

**PERIODIC REVIEW REPORT  
FOR THE PROTECTION OF VISIBILITY**

**November 2003**

**Prepared by:  
Oklahoma Department of Environmental Quality  
Air Quality Division  
707 N Robinson, P.O. Box 1677  
Oklahoma City, OK 73101-1677**

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## **INTRODUCTION**

The Oklahoma Department of Environmental Quality (ODEQ) has developed a long-term strategy to protect the visibility in the mandatory Class I Area, the Wichita Mountains Wilderness in Comanche County, from man-made pollution. The requirements for the periodic reports on visibility are contained in S169(A) of the Federal Clean Air Act, 40CFR 51.306, and the Oklahoma Visibility State Implementation Plan (SIP). According to the Oklahoma Visibility SIP (Appendix A), a report will be filed with the EPA every three years describing the condition of the visibility in the Wilderness Area. The report will assess the adequacy of preventing an impairment of visibility in the area. This periodic review report, assessing visibility beginning in 1986 and ending in 2002, is the fourth three-year periodic review report.

## **DESCRIPTION OF PROTECTED AREA**

The mandatory Class I Area in Oklahoma, the Wichita Mountain Wilderness, is located in Comanche County near Ft. Sill Military Reservation (see Figure 1). This Class I Area consists of the Wichita Mountains National Wildlife Refuge, which is managed by the United States Fish and Wildlife Service. The area also consists of North Mountain and Charons Garden Wilderness Areas within the Refuge. The Ft. Sill Military Reservation, an Army training base, is located southeast of the Refuge. The City of Lawton is the closest population center and is located 22 miles southeast of the Refuge.

## **EVALUATION OF VISIBILITY**

The goals of the long-term strategy were to prevent future impairment of visibility since no impairment of visibility existed. Visibility for the Wilderness Area is evaluated through:

- 1) New Source Review process
- 2) Consultation with the Federal Land Manager
- 3) Review of local airport visibility data, PM<sub>10</sub>, PM<sub>2.5</sub>, and O<sub>3</sub> monitoring data, and meteorological data
- 4) Review of emission inventories and permits of nearby sources (i.e. less than 100 km distance).

## **NEW SOURCE REVIEW PROCESS**

The New Source Review Program is considered by the ODEQ to be the most cost effective and timely means of assuring good visibility in the Wilderness Area. Major sources within 100 km of the Wilderness Area must submit a visibility evaluation as part of their Prevention of Significant Deterioration (PSD) application, analyzing impairment of visibility that could result from construction and operation of the source in the vicinity. All PSD permits include an analysis of impact on Class I Areas. An example of a visibility analysis is provided in Appendix B. The Air Quality Division (AQD) of the

ODEQ has ten PSD facilities in their database that are within 100 km of the Federal Class I Area. The database shows that ten PSD permit applications were received since the last report was submitted. Six of the ten permits have been issued stating that the facility will not adversely affect visibility in the Class I area. One application was withdrawn and the other three are in-house, one of which is removing the equipment that made them a PSD source, making them a synthetic minor facility.

### **FEDERAL LAND MANAGER**

The Federal Land Manager (FLM) is notified of any permit application received by the ODEQ for a source that may impact the area. The FLM also receives a copy of the complete application for a permit within 30 days of receipt and at least 60 days before holding any public hearing. The FLM and the public are given the opportunity to provide input in the New Source Review process. Sam Waldstein, FLM for the Wichita Mountain Wilderness Area, U.S. Department of the Interior, was consulted for any further information available regarding visibility in the area. Mr. Waldstein replied that they operate an Interagency Monitoring of Protected Visual Environments (IMPROVE) particle sampler, have a remote high-resolution automatic digital camera system for scene monitoring in-place for visibility monitoring, and will be installing a nephelometer on the refuge within the next few months.

### **AIRPORT VISIBILITY DATA**

Records for hourly visual range data were obtained for Lawton Municipal Airport located 22 miles southeast of the Wilderness Area, and for Ft. Sill Military Reservation located 19 miles southeast of the Wilderness Area. These data are representative of conditions in the Class I Area. Data was obtained from the Southern Regional Climatic Center, the Oklahoma Climatological Survey, and the National Climatic Data Center. Visibility readings were obtained hourly at both sites and the values recorded in miles. Visibility data for Lawton was collected using an Automated Surface Observation System. This system uses two sensors that are three feet apart and a strobe light to calculate visibility. The system will measure visibility distance of up to 10 miles, and anything beyond that simply returns a value of 10 miles. All available 12:00pm visibility readings were compiled separately for the two sites. Percentage of readings greater than or equal to seven miles was calculated for each quarter and for each year from 1986 through 2002. The most recent data from Ft. Sill, 2000 to 2002, showed a decrease in percentages for the year and for the first and fourth quarter; however, the percentages were typically higher in 2002 than in 2001, and it is too early to label this as a trend (Figures 2 and 3). The Lawton yearly percentage was down slightly from 1999, but is consistently high. Quarterly percentages for Lawton airport were normal or high compared to previous years (Figures 4 and 5).

### **OTHER DATA**

For days where visibility was less than seven miles, particulate monitoring, meteorological, and ozone monitoring data were evaluated to determine a cause for

decreased visibility. PM<sub>10</sub> monitoring data was collected by ODEQ for 1988-1998 from a monitoring site located in Lawton, 22 miles southeast of the Wilderness Area (Table 1 and Figure 6). PM<sub>10</sub> monitoring at this site was discontinued in 1998 and collection of PM<sub>2.5</sub> data began in March 1999 (Table 2). IMPROVE monitoring data from the U.S. Fish and Wildlife Service was gathered from the IMPROVE Aerosol Data page of the IMPROVE website: <http://vista.cira.colostate.edu/improve> (Tables 3 and 4, and Figure 7). The IMPROVE Monitor was installed at the refuge March 1, 2001. It measures the concentration of several pollutants, including PM<sub>10</sub> and PM<sub>2.5</sub>, on a schedule similar to that of the Lawton monitoring station, collecting 24-hour samples every three days. The IMPROVE program at the refuge is very young in comparison, so no trends are recognizable yet, but annual averages at the refuge for 2001 and 2002 have been lower than those at the Lawton site. Meteorological data for the past three years shows that low visibility days at Lawton and Ft. Sill were 96% and 90% attributable to meteorological conditions, respectively. Both sites consistently reported relative humidity values in excess of 90%, precipitation, or both on days when the visibility dropped below 7 miles. For days when this was not the case, yet visibility was still low, wind speed and direction along with the location of high-emission facilities were reviewed. No impact can be found from wind speed and wind direction on visibility in the area. On some days strong winds would precede an increase in visibility, while on other days they would result in impaired visibility. Ozone monitoring data was collected by the ODEQ at a site in Lawton. Data from days when decreased visibility was not attributable to meteorological conditions were reviewed, and none of the ozone levels were high enough to be the cause of the brief drops in visibility (Table 5).

## **EMISSION INVENTORIES AND PERMITTED SOURCES IN THE AREA**

Particulate sources located around the Wilderness Area were plotted on a map (Figure 8). There were a total of 11 facilities in Comanche or Caddo counties with PM<sub>10</sub> emissions greater than 5 TPY (based on 2001 emissions data). The emission inventories of sources in surrounding counties within 100 km of the Class I Area were reviewed and the PM<sub>10</sub>, SO<sub>x</sub>, and NO<sub>x</sub> emissions were evaluated (Tables 6 and 7). These totals were normal in comparison to the data from previous reports.

## **ASSESSMENT**

40 CFR 50.306 contains the requirements for the public review reports of the long-term strategy. They are as follows:

- 1. The progress achieved in remedying existing impairment of visibility in any mandatory Class I Federal area.*

There is no existing visibility impairment in the Wilderness Area attributable to a source or group of sources. No visibility impairment has existed since the beginning of this program; thus, no corrective action has been required.

*2. The ability of the long-term strategy to prevent future impairment of visibility in any mandatory Class I Federal area.*

The New Source Review process requires that any new or modified major stationary source submit a visibility analysis and analysis of impacts on the Wilderness Area as part of their PSD application (example provided in Appendix B). This requirement has been in place since the beginning of the Oklahoma Visibility SIP in 1986. 31 PSD permits have been issued in Oklahoma in the past three years, 6 of which lie within 100 km of the Wilderness Area. None of them have caused an impairment of visibility in the Class I Federal area.

*3. Any change in visibility since the last such report, or in the case of the first report, since plan approval.*

The data from Ft. Sill suggests the development of a trend of steadily decreasing percent yearly readings  $\geq 7$  miles (see Figure 2); however, it has yet to drop below 86%. The percentages for the Lawton airport seem steady and have even increased slightly over time (see Figure 4). Some variability from year to year is attributable to meteorological conditions.

*4. Additional measures, including the need for SIP revisions, which may be necessary to assure reasonable progress toward the national visibility goal.*

The New Source Review process continues to be sufficient in protecting from attributable visibility impairment in the Wilderness Area at this time. No additional measures to assure progress toward the national visibility goal are necessary.

*5. The progress achieved in implementing BART and meeting other schedules set forth in the long-term strategy.*

The implementation of BART does not apply because no existing attributable visibility impairment in the Wilderness Area has been identified.

*6. The impact of any exemption under section 303 BART.*

BART is not required as explained in the previous section; therefore, this issue is not applicable.

*7. The need for BART to remedy existing visibility impairment of any integral vista listed in the plan since the last such report, or, in the case of the first report, since plan approval.*

There are no integral vistas and no existing visibility impairment in the Wilderness Area; therefore, this issue is not applicable.

TABLE 1  
PM<sub>10</sub> LAWTON MONITORING DATA

Year	Annual Average µg/m <sup>3</sup>
1988	31
1989	31
1990	30
1991	27
1992	25
1993	28
1994	28
1995	25
1996	27
1997	26
*1998	28

\*Represents PM<sub>10</sub> data from January through September only

TABLE 2  
PM<sub>2.5</sub> LAWTON MONITORING DATA

Year	Annual Average µg/m <sup>3</sup>
**1999	8.9
2000	9.1
2001	9.9
2002	9.4

\*\*Represents PM<sub>2.5</sub> data from March through December

TABLE 3  
 PM<sub>2.5</sub> AND PM<sub>10</sub> IMPROVE MONITORING DATA  
 2001

Month	Monthly Average PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Monthly Average PM <sub>10</sub> (µg/m <sup>3</sup> )
March*	6.01	16.03
April	10.83	28.26
May**	6.31	13.11
June	9.99	22.08
July	11.16	23.15
August	8.98	15.88
September	8.75	17.50
October	6.26	15.01
November	8.08	11.96
December	3.08	6.63
<b>2001 Annual Average</b>	<b>7.98</b>	<b>16.68</b>

\*IMPROVE Monitoring at the Wildlife Refuge began March 1, 2001

\*\*Sample area increased from 2.2 cm<sup>2</sup> to 3.5 cm<sup>2</sup> on May 16, 2001 to prevent the filter from clogging

TABLE 4  
 PM<sub>2.5</sub> AND PM<sub>10</sub> IMPROVE MONITORING DATA  
 2002

Month	Monthly Average PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Monthly Average PM <sub>10</sub> (µg/m <sup>3</sup> )
January	5.51	11.92
February	3.75	9.43
March	7.59	16.64
April	9.42	21.00
May	8.92	15.68
June	10.49	19.91
July	9.02	19.06
August	9.44	22.32
September	10.57	17.29
October	4.56	8.42
November***	3.95	9.28
<b>2002 Annual Average</b>	<b>7.77</b>	<b>15.48</b>

\*\*\*End of available quality assured data

TABLE 5  
OZONE LAWTON MONITORING DATA

DATE*	1 HR MAX (PPM)	8 HR ROLLING AVG MAX (PPM)
February 1, 2000	0.049	0.040
February 11, 2000	0.031	0.028
March 18, 2000	0.034	0.029
May 11, 2000	0.055	0.051
November 23, 2000	0.021	0.019
March 5, 2001	0.053	0.047
April 3, 2001	0.038	0.030
October 15, 2001	0.041	0.038
June 25, 2002	0.080	0.069
July 10, 2002	0.061	0.057
December 1, 2002	0.039	0.035

\*Dates when visibility < 7 miles could not be attributed to meteorological conditions

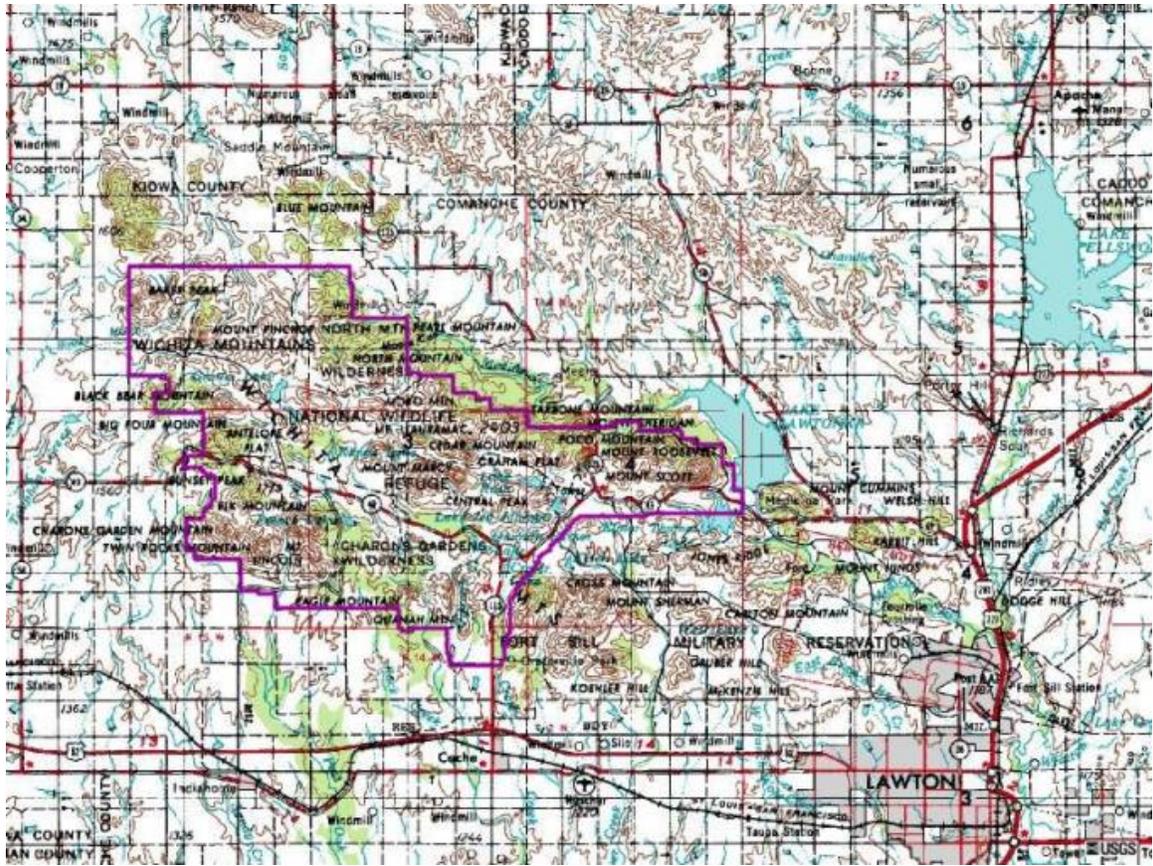
TABLE 6  
 POINT SOURCE EMISSION INVENTORIES FROM COUNTIES  
 WITHIN 100 KM OF WICHITA MOUNTAINS WILDERNESS  
 2000

COUNTY	TONS/YEAR OF PM <sub>10</sub>	TONS/YEAR OF SO <sub>x</sub>	TONS/YEAR OF NO <sub>x</sub>
Beckham	15	390	1,150
Blaine	100	0	1,643
Caddo	372	24	6,398
Canadian	35	3	4,445
Comanche	374	5	4,090
Cotton	0	0	0
Custer	20	1	2,482
Garvin	4	2,033	4,899
Grady	12	97	2,913
Greer	4	12	5
Harmon	0	0	0
Jackson	21	7	120
Jefferson	5	1	31
Kiowa	20	0	3
McClain	37	0	725
Stephens	0	265	4,300
Tillman	27	0	19
Washita	1	0	513
<b>TOTAL</b>	<b>1,047</b>	<b>2,838</b>	<b>33,736</b>

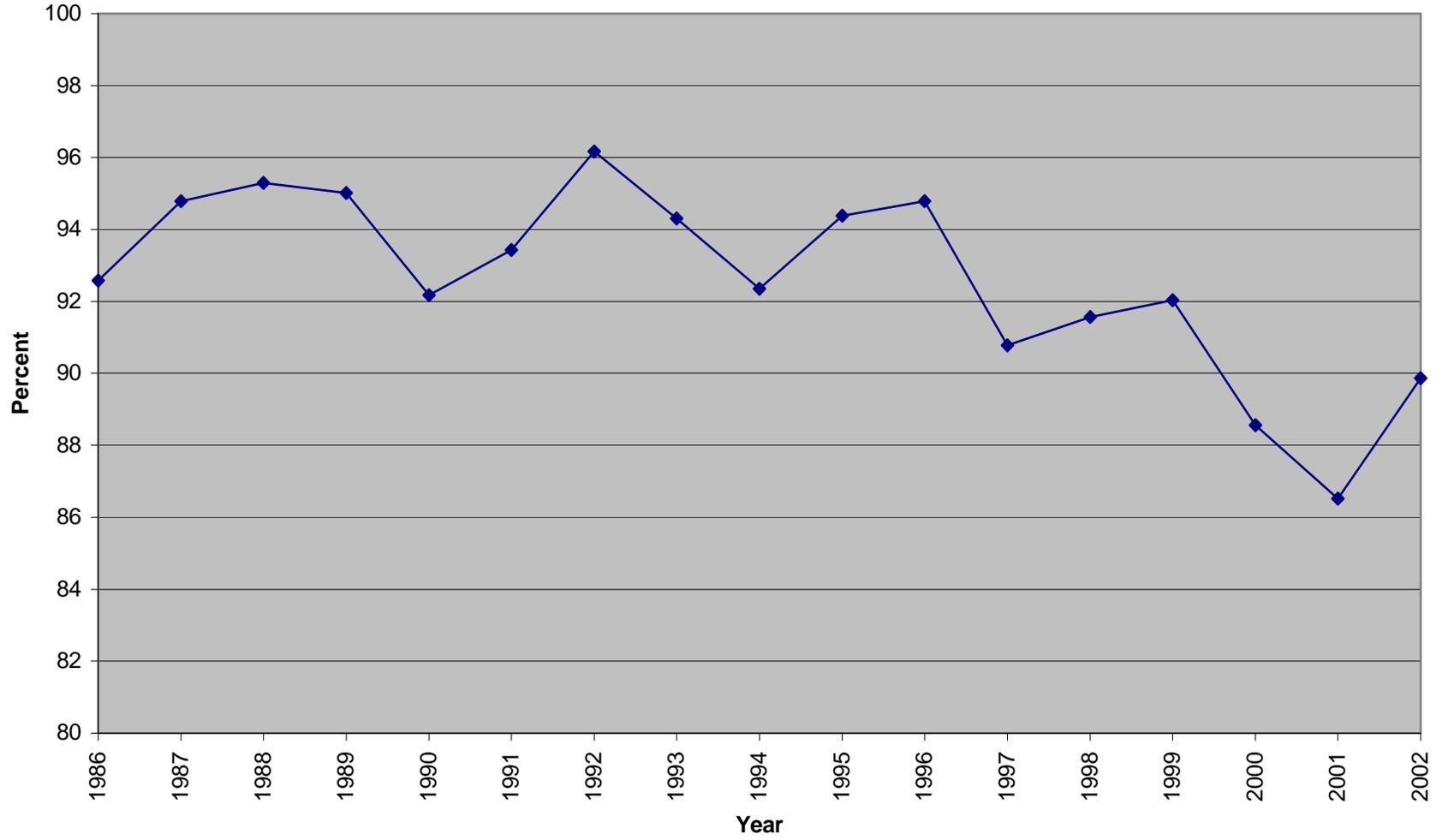
TABLE 7  
 POINT SOURCE EMISSION INVENTORIES FROM COUNTIES  
 WITHIN 100 KM OF WICHITA MOUNTAINS WILDERNESS  
 2001

COUNTY	TONS/YEAR OF PM <sub>10</sub>	TONS/YEAR OF SO <sub>x</sub>	TONS/YEAR OF NO <sub>x</sub>
Beckham	15	443	1,252
Blaine	97	0	1,733
Caddo	132	60	5,988
Canadian	63	3	5,055
Comanche	121	12	2,955
Cotton	0	0	0
Custer	18	2	2,292
Garvin	4	2,169	4,963
Grady	15	33	3,241
Greer	4	12	5
Harmon	0	0	0
Jackson	7	2	93
Jefferson	5	1	33
Kiowa	20	0	56
McClain	38	153	966
Stephens	21	290	3,784
Tillman	28	0	19
Washita	0	0	708
<b>TOTAL</b>	<b>588</b>	<b>3,180</b>	<b>33,143</b>

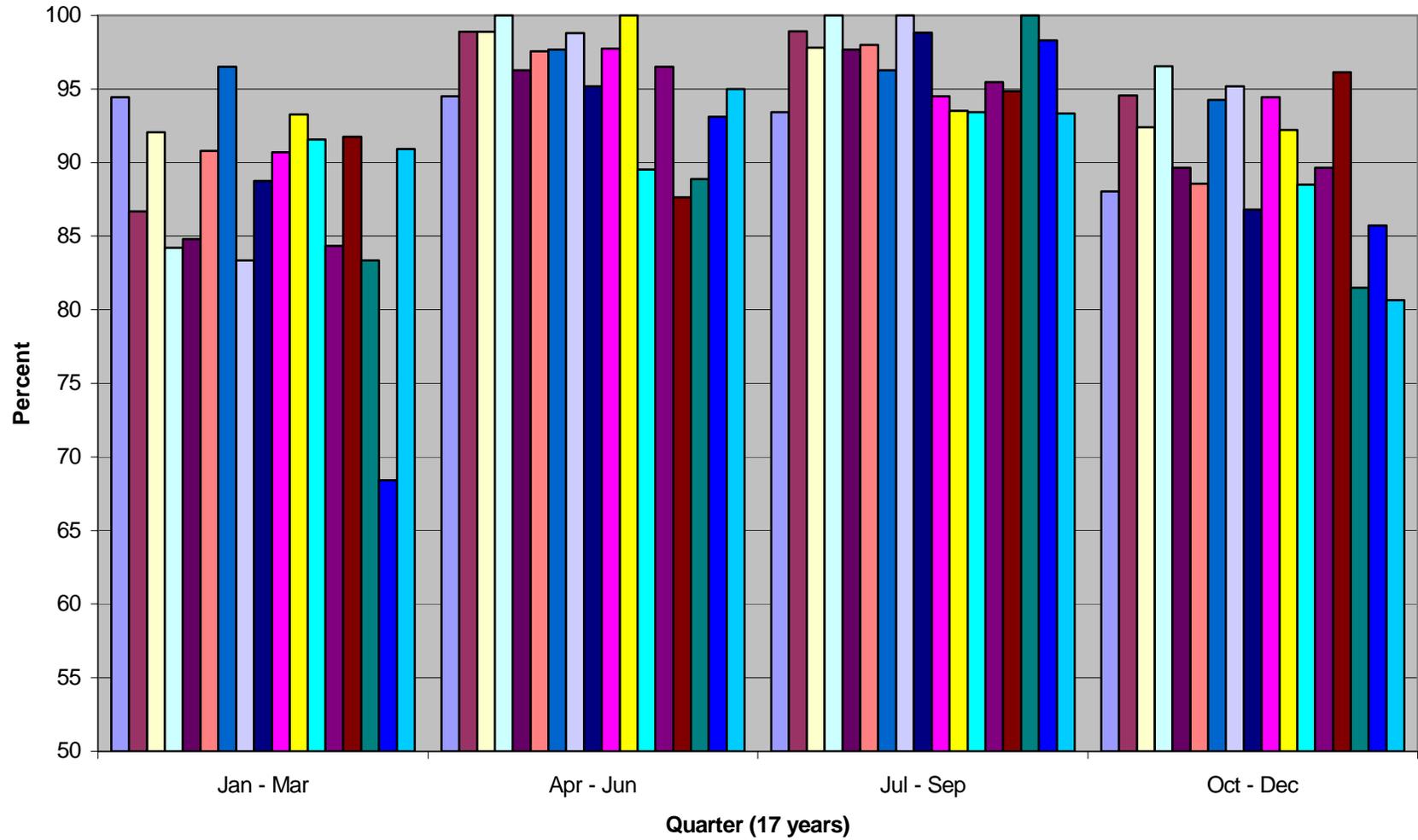
Figure 1  
Class I Area  
Wichita Mountains Wilderness



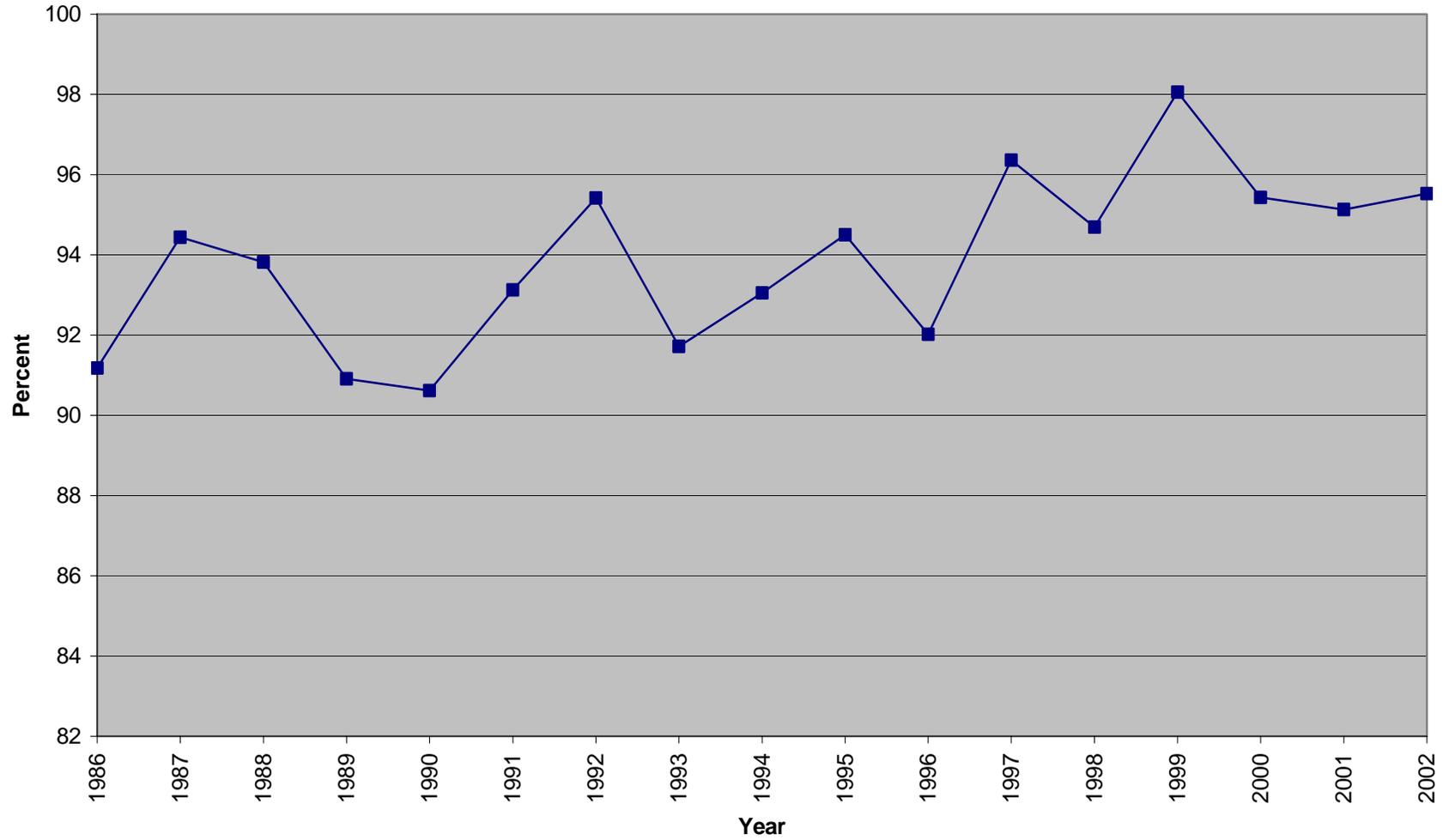
**Figure 2**  
**% Yearly Readings  $\geq$  7 miles**  
**Fort Sill**



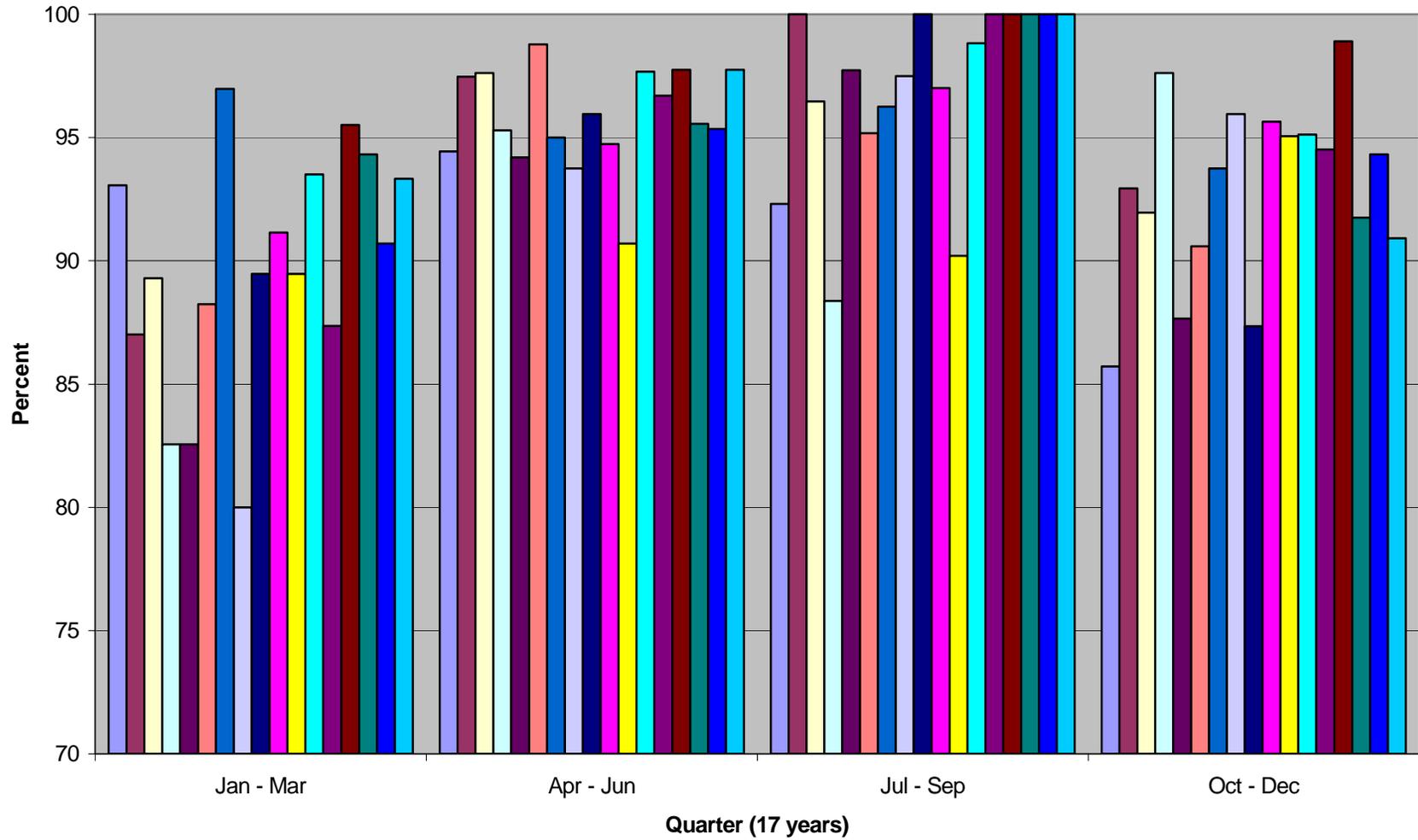
**Figure 3**  
**% Quarter Readings  $\geq$  7 miles**  
**Fort Sill**



**Figure 4**  
**% Yearly Readings  $\geq 7$  miles**  
**Lawton Airport**



**Figure 5**  
**% Quarter Readings  $\geq 7$  miles**  
**Lawton Airport**



**Figure 6**  
**PM<sub>10</sub> and PM<sub>2.5</sub> Lawton Monitoring Data**

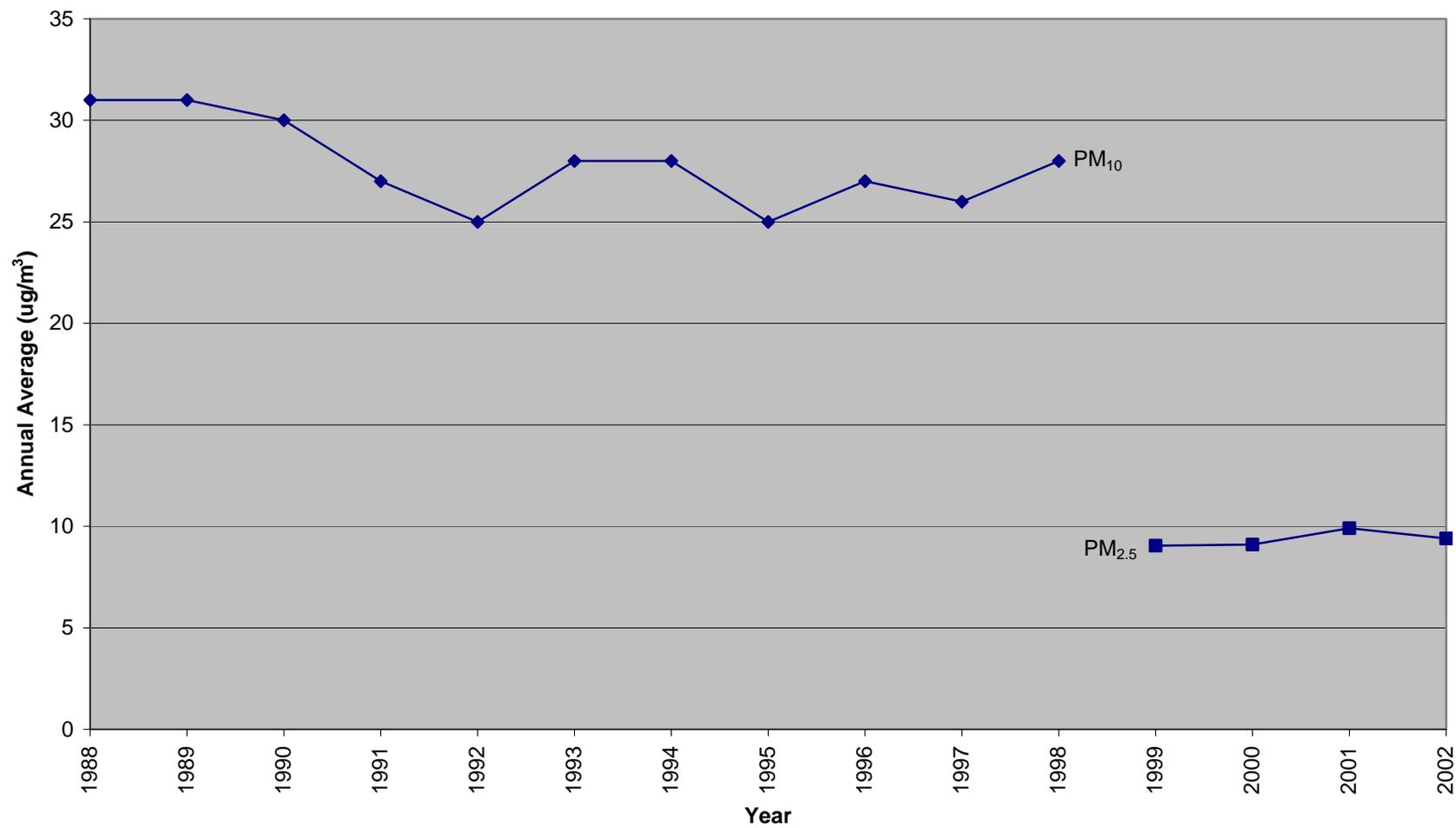


Figure 7  
PM<sub>10</sub> and PM<sub>2.5</sub> IMPROVE Monitoring Data

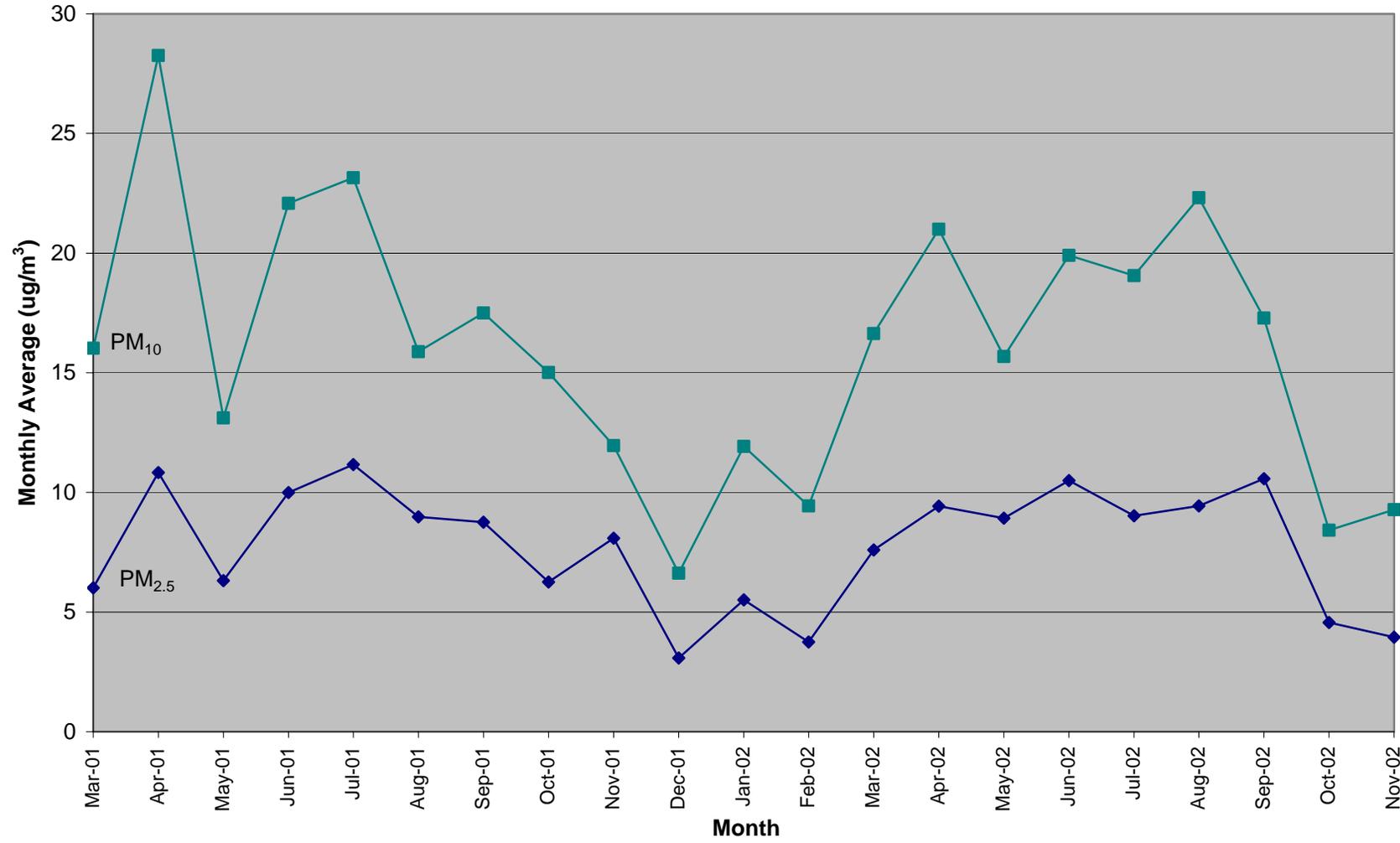
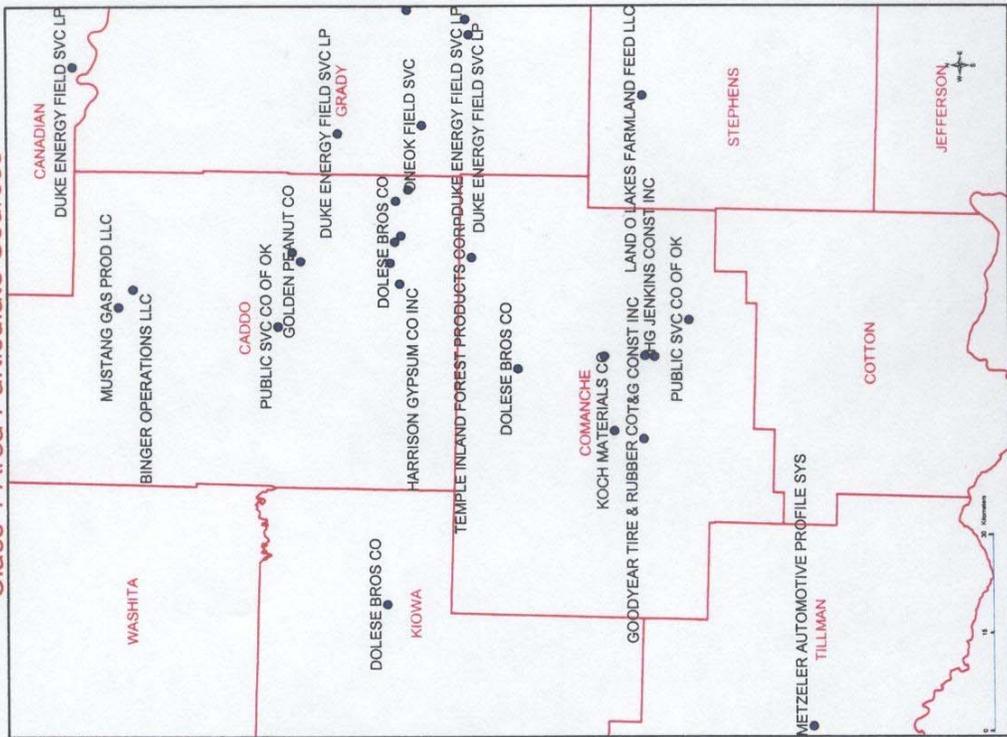


FIGURE 8  
PARTICULATE SOURCES NEAR  
THE WICHITA MOUNTAINS AREA

# Class 1 Area Particulate Sources



APPENDIX A  
OKLAHOMA VISIBILITY STATE IMPLEMENTATION PLAN  
(available upon request)

APPENDIX B  
EXAMPLE OF VISIBILITY IMPACT ANALYSIS FROM  
PSD PERMIT

## SECTION VIII. AIR QUALITY IMPACTS

For an area which is affected by emissions from a new major source or modification, an analysis of the existing air quality is required for those pollutants which are emitted in significant quantities. The facility must demonstrate that the project does not cause nor contribute to a violation of the National Ambient Air Quality Standards (NAAQS) nor violate the increments of PSD. In addition, state-only standards affect ambient impacts of toxic air pollutants and sulfur dioxide.

The facility is located in the western part of Ardmore at an elevation of 875 feet above sea level in an area characterized by gently rolling terrain. Some stack heights are less than Good Engineering Practice (GEP) heights, thus building downwash effects will cause ambient impacts to be higher and to occur close to the stacks. Modeling was conducted using the ISCST3 model. Regulatory default options for the model were used in all cases. The techniques used in the air dispersion modeling analysis are consistent with current AQD and U.S. EPA modeling procedures.

### A. VOC / Ozone

VOC is not limited directly by NAAQS. Rather, it is regulated as an ozone precursor. EPA developed a method for predicting ozone concentrations based on VOC and NOx concentrations in an area. The ambient impacts analysis utilized these tables from "VOC/NOx Point Source Screening Tables" (Richard Sheffe, OAQPS, September, 1988). The Scheffe tables utilize increases in NOx and VOC emissions to predict increases in ozone concentrations. Total facility post-project emissions were utilized: 160.2 TPY NOx and 571.7 TPY VOC.

The following tables show maximum impacts from the project compared to the ambient levels of significance for ozone. As shown, ambient impacts are below NAAQS; there is no increment standard for ozone. Thus, it has been demonstrated that the plant does not cause nor contribute to an air quality standards violation.

#### NAAQS COMPLIANCE

<b>Pollutant</b>	<b>Modeled Impacts, ug/m<sup>3</sup></b>	<b>Background Concentration, ug/m<sup>3</sup></b>	<b>Total Impacts, ug/m<sup>3</sup></b>	<b>NAAQS, ug/m<sup>3</sup></b>
<b>Ozone</b>	39	187	226	235

Pre-construction monitoring has already been conducted, showing ozone impacts of 187 ug/m<sup>3</sup> (1-hour average).

**COMPARISON OF INCREMENT TO AMBIENT MONITORING LEVELS OF SIGNIFICANCE**

<b>Pollutant</b>	<b>Modeled Incremental Impacts, ug/m<sup>3</sup></b>	<b>Monitoring Levels of Significance, ug/m<sup>3</sup></b>	<b>Ambient Monitoring Required?</b>
Ozone (VOC)	133.8 TPY VOC	100 TPY VOC	yes

The applicant has fulfilled all applicable requirements relative to the construction permit application provisions. Pre-construction ambient monitoring of ozone has been conducted in accordance with OAC 252:100-8-35(d).

**B. SO<sub>2</sub>**

Modeling of SO<sub>2</sub> impacts was conducted to show compliance with the ambient impacts limits of OAC 252:100-31.

Receptors were placed from the property boundaries to 10 km distance in all directions with receptor elevations taken from USGS digitized elevation maps. Receptor spacing varied from 100 meters (from the fenceline to 1,000 meters from the fenceline, 500 meter spacing from 1,000 meters to 5,000 meters, and 1,000 meters spacing from 5,000 meters to 10,000 meters.

SO<sub>2</sub> modeling utilized five years (1986-1991 excluding 1990) of preprocessed meteorological data based on surface observations taken from Oklahoma City, Oklahoma, (National Weather Service [NWS] station number 13967) and upper air measurements from Norman, Oklahoma (NWS station number 03946). Since Subchapter 31 requires the addition of an appropriate background level, SO<sub>2</sub> concentrations were taken from the Muskogee air monitoring site.

**OAC 252:100-31 AMBIENT IMPACTS COMPLIANCE FOR SO<sub>2</sub>**

<b>Averaging Time</b>	<b>Standard µg/m<sup>3</sup></b>	<b>Maximum Facility Impacts, µg/m<sup>3</sup></b>
1-hour	1,200	318.3
3-hour	650	242.6
24-hour	130	81.7

### C. Toxic Air Pollutants

The potential impacts of emissions of Hazardous and Toxic Air Pollutants were modeled to demonstrate continued compliance with OAC 252:100, Subchapter 41, Control of Emission of Hazardous and Toxic Air Contaminants, at the higher emission rates requested in that application.

Toxic air pollutant modeling utilized a single year (1986) of met data from the same sources. In accordance with SOP No. 9 (Modeling Protocol), a single year of met data is allowed when toxic air pollutant impacts are less than 50% of the MAAC.

The facility-wide annual emission rates of individual hazardous and toxic Air Pollutants were estimated and all but nine of the pollutants were below the de minimis levels in OAC 252:100-41-43. The compounds that were required to be modeled were: aniline, carbon black, carbon disulfide, ethanol, isophorone, methylene chloride, styrene, tetrachloroethylene, and toluene.

Modeling was conducted at initial estimates of emission rates which has been based on 60,000 tires per day (Permit No. 2000-128-C (PSD)). These emission rates have been reduced to levels based on 42,250 tires per day, but stack flows have not been reduced. Therefore, impacts shown will be conservative.

#### MAAC COMPLIANCE FOR COMPOUNDS ABOVE DE MINIMIS LEVELS

Pollutant	CAS No.	Toxic Category	Emission Rate		Modeled Impact, ug/m <sup>3</sup>	MAAC, ug/m <sup>3</sup>	In Compliance?
			lb/hr	TPY			
Aniline	62533	B	1.13	4.93	3.83	152	yes
Carbon Black	1333864	A	4.93	21.59	14.48	35	yes
Carbon Disulfide	75150	B	1.79	7.86	6.01	62	yes
Ethanol	64715	B	30.9	135.10	72.86	38000	yes
Isophorone	78591	C	1.39	6.07	6.80	2261	yes
Methylene Chloride	75092	A	3.45	15.10	9.08	1736	yes
Styrene	100425	C	0.31	1.34	0.98	4260	yes
Tetrachloroethylene	127184	A	0.26	1.14	0.76	3350	yes
Toluene	108883	C	2.20	9.45	6.89	37668	yes

This air dispersion impact analysis demonstrates that air emissions from the site at the production rate of 42,250 tires per day continue to be below the MAAC levels for all pollutants, and therefore in compliance with Subchapter 41.

## **SECTION IX. OTHER PSD ANALYSES**

### **Growth Impacts**

No significant industrial or commercial secondary growth will occur as a result of the project. Only a nominal number of new jobs will be created at the new facility and these will be filled by the local work force in the immediate area. No significant population growth will occur. Only a minimal air quality impact is expected as a result of associated secondary growth.

### **Soils, Vegetation, and Visibility**

There are two portions to a visibility analysis: impacts near the facility and impacts on Class I areas. The applicant has conducted a visibility impact analysis in accordance with guidelines in the Workbook for Estimating Visibility Impairment (EPA-450/ 4-80-031) using EPA's software VISCREEN. A Level 1 screening analysis was performed for the facility's impact on the nearest Class I area, the Wichita Mountains Wildlife Refuge, 130 km (80 miles) away. The analysis used a 160 km visual range as requested by the U.S. Department of the Interior. Since contrast parameters were all computed to be less than the specified level where additional analysis would be required, the Level 1 analysis indicated that it is highly unlikely that the source would cause any adverse visibility impairment in the nearest Class I area. There are no scenic vistas near the vicinity of the project. There will be minimal impairment of visibility resulting from the facility's emissions.

Operation of the facility is not expected to produce any perceptible visibility impacts in the vicinity of the plant. The applicant has attempted to utilize EPA computer software for visibility impacts analyses. The software was intended to predict distant impacts. Attempts to utilize the EPA methods for close-in impacts have resulted in the program prematurely terminating operation. Given the limitation of 20% opacity of discharges, and a reasonable expectation that normal operation will result in 0% opacity, no local visibility impairment is anticipated.

No effect on soils is anticipated from the facility. The application correctly pointed out that the particulate matter is primarily silicon dioxide and inert organic material. These are already among the primary constituents of the local soils.

### **Impact On Class I Areas**

The nearest Class I area is the Wichita Mountains Wildlife Refuge, about 130 km (80 miles) from the facility at nearly a 70° angle to the prevailing winds. The two important tests for impactation on a Class I area are visibility impairment and ambient air quality effect. A visibility analysis in the previous section indicated no impairment of visibility for this area. A significant air quality impact is defined as an ambient concentration increase of 1 ug/m<sup>3</sup>, 24 hour average. The radius of impact is 3.2 km from the plant, or

127 km from the Class I area. The extended transport distance to the nearest Class I area precludes any significant air quality impact from the facility.

APPENDIX C  
CORRESPONDENCE WITH FEDERAL LAND MANAGER

May 19, 2003

Sam Waldstein, Refuge Manager  
U.S. Department of the Interior  
Wichita Mountains Wildlife Refuge  
Rt. 1, Box 448  
Indiahoma, OK 73552

Re: Periodic Review Report for the Protection of Visibility, 2000-2002

Dear Mr. Waldstein,

The Oklahoma Department of Environmental Quality is currently in the process of reviewing our long-term strategy for protection of visibility in the Class I area under Oklahoma's jurisdiction, the Wichita Mountains Wilderness. We will be providing a report to Region VI of the Environmental Protection Agency regarding the progress made on visibility and any effects resulting from air pollution from 1986-2002.

In order to complete our report, we are requesting any information you may have regarding:

- Information concerning visibility conditions
- Determination of any impairment of visibility and data indicating any impairment
- Source specific visibility degradation
- New source applications affecting the area

When a draft of the visibility report is completed, we will submit it for any comments or suggestions you might have. If you have any questions, please feel free to contact Jonathan Ball at (405) 702-4132. We look forward to hearing from you soon.

Sincerely,

Cheryl E. Bradley, Environmental Programs Manager  
Technical Resources and Projects Section  
Air Quality Division

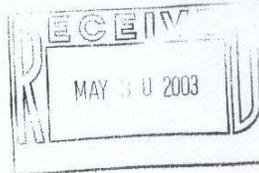
CEB/JRB



UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
WICHITA MOUNTAINS WILDLIFE REFUGE  
RR #1, Box 448  
Indiahoma, Oklahoma 73552



May 29, 2003



Cheryl E. Bradley, Environmental Programs Manager  
707 North Robinson  
P.O. Box 1677  
Oklahoma City, Oklahoma 73101-1677

Dear Ms. Bradley:

We have been operating an Interagency Monitoring of Protected Visual Environments (IMPROVE) particle sampler, have a remote high-resolution automatic digital camera system for scene monitoring in-place for visibility monitoring and a nephelometer will be installed on the refuge within the next few months.

Please contact us if you need any additional information.

  
Sam Waldstein  
Refuge Manager