) – PM2.5 Design Values (Annual)
- Tables 5.5.3(c) – PM2.5 Design Values and Annual Averages
- Graph 5.5.3(d) – PM2.5 98th Percentile Values (24-Hour)
- Tables 5.5.3(d) – PM2.5 98th Percentile Design Values and 98th Percentiles (24-Hour)

The EPA promulgated revised primary and secondary standards for PM2.5 on July 18, 1997. The Jefferson County Department of Health began monitoring for PM2.5 on January 1, 1999. In December 2004, EPA designated Jefferson County, Alabama, nonattainment of the annual PM 2.5 NAAQS based on 2001-2003 data. The effective date of this designation was April 5, 2005. In 2006 JCDH, in collaboration with other organizations (ADEM, EPA Region 4, Envair, and Industry) began to analyze the particulate matter problem with special focus upon the Community Monitoring Zone (CMZ) and its two monitors at Wylam and North Birmingham. A final report (dated July 14, 2006), "Particulate Matter Sources in Birmingham, Alabama," was prepared by the Envair Company for ADEM and JCDH. This report was considered preliminary work for a larger analysis proposed for 2007.

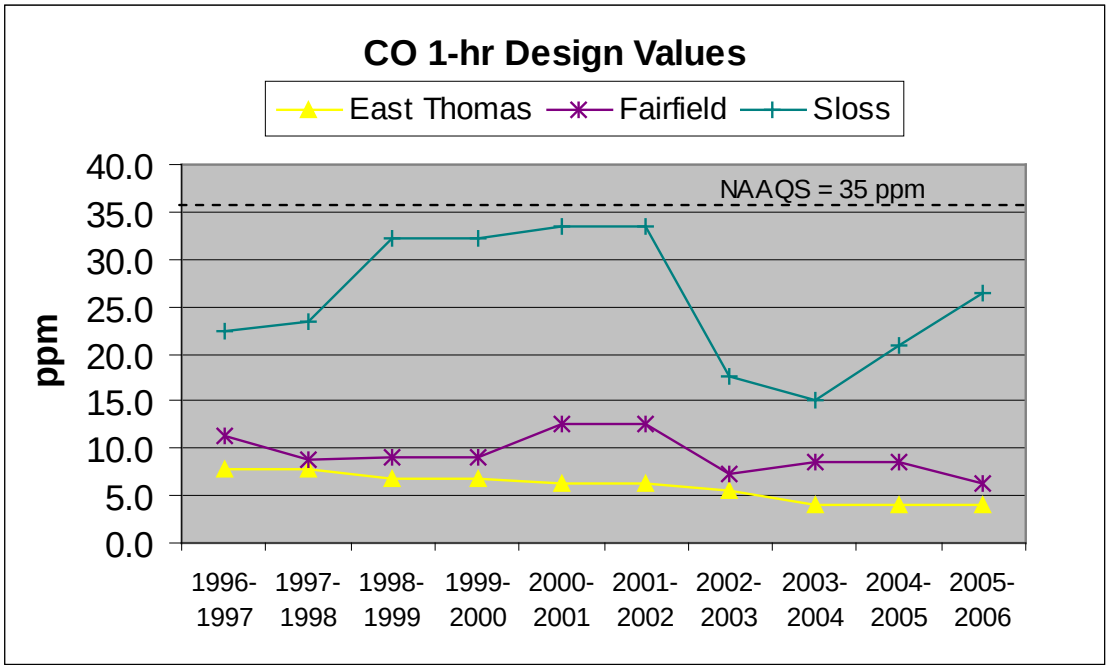
5.4 Sulfur Dioxide

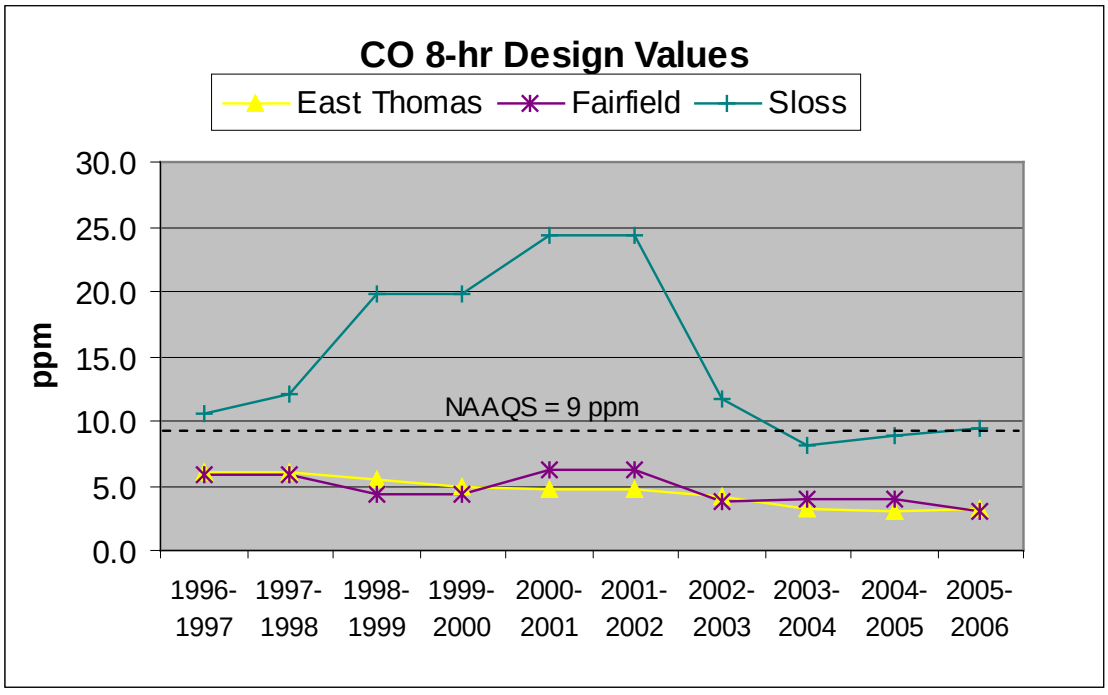
The sulfur dioxide (SO2) monitoring network consists of 1 monitor (1 NAMS) located in Fairfield. SO2 was not responsible for the air quality index on any day in 2006. Refer to Graphs 5.5.4 and Table 5.5.4 for SO2 concentrations, which remained well below NAAQS thresholds for the three averaging periods (annual, 24-hour, and 3-hour).

5.5 Graphs and Tables

Graphs 5.5.1

Carbon Monoxide Design Values (1-Hour and 8-Hour) 1996-2006





Tables 5.5.1

Carbon Monoxide 2nd Maximum Values 1996-2006

Values measured in parts per million (ppm).

1-hour 2nd Max	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
East Thomas	7.1	7.7	5.4	6.7	5.6	6.2	5.5	4.1	3.8	4.1	3.8
Fairfield	11.2	8.5	8.7	9	8.5	12.5	7	7.4	8.6	6.1	6.2
Sloss	17.8	22.3	23.4	32.3	23.6	33.5	17.7	9.1	15	20.9	26.3

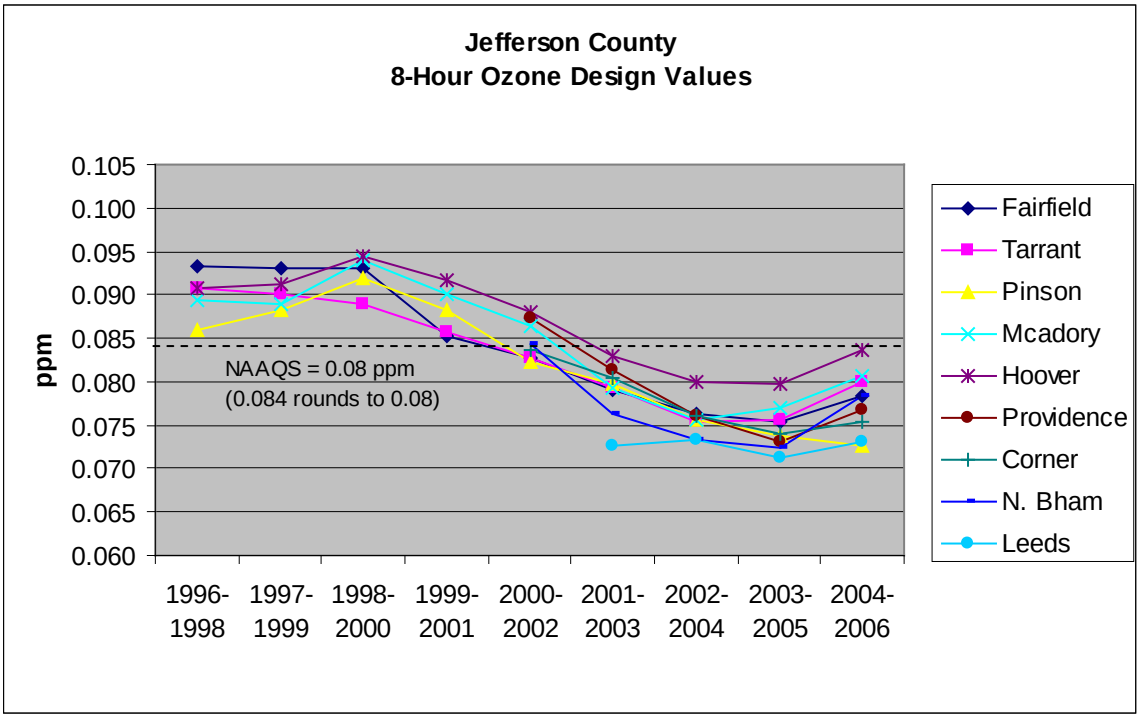
1-hour Design Values		1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
East Thomas		7.7	7.7	6.7	6.7	6.2	6.2	5.5	4.1	4.1	4.1
Fairfield		11.2	8.7	9.0	9.0	12.5	12.5	7.4	8.6	8.6	6.2
Sloss		22.3	23.4	32.3	32.3	33.5	33.5	17.7	15.0	20.9	26.3

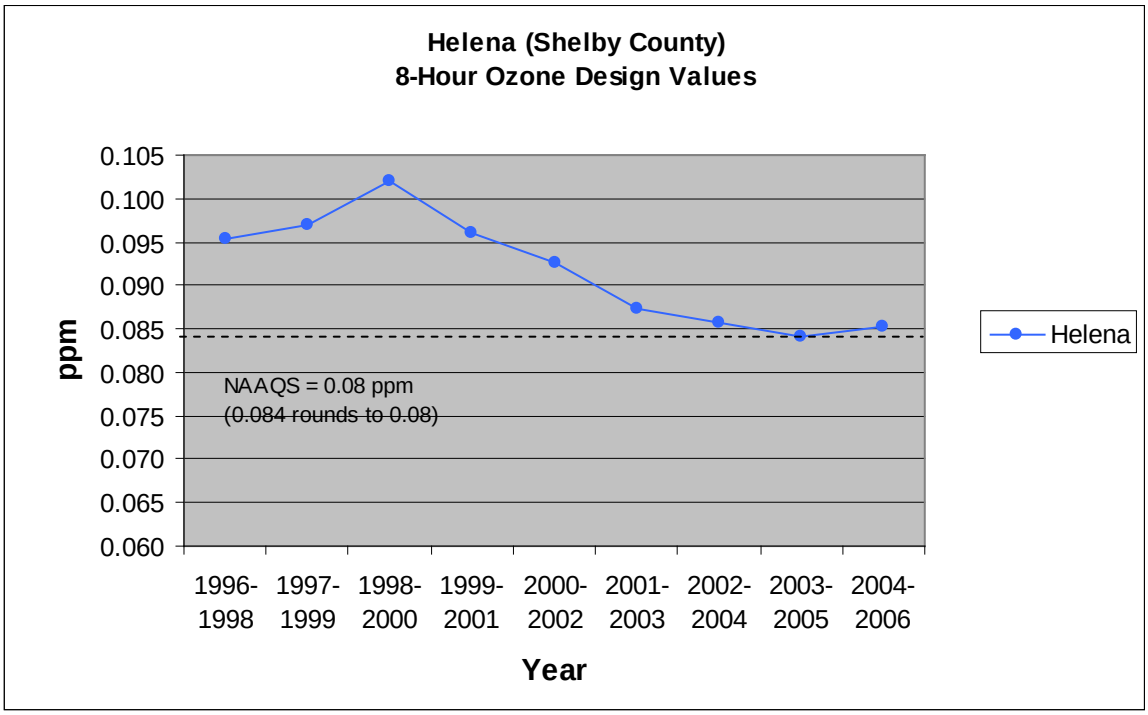
8-hour 2nd Max	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
East Thomas	5.7	6.1	5.4	5	4.5	4.8	4.1	3.2	2.9	3.1	3.2
Fairfield	4.9	5.9	4.4	4.4	3.7	6.3	3.7	3.1	3.9	2.5	3.1
Sloss	10.5	9.5	12.1	19.8	16.3	24.3	11.7	4.5	8.2	8.8	9.5

8-hour Design Values		1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
East Thomas		6.1	6.1	5.4	5.0	4.8	4.8	4.1	3.2	3.1	3.2
Fairfield		5.9	5.9	4.4	4.4	6.3	6.3	3.7	3.9	3.9	3.1
Sloss		10.5	12.1	19.8	19.8	24.3	24.3	11.7	8.2	8.8	9.5

Graphs 5.5.2

Ozone Design Values
(Ending 2004–2006 Averaging Period)





An exceedance of the standard occurs when the 4th maximum value recorded during the year is greater than or equal to 0.085 ppm. Compliance with the 8-hour standard is determined by averaging the 4th highest 8-hour ozone value at each site over a 3-year period.

Tables 5.5.2

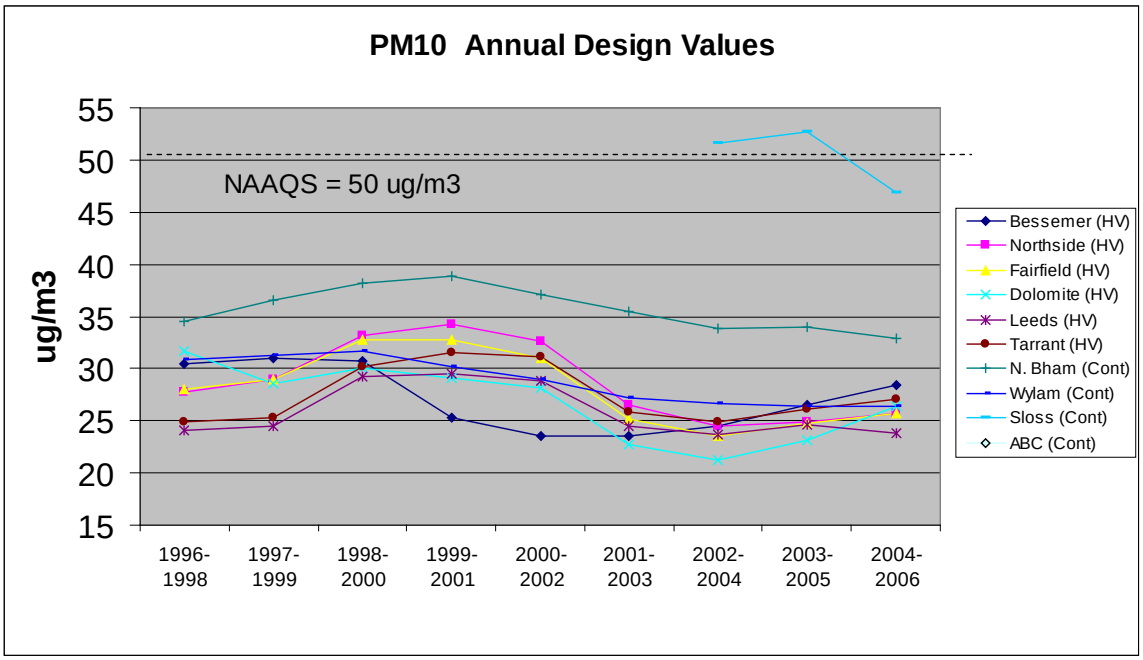
8-Hour Ozone Design Values and 4th Highest 8-Hour Values (Ending 2004–2006 Averaging Period)

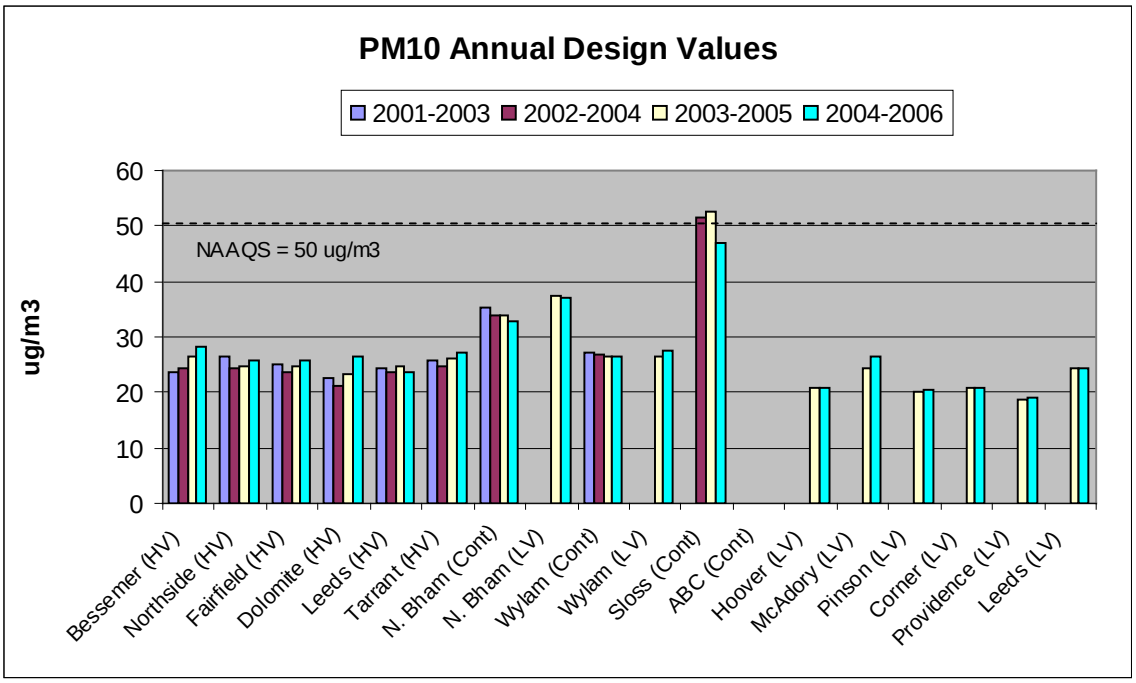
Ozone 8-hour 4th Max	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Fairfield	0.093	0.086	0.101	0.092	0.086	0.078	0.084	0.075	0.07	0.081	0.084
Tarrant	0.094	0.088	0.09	0.092	0.085	0.08	0.083	0.075	0.068	0.084	0.088
Pinson	0.089	0.078	0.091	0.096	0.089	0.08	0.078	0.081	0.068	0.072	0.078
Mcadory	0.093	0.079	0.096	0.092	0.094	0.084	0.081	0.073	0.073	0.085	0.084
Hoover	0.095	0.083	0.094	0.097	0.092	0.086	0.086	0.077	0.077	0.085	0.089
Providence					0.088	0.086	0.088	0.07	0.07	0.079	0.081
Corner					0.087	0.081	0.083	0.077	0.068	0.077	0.081
N. Bham					0.092	0.079	0.082	0.068	0.07	0.079	0.086
Leeds						0.071	0.077	0.07	0.073	0.071	0.075
Helena	0.095	0.084	0.107	0.1	0.099	0.089	0.09	0.083	0.084	0.085	0.087

Ozone 8-hour Design Values			1996-1998	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006
Fairfield			0.093	0.093	0.093	0.085	0.083	0.079	0.076	0.075	0.078
Tarrant			0.091	0.090	0.089	0.086	0.083	0.079	0.075	0.076	0.080
Pinson			0.086	0.088	0.092	0.088	0.082	0.080	0.0757	0.074	0.073
Mcadory			0.089	0.089	0.094	0.090	0.086	0.079	0.0757	0.077	0.081
Hoover			0.091	0.091	0.094	0.092	0.088	0.083	0.080	0.080	0.084
Providence							0.087	0.081	0.076	0.073	0.077
Corner							0.084	0.080	0.076	0.074	0.075
N. Bham							0.084	0.076	0.073	0.072	0.078
Leeds								0.073	0.073	0.071	0.073
Helena			0.095	0.097	0.102	0.096	0.093	0.087	0.0857	0.084	0.085

Graphs 5.5.3(a)

PM10 Design Values (Annual)
(Ending 2004–2006 Averaging Period)





*Note: Sloss is a Special Purpose Monitor and, therefore, not used for compliance purposes.

Tables 5.5.3(a)

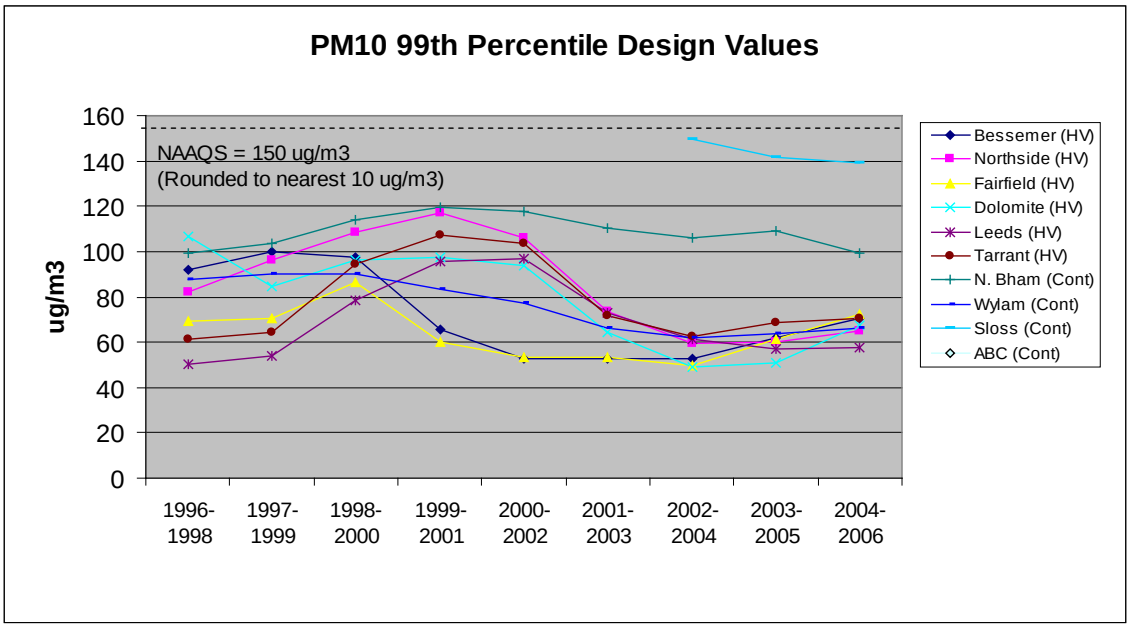
PM10 Design Values and Annual Averages
(Ending 2004–2006 Averaging Period)

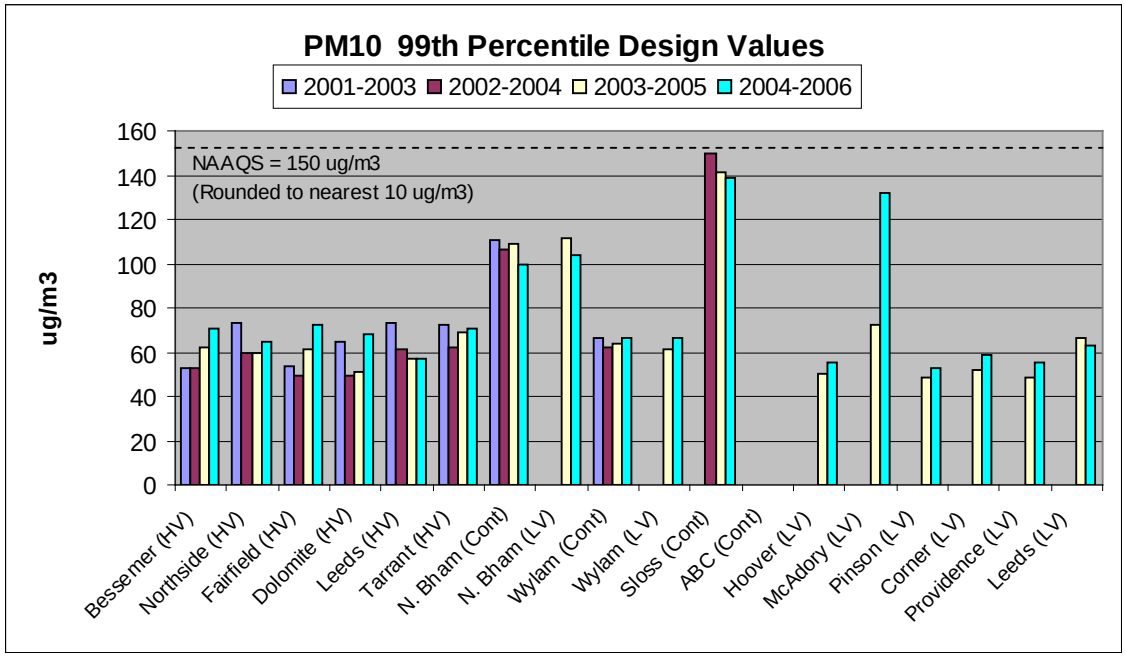
Annual Averages	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Bessemer (HV)	24.5	25.6	27.2	24.7	39.6	28.8	23.6	23.6	25.4	27.7	29.1
Northside (HV)	25.6	29.6	28.2	29.1	42.2	31.3	24.4	23.9	25	25.7	26.3
Fairfield (HV)	26.0	29.0	29.0	28.7	40.7	28.7	23.4	23.3	23.9	26.9	26.5
Dolomite (HV)	33.0	33.0	29.0	23.8	37.2	26.5	20.7	21	22.1	26.4	30.6
Leeds (HV)	23.9	23.2	25.3	25	37.6	26	23	24.5	23.6	25.7	22.1
Tarrant (HV)	24.7	25.1	25	25.8	39.8	29.1	24.5	24.1	25.9	28.4	26.8
N. Bham (Cont)	33.2	34.7	35.8	39.2	39.7	37.5	34.1	34.8	32.8	34.3	31.6
Wylam (Cont)	29.7	30.1	32.8	31	31.2	28.5	27	26.2	26.8	26	26.4
Sloss (Cont)				49.2	N/A	N/A	45.9	57.1	51.8	49.3	39.3
ABC (Cont)				38.9	N/A	N/A	31.5	N/A	N/A	36.4	40.1
N. Bham (LV)								35.7	37.3	39.1	34.9
Wylam (LV)								26.2	24.8	28.4	28.9
Hoover (LV)								21.3	19.9	21.5	21.1
McAdory (LV)								23.1	23.0	26.6	29.3
Pinson (LV)								20.1	19.0	21.7	21.0
Corner (LV)								21.0	19.0	22.6	21.4
Providence (LV)								18.1	17.2	20.4	19.2
Leeds (LV)								23.4	24.1	25.7	23.3

Design Values			1996-1998	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006
Bessemer (HV)			31	31	31	25	24	24	25	27	28
Northside (HV)			28	29	33	34	33	27	24	25	26
Fairfield (HV)			28	29	33	33	31	25	24	25	26
Dolomite (HV)			32	29	30	29	28	23	21	23	26
Leeds (HV)			24	25	29	30	29	25	24	25	24
Tarrant (HV)			25	25	30	32	31	26	25	26	27
N. Bham (Cont)			35	37	38	39	37	35	34	34	33
N. Bham (LV)										37	37
Wylam (Cont)			31	31	32	30	29	27	27	26	26
Wylam (LV)										26	27
Sloss (Cont)									52	53	47
ABC (Cont)											
Hoover (LV)										21	21
McAdory (LV)										24	26
Pinson (LV)										20	21
Corner (LV)										21	21
Providence (LV)										19	19
Leeds (LV)										24	24

Graphs 5.5.3(b)

PM10 99th Percentile Design Values (24-Hour)
(Ending 2004–2006 Averaging Period)





- Code for abbreviations: (Cont) Continuous monitor; (HV) Manual monitor, High Volume Method; (LV) Manual monitor, Low Volume Method.
- Compliance with the NAAQS is determined by a 3-year average of the 99th percentile values which is rounded to the nearest 10 ug/m^3 (e.g., 154 ug/m^3 rounds to 150 ug/m^3 which is in compliance).
- Note: PM10 collected at ambient conditions (i.e. low volume method) is not used for compliance purposes

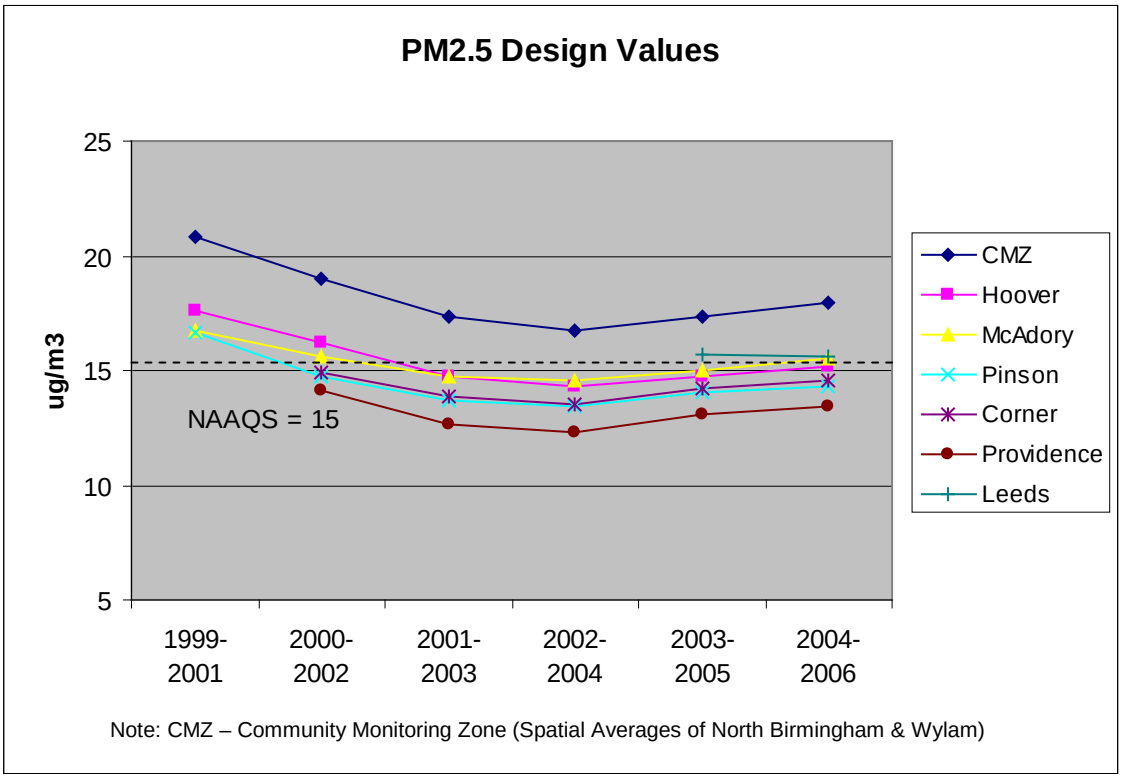
Tables 5.5.3(b)

PM10 99th Percentile Design Values (24-Hour) and 99th Percentiles (Ending 2004–2006 Averaging Period)

99th Percentile	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Bessemer (HV)	53	70	68	62	146	91	55	50	55	69	72
Northside (HV)	56	111	79	99	147	105	66	49	63	68	64
Fairfield (HV)	67	64	77	70	112	73	57	50	49	74	71
Dolomite (HV)	125	104	91	59	138	95	48	51	49	53	101
Leeds (HV)	54	54	42	65	128	93	69	57	58	56	58
Tarrant (HV)	58	67	58	69	157	95	59	62	66	78	68
N. Bham (Cont)	96	104	98	108	136	115	102	114	103	111	84
Wylam (Cont)	75	93	95	83	92	76	63	60	63	68	68
Sloss (Cont)				123	N/A	N/A	144	151	154	120	143
ABC (Cont)				134	N/A	N/A	111	N/A	N/A	132	148
N. Bham (LV)								115	109	111	91
Wylam (LV)								57	65	62	73
Hoover (LV)								48	42	61	64
McAdory (LV)								62	62	93	242
Pinson (LV)								48	45	53	61
Corner (LV)								46	48	63	66
Providence (LV)								46	44	56	66
Leeds (LV)								72	72	54	62

99th Percentile Design Values			1996-1998	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006
Bessemer (HV)			92	100	97	65	53	53	53	62	71
Northside (HV)			82	96	108	117	106	73	59	60	65
Fairfield (HV)			69	70	86	60	54	54	50	62	73
Dolomite (HV)			107	85	96	97	94	65	49	51	68
Leeds (HV)			50	54	78	95	97	73	61	57	57
Tarrant (HV)			61	65	95	107	104	72	62	69	71
N. Bham (Cont)			99	103	114	120	118	110	106	109	99
N. Bham (LV)										112	104
Wylam (Cont)			88	90	90	84	77	66	62	64	66
Wylam (LV)										61	67
Sloss (Cont)									150	142	139
ABC (Cont)											
Hoover (LV)										50	56
McAdory (LV)										72	132
Pinson (LV)										49	53
Corner (LV)										52	59
Providence (LV)										49	55
Leeds (LV)										66	63

Graph 5.5.3(c)
PM 2.5 Annual Means
(Ending 2004–2006 Averaging Period)



Note: CMZ – Community Monitoring Zone (Spatial Averages of North Birmingham & Wylam)

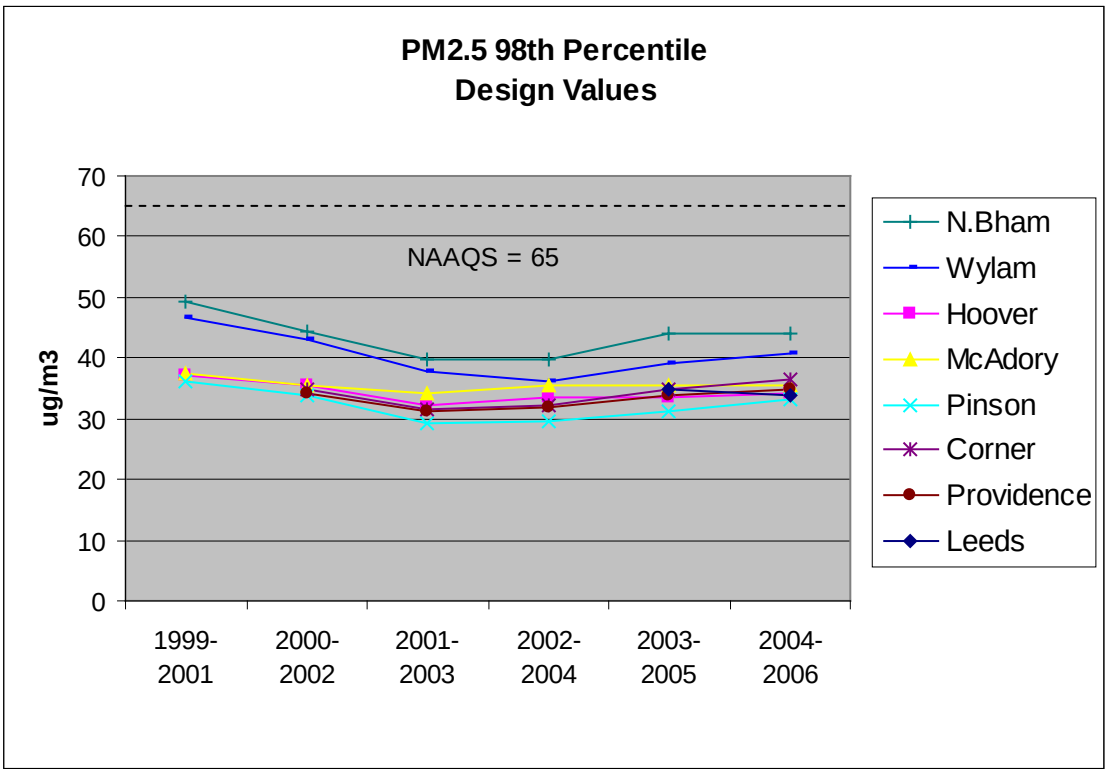
Tables 5.5.3(c)

Annual Averages	1999	2000	2001	2002	2003	2004	2005	2006
N.Bham	23.41	22.31	19.09	17.46	17.38	17.66	19.63	18.39
Wylam	21.3	20.74	17.93	16.59	15.63	15.86	17.94	18.05
CMZ	22.36	21.53	18.51	17.03	16.51	16.76	18.79	18.22
McAdory	18.36	16.91	14.97	15.02	14.1	14.57	16.32	15.58
Providence		16.66	13.34	12.33	12.21	12.43	14.52	13.44
Leeds						14.74	16.73	15.32
Hoover	18.68	18.52	15.6	14.42	14.12	14.39	15.72	15.3
Pinson	19.09	16.52	14.31	13.35	13.47	13.52	15.21	14.31
Corner		16.78	14.67	13.33	13.53	13.66	15.43	14.48

Design Values			1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006
N.Bham			21.6	19.6	18.0	17.5	18.2	18.6
Wylam			20.0	18.4	16.7	16.0	16.5	17.3
CMZ			20.8	19.0	17.3	16.8	17.4	17.9
McAdory			16.7	15.6	14.7	14.6	15.0	15.5
Providence				14.1	12.6	12.3	13.1	13.5
Leeds							15.7	15.6
Hoover			17.6	16.2	14.7	14.3	14.7	15.1
Pinson			16.6	14.7	13.7	13.4	14.1	14.3
Corner				14.9	13.8	13.5	14.2	14.5

Graph 5.5.3(d)

PM2.5 98th Percentile Values (24-Hour)
(Ending 2003–2005 Averaging Period)

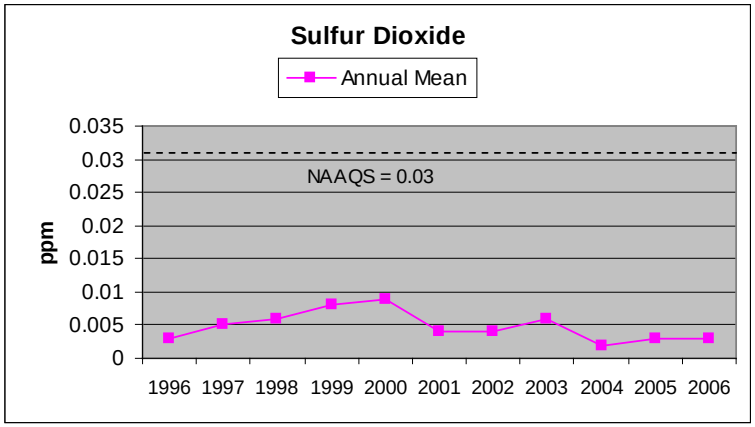


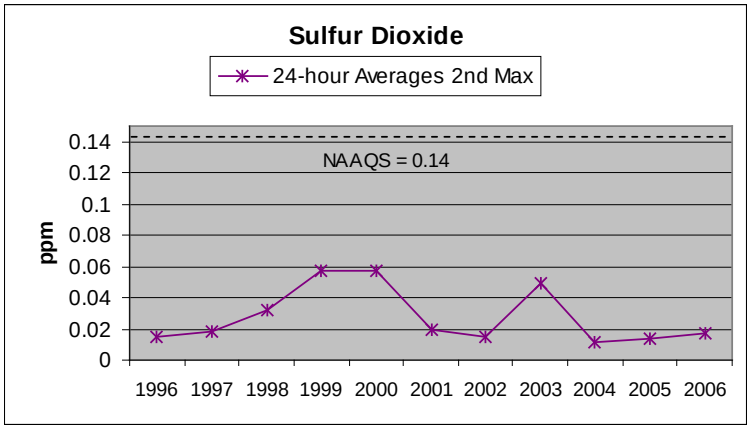
Tables 5.5.3(d)

98th Percentiles	1999	2000	2001	2002	2003	2004	2005	2006
N.Bham	52.7	52.5	42.8	37.6	39.1	42.3	50.3	39.6
Wylam	46.9	50.4	42.7	35.8	35.3	37.8	44.5	40.3
McAdory	41.1	38.1	32.9	35.7	33.7	37.3	35.5	33.9
Providence		38.5	29.7	34.2	29.5	32.4	39.8	32.7
Leeds						31.8	37.6	32.5
Hoover	39.2	39.9	32.2	34.4	29.9	36.1	34.3	31.9
Pinson	39.1	40.3	28.7	32.7	26.7	29.3	37.2	33.2
Corner		39.3	32.3	33.3	28.6	34.5	41.8	33.4

98th Percentile Design Values			1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006
N.Bham			49	44	40	40	44	44
Wylam			47	43	38	36	39	41
McAdory			37	36	34	36	36	36
Providence				34	31	32	34	35
Leeds							35	34
Hoover			37	36	32	33	33	34
Pinson			36	34	29	30	31	33
Corner				35	31	32	35	37

Graphs 5.5.4
Sulfur Dioxide – Annual Means and 24-Hour / 3 Hour Averages
(Ending 2006 Averaging Period)





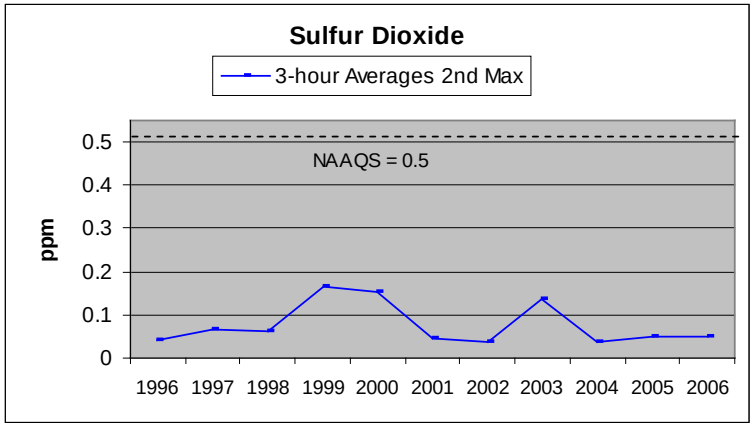


Table 5.5.4

Sulfur Dioxide	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Annual Mean	0.003	0.005	0.006	0.008	0.009	0.004	0.004	0.006	0.002	0.003	0.003
24-hour Averages 2nd Max	0.015	0.018	0.032	0.057	0.057	0.019	0.015	0.049	0.012	0.014	0.017
3-hour Averages 2nd Max	0.041	0.065	0.061	0.164	0.154	0.046	0.038	0.138	0.037	0.048	0.049

6.0 Exceedances of the Ambient Air Quality Standards

An exceedance of an ambient standard is the occurrence of a pollutant concentration that is greater than the numerical value of the standard for a period of time equal to the averaging time specified by the standard (see Table 2.1). A violation of an ambient standard, at a single monitor, is the occurrence of more exceedances of the numerical value of the standard than is allowed within a specified period of time.

An excludable exceedance is one that occurred as a result of an unusual natural or man-made event such as a severe drought, wildfire, tornado, structural fire, or temporary construction project near a monitor. The question of whether or not an exceedance will be excluded arises in determining the attainment status of an area. It is not a question of whether or not the exceedance occurred, but, rather, of what it represents. An exceedance can be excluded only after consultation with ADEM and EPA. Historically, there have been two instances related to this issue:

> (1) EPA granted exclusion of Jefferson County's ozone and particulate matter data for May 13, 14, 18, and 19 in 1998 because of Central-American forest fires which affected a large portion of the eastern United States.
>
> (2) JCDH requested that EPA exclude late season exceedances of the 8-hour ozone and particulate matter (PM10 and PM2.5) NAAQS on October 23, 2000, and October 25, 2000. However, EPA failed to respond to both written requests and in-person requests. JCDH, therefore, included these data as valid.

As cited in Section 5, the Birmingham area is currently designated as non-attainment of the annual PM2.5 NAAQS. The exceedance of the 8-hour ozone NAAQS for the three-year period (2004-2006) will be considered in the State's Contingency Plan to bring the area back into compliance with the NAAQS.

7.0 Compliance and Enforcement Activities

7.1 Industrial Facilities

Industrial air pollution sources are subject to compliance monitoring by Environmental Health Specialists (EHS) and Air Pollution Control Engineers (APCE). Synthetic Minor air pollution sources receive a Full Compliance Evaluation (FCE) by the assigned EHS or APCE at least once every five years. Major air pollution sources receive an FCE biennially by an engineer. An FCE includes a thorough review of relevant records and an onsite inspection of the facility. The APCE or EHS prepares a comprehensive inspection report that is stored in the facility file maintained by the Air and Radiation Protection Division (ARPD). Emissions from regulated industrial sources are calculated annually. During 2006 the Air Pollution Control Program (APCP) performed 278 visible emission evaluations, conducted 237 inspections, investigated 140 complaints, and issued 7 Notices of Violations.

7.2 Open Burning

The APCP regulates open burning due to smoke nuisance, as well as particulate and VOC emissions. Generally, open burning is prohibited except under specific circumstances allowed by the Department. All open burning for construction and right-of-way clearing is prohibited during the months of May through October. The issuing of open burning authorizations for land clearing operations requires a site evaluation by an EHS to determine if the material and circumstances meet regulation requirements, and to set distance restrictions for the burning site. During 2006 the APCP issued 85 open burning authorizations.

The APCP also investigates complaints regarding open burning. An Advisory Notice or Official Notice of Violation is issued if the investigation determines a violation of the regulations. During 2006 the APCP investigated 211 open burning complaints, issued 55 Advisory Notices, and wrote 56 Notices of Violation.

7.3 Other Programs

7.3.1 Gasoline Dispensing Facilities and Tanker Trucks

The APCP regulates gasoline-dispensing facilities and tanker trucks due to emissions of VOCs. Gasoline dispensing facilities must have and use Stage I Vapor Balance equipment while filling storage tanks. Gasoline tanker trucks are required to recover gasoline vapors while filling or emptying the truck vessels. Gasoline tanker trucks must certify vapor tightness annually and display an Air Sticker issued by the APCP. Regulatory activities for this segment of the gasoline marketing industry are performed by the Field Services Section staff. During 2006 the APCP issued 607 Air Stickers.

7.3.2 Asbestos Abatement

The APCP enforces the National Emission Standards for Hazardous Air Pollutants (NESHAPs) for asbestos during renovation and demolition operations. The Environmental Health Program Supervisor for Field Services serves as the Asbestos Abatement Coordinator for Jefferson County and is responsible for the regulatory activities in this program area. During 2006 there were 284 regulated asbestos abatement or demolition notifications received and reviewed, of which 157 were subject to Federal asbestos standards, 93 inspections conducted, 22 complaints investigated, and 2 Notices of Violation issued.

7.3.3 Indoor Air Quality

The APCP acts as an information and referral resource regarding indoor air quality problems. Indoor air quality complaints in public buildings are investigated to a limited degree. Owners are often referred to other resources for more complex investigations or solutions. Individuals complaining about residential indoor air quality problems are also referred to other resources for additional information. The APCP has no regulations or enforcement policies regarding indoor air quality at this time. Complainants may be referred to other agencies like the Occupational Health and Safety Administration, if appropriate. During 2006 the Air and Radiation Protection Division investigated 53 indoor air complaints.

7.3.4 Dry Cleaners

During 2006 there were 25 inspections of dry cleaning facilities in Jefferson County that are subject to NESHAPs (**40 CFR 63, Subpart M**).

8.0 Air Pollution Source Permitting

Permit applications must be submitted prior to the construction of new sources that have the potential to emit air pollutants and before the modification of existing air pollution sources. The type of emission source determines the information required in the application. The Engineering Section evaluates the degree of air pollution control required for all emission points within each industrial/commercial facility. Field Services Section staff are responsible for processing all permit applications for gasoline tanker trucks and dispensing facilities. Using established emission factors to ensure allowable air emission standards, calculations are made to determine the estimated emissions for the proposed source. During 2006, air permits were issued for 45 new, renewal, or modified sources. The APCP continues to issue Title V Major Source Operating Permits under Chapter 18 of *The Jefferson County Board of Health Air Pollution Control Rules and Regulations*. Qualified sources may apply for and receive a Synthetic Minor Operating Permit under Chapter 17 of the Regulations. Minor sources receive air permits under Chapter 2 of the Regulations.

The following table is a summary of source permitting for 2006.

Table 8.1 Sources and Number of Permits Issued in 2006

Source Type	Number of Permits Issued
Industrial/Commercial	32
Gasoline Tanker Trucks	13
Total	**45**

Type of Permit Issued	Number of Permits Issued
Title V Major	5
Synthetic Minor	15
Minor	25
Total	**45**

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