DOUGLAS SULFUR DIOXIDE NONATTAINMENT AREA STATE IMPLEMENTATION AND MAINTENANCE PLAN

AIR QUALITY DIVISION

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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1.0 INTRODUCTION

1.1 Purpose and Regulatory Background

This document consists of the attainment demonstration, maintenance plan, and redesignation to attainment request for the Douglas Sulfur Dioxide (SO_2) Nonattainment Area. The purpose of this document is to demonstrate how the State of Arizona has met the National Ambient Air Quality Standards (NAAQS) for SO_2 and intends to maintain compliance with the NAAQS in the Douglas area. Air quality standards are divided into two types: primary standards based on health effects and secondary standards based on environmental effects such as damage to property, plants, visibility, etc. Both standards are established by EPA for criteria air pollutants such as sulfur dioxide.[1]

1.2 History

The United States Environmental Protection Agency (EPA) designated the entire area of Cochise County as nonattainment for SO_2 on March 3, 1978, (43 FR 8968) for lack of a State recommendation. At the request of Arizona Department of Environmental Quality (ADEQ), the nonattainment area was subsequently reduced to three townships in and around Douglas on April 10, 1979 (44 FR 21261). As shown in the table below, the portions of Cochise County that define the boundary of the Douglas nonattainment area (40 CFR 81.303) are marked and classified as[2]:

Douglas Location	Does Not Meet Primary Standards	Cannot Be Classified
T23S, R27E	X	
T24S, R27E	X	
T24S, R28E	X	
T23S, R26E		X
T23S, R28E		X
T24S, R26E		X

[1] Sulfur Dioxide Standards: In 1971, EPA published in the Federal Register (36 FR 81875 for 1971) the primary and secondary NAAQS for SO_2. Secondary annual and 24-hour standards were later revoked and May 22, 1996 (61 FR 25566) the primary standard revised from $\mu g/m^3$ to parts per million (ppm). The current established NAAQS for SO_2 are:

	Annual	24-hour average	3-hour average
Primary	.030 ppm (80 $\mu g/m^3$)	.14 ppm (365 $\mu g/m^3$)	
Secondary			.5 ppm (1300 $\mu g/m^3$)

SOURCE: 40 CFR 50.4 - 50.5

[2] See **Appendix A.1** for a delineation of the existing area as codified in 40 CFR 81.303.

Phelps Dodge Douglas Reduction Works Smelter (PDDRWS) was the largest point source in the nonattainment area. The PDDRWS facility was located off highway 80, approximately 1.5 miles west of the city of Douglas, in Cochise County, Arizona; at a latitude coordinate of 31^0-21' and a longitude coordinate of -109^0-35', and an elevation of 3990' (See **Appendix A** for a detailed map and photographs). A more detailed description of PDDRWS operations can be found in **Section 2.1**.

As required by the Clean Air Act (CAA), Arizona submitted a State Implementation Plan (SIP) for all major sources in the State on January 30, 1972. At that time, the portion of the SIP pertaining to SO_2 in the Douglas area (part of the Southeast Arizona Intrastate Air Quality Control Region (40 CFR 81.272)) was not approved due in part to the failure to analyze the impact of smelter fugitive emissions from PDDRWS on ambient air quality (40 CFR 52.125(a)(1)). On November 30, 1981, Arizona submitted a proposed Multi-Point Rollback (MPR) rulemaking as part of revisions to the Arizona SIP. It was approved by the EPA as final rulemaking on January 14, 1983 (48 FR 1717).[3] The rule, which establishes standards of performance for existing primary copper smelters, set requirements for analyzing the impact of smelter fugitive SO_2 emissions on ambient air quality. PDDRWS failed to meet these standards and subsequently made the decision to cease operations. On January 15, 1987, the facility was permanently closed and dismantling began. In 1991, the facility was completely dismantled. By January 30, 1992, ADEQ confirmed that the facility was dismantled and no longer existed at the former site (See Photographs in **Appendices A.2 and A.3**).

1.3 Climate

Both desert terrain and mountain ranges are found within Cochise County's landscape. The elevations range from 2,000 to 9,000 feet above sea level, and the City of Douglas sits at an elevation of 3,990 feet. This unique environment experiences both warm desert and cool alpine climates, including all the variations within those extremes. In the Douglas area, the hottest month of the year is July, when the average daily temperature is 89º Fahrenheit (F). January is the coolest month of the year; with an average daily temperature of 45º F. The average yearly temperature for Douglas is 62º F.

Rainfall generally occurs in two seasons. The wettest month is July when monsoon-type rains produce 3.41 inches of rain in the Douglas area. Pacific winter storms moving across the area in December produce an average of 1.04 inches of rain in Douglas. The driest month is May, when Douglas receives an average of 0.20 inches of rain. The average yearly precipitation for Douglas is 13.42 inches of rain.

1.4 Population

The population data for the City of Douglas and the Cochise County area were compiled from data

[3] Arizona Code of Rules and Regulations (ACR): Rule (R) 9-3-515 (recodified as Arizona Administrative Code (AAC) R18-2-515; renumbered as R18-2-715 in 1993 as Standards of Performance for Existing Primary Copper Smelters; Site Specific Requirements).

developed by the Arizona Department of Economic Security (ADES).[4] **Table 1.1** presents ADES records of 1997-2000 population for Cochise County and the city of Douglas in addition to estimates for 2000-2015. Population counts and projections are also provided for the entire state of Arizona. Recent growth patterns indicate that population growth rates in the Cochise County area have moderated and are now less than the surrounding regions.

Table 1.1 Population Statistics

	1997	2000	2015	% Change 1997 - 2000	% Change 2000 - 2015
Cochise Co.	116,737	121,837	143,793	4 %	18 %
Douglas	15,058	15,520	16,325	3 %	5 %
Arizona	4,595,379	4,961,953	6,744,754	8 %	35 %

SOURCE: Arizona Department of Economic Security, 1997

1.5 Economy

Cochise County was created in 1881 by the Eleventh Territorial Assembly. The County covers 6,215 square miles. Individual and corporate ownership accounts for 40 percent of land ownership in the County. The U.S. Forest Service and the Bureau of Land Management own 22.2 percent; the state of Arizona owns 34.6 percent; and other public lands comprise the remaining 3.2 percent. There are no Indian reservations in Cochise County. Douglas was founded in 1901 as a site for a copper smelter and was incorporated in 1905.

Because of its location, the economy of the Douglas area includes international commerce. Douglas has three manufacturing plants, and the nearby border community of Agua Prieta in the state of Sonora, Mexico has 32 manufacturing plants. Some of the Agua Prieta plants are "maquiladoras" (twin-plants manufacturing on both sides of the border). These maquiladoras manufacture clothing, electronics, auto parts, and plastic injection moldings. Agriculture and ranching are still important economic segments of the area as well. Douglas also serves as a retail center for shoppers on both sides of the border. Thirty-nine percent of retail sales in the Douglas area are attributed to Mexican shoppers.

Tourists are attracted to the area because of the frontier mining town of Tombstone, shopping in Agua Prieta, and the historic and scenic sites of Old Fort Bowie, Fort Huachuca, Coronado National Memorial, Cochise Stronghold, Chiricahua National Monument, Coronado National Forest, Texas Canyon, Kartchner Caverns State Park, and the San Bernardino Wildlife Refuge. Additional background economic information on the area can be found in **Table 1.2** and **Table 1.3.**

[4] According to Executive Order 95-2, signed by Governor Fife Symington, February 10, 1995, ADES statistics are to be used by all State agencies instead of US Census data for the purposes of planning. This was done to prepare one official set of population estimates and projections. US Census data for the year 2000, records the population for Cochise County as 97,624; Douglas as 17,324; and Arizona as 3,665,228 persons.

Table 1.2 Labor Force Data - Douglas, Arizona			
	1980	**1990**	**1998**
Civilian Labor	4,331	4,705	4,527
Employed	3,884	4,139	3,912
Unemployed	447	566	616
Unemployment Rate	10.3%	12.0%	13.6%

SOURCE: Arizona Department of Economic Security, 1997

Table 1.3 Growth Indicators - Douglas			
	1990	**1997**	**1998**
Taxable Sales	99,638,900	127,036,800	136,820,880
Postal Receipts	1,036,102	1,267,266	1,168,606
School Enrollment	4,412	4,682	4,722
Net ($) Assessed Valuation	22,927,209	31,727,825	31,270,112

SOURCE: Arizona Department of Commerce, 1997

1.6 General SIP Requirements

Section 110 and Title I, Part D, subparts 1 and 5 of CAA are applicable to this SIP.

1.6.1 CAA Section 110(a)(2)

Section 110(a)(2) sets forth the following requirements for nonattainment areas:

a. States shall include enforceable emission limitations and other control measures, means, or techniques, as well as schedules and timetables for compliance (See **Chapter 4.0**).
b. States shall provide for establishment and operation of appropriate devices, methods, systems, and procedures necessary to monitor, compile, and analyze data on ambient air quality (See **Chapter 3.0**).
c. States shall include a program to provide for the enforcement of the measures described in (a) above, and regulation of the modification and construction of any stationary source within the areas covered by the plan to assure that national ambient air quality standards are achieved, including a permit program as required in part (d) below (See **Chapter 4.0**).
d. SIPs shall contain adequate provisions prohibiting any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will contribute

significantly to nonattainment or interfere with measures required to be included in the applicable implementation plan (See **Chapters 4.0, 6.0 and 9.0**).

e. Provide necessary assurances that the State will have adequate personnel, funding, and authority under State law to carry out such implementation plans (See **Section 4.4**).

1.6.2 CAA Section 172(c)

Section 172(c) of CAA, Nonattainment Plan Provisions, sets forth the following requirements for nonattainment areas:

a. Implementation of all reasonably available control measures (RACM) as expeditiously as practicable (CAA § 172(c)(1)) - RACM is met for the PDDRWS because the facility was completely dismantled and no longer exists. There are three remaining SO_2 point sources in the nonattainment area and within the 50km buffer area: Chemical Lime, Incorporated (Chemical Lime), Arizona Public Service (APS), Fairview Station, and Maddux & Sons, Coleman Pit.[5] See **Section 4.2** for further explanation of applicable RACM and emissions data for these sources.

b. Reasonable further progress (RFP) must be demonstrated in accordance with CAA §172(c)(2) - EPA's RFP requirements stipulate that annual incremental reductions in SO_2 are needed to achieve attainment of the SO_2 NAAQS. With the closure of PDDRWS in 1987, this submittal demonstrates progress, towards and achievement of attainment for the SO_2 primary NAAQS.

c. A current inventory of actual emissions from all sources of relevant pollutant or pollutants (CAA §172(c)(3)) - The ADEQ Air Quality Division maintains a historical and current database of actual emissions from State-permitted point and area sources. All non-permitted source emissions data (ie: mobile sources) comes from EPA's AIR*Data* emission inventories.[6] For historical purposes, ADEQ's inventory lists emissions from SO_2 units at PDDRWS during its time of operation. The total SO_2 emissions are based upon the measured fugitive emissions plus total stack emissions. Monitoring data is also available to supplement the emissions inventory, including data for point, area, and mobile sources (See **Chapters 2.0 and 3.0, and Section 8.1**).

d. Requirements for new and modified major stationary sources are required for the construction and operation of new and modified major stationary sources throughout the nonattainment area (in accordance with CAA §172(c)(5) and CAA §173). The ADEQ Air Quality Division has codified the permit application process in Title 18, Article 3 of the Arizona Administrative Code (AAC). It should be noted that the ADEQ Air Quality Division currently has interim approval of its Title V permit program and expects full approval by the end of 2001 (See **Sections 8.3** and **8.5**).

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[5] See **Appendix A.4** for location of these facilities.

[6] AIR*Data* provides access to air pollution data for the entire United States. Website address (as of date published): http://www.epa.gov/air/data/index.html

e. The Plan shall include enforceable emissions limitations and such other control measures, means or techniques, as well as schedule and timetables for compliance, as may be necessary or appropriate to provide for attainment of such standard in such area by the applicable attainment date (CAA §172(c)(6)). AAC R18-2-715 contains the required annual average emission limitations and number of three-hour average emission limits for Arizona smelters. AAC R18-715.01 (Standards of Performance for Existing Primary Copper Smelters; Compliance and Monitoring; See **Appendix B.1**), set forth the compliance date of January 14, 1986, for monitoring, calibration, measurement system performance requirements, record keeping, bypass operation, and issuance of notices of violation.[7] Details regarding control for the remaining SO_2 sources may be found in **Chapter 4.0**.

f. Equivalent techniques for modeling, emissions inventory, and planning procedures allowed by the administrator (CAA §172(c)(8)) - The Air Quality Division (AQD) at ADEQ is utilizing a Memorandum from John Seitz, EPA's Director of the Office of Air Quality Planning and Standards, dated October 18, 2000, "Redesignation of Sulfur Dioxide Nonattainment Areas in the Absence of Monitored Data," to make the attainment demonstration for this nonattainment area.

g. Contingency measures that can be implemented automatically in the event the area fails to make reasonable further progress (CAA §172(c)(9)) - the area has met the RFP requirement for attainment, so no specific attainment demonstration contingency measures are necessary (See **Chapter 5.0**).

1.6.3 CAA Section 175(a)

Section 175(a) of CAA, Maintenance Plans, sets forth the following requirements for nonattainment areas.[8]

a. Plan Revision - each State which submits a request for redesignation of a nonattainment area shall also submit a revision of the applicable SIP to provide for the maintenance of the NAAQS for at least ten years after the redesignation. This submittal shows attainment through year 2015.

b. Subsequent Plan Revisions - eight years after redesignation as any attainment area, the State shall submit an additional revision of the applicable SIP for maintaining the NAAQS for ten years after the expiration of the ten-year period referred to in subsection (a). ADEQ commits to submit an additional SIP revision in the year 2013 time frame.

c. Nonattainment Requirements Applicable Pending Plan Approval - until such plan revision is approved and an area is redesignated as attainment for any area designated

[7] Standards of Performance for Existing Primary Copper Smelters; Site-specific Requirements, R18-2-515, renumbered R18-2-715 (1993).

[8] A discussion of this SIP's Maintenance Plan can be found in **Chapter 7.0**.

nonattainment, the requirements of this part shall continue in force and effect. ADEQ commits to keeping all applicable measures in place.

d. Contingency Provisions - each plan revision submitted under this section shall contain such contingency provisions to assure that the State will promptly correct any violation of the standard which occurs after the redesignation of the area as an attainment area. Such provisions shall include a requirement that the State will implement all measures with respect to the control of the air pollutant concerned before redesignation. ADEQ commits to implementing all identified measures as necessary (See **Chapter 6.0**).

1.6.4 CAA Sections 191 and 192

Sections 191 and 192, Plan Submission and Attainment Dates - This submittal fulfills this requirement. And, with the submittal of this SIP and Maintenance Plan, ADEQ requests redesignation of the Douglas SO_2 Nonattainment Area to attainment.

2.0 SO_2 EMISSIONS INVENTORY FOR POINT, AREA AND MOBILE SOURCES

2.1 Historical Emissions Inventory

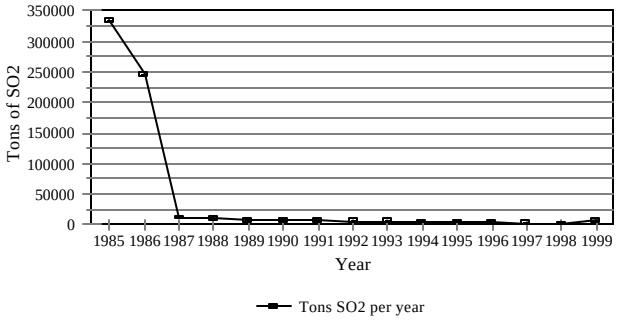
The historical emissions inventories for the Douglas area indicate that although there were other point sources of SO_2 emissions in the area, PDDRWS was the primary point source for SO_2 emissions for this nonattainment area. The Douglas smelter was the fifth largest copper smelter in the country and used a standard reverberatory furnace smelting process. Major process equipment included 24 roasters, three reverberatory furnaces, five converters, and two anode furnaces. Copper feed arrived at the plant by rail and was transferred to the bedding plant. Feed material was dropped onto the top hearth of a roaster. The resulting material (calcines) produced in the roasters was charged into one of the two operating reverberatory furnaces. Matte from these two furnaces was then tapped into ladles and transferred by overhead cranes to one of five converters. Slag was carried by rail to a nearby dump. Blister copper from the converters was then cast into anodes after refining in one of two anode furnaces. The final product was approximately 99.7 percent pure copper anodes. Emissions from these sources were collected, treated for particulate removal and ducted to one of two stacks. The average annual SO_2 emissions for the two years prior to the closure (1985 and 1986), was 287,588 tons per year (tpy) of SO_2 (See **Appendix C.1**). Area and mobile source emissions during this period were 684 tpy and 750 tpy respectively (See **Figure 2.**).

2.2 Emission Inventory for Attainment Demonstration: Years 1985-86, 1999

Point Sources

PDDRWS was the major source for the area. When it closed in 1987, the SO_2 point source emissions in the Douglas nonattainment area were reduced to1,325 tpy in 1987. The total SO_2 emissions for point sources in 1999 was 1,969 tpy. Additional data show that no other point, area or mobile sources have contributed, or contribute to the same levels of sulfur dioxide in the Douglas nonattainment area PDDRWS when it was operational. There are three SO_2 point sources within 50 kilometers of the Douglas nonattainment area: Chemical Lime, APS, Fairview, and Maddux & Sons. (See **Section 6.1** for emissions inventory data).

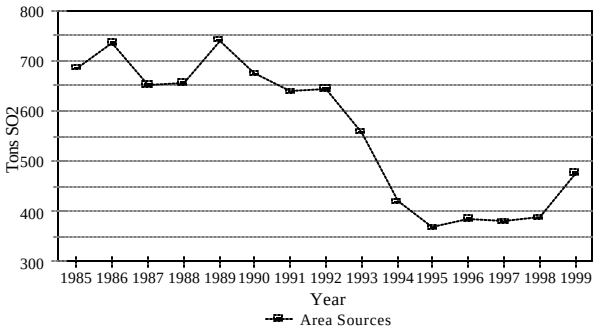
Figure 2.1 Point Sources In CochiseCounty



Area and Mobile Sources

There are no significant area or mobile sources associated with the Douglas nonattainment area. As reflected in **Figure 2.2**, EPA's AIR*Data* for all of Cochise County shows in 1985 area and mobile sources emitted 684 tpy of SO_2 (See **Appendix C.1**). By 1987, area and mobile sources had dropped to a low of 652 tpy. In 1998, area sources emitted 387 tpy, a reduction of over 50 percent of the 1987 level. Area and point sources operating in Mexico are beyond fifty kilometers from the southern boundary of the nonattainment area.

Figure 2.2 Area and Moblie Sources in Cochise County



3.0 MONITORING NETWORK

Protocols for SO_2 monitoring are found in 40 CFR Part 50, Appendix A, Reference Method for the Determination of Sulfur Dioxide in the Atmosphere, Part 58, Subpart B, Section 58.14, Special Purpose Monitors, Subpart C, Section 58.20, State and Local Air Monitoring Stations, Air Quality Surveillance: Plan Content, and Subpart D, Section 58.30, National Air Monitoring Stations (NAMS).

3.1 SO_2 Monitoring

ADEQ began monitoring for SO_2 in the Douglas area as early as 1970.[9] With ADEQ concurrence, PDDRWS began ambient SO_2 air quality monitoring in Douglas in 1975. Since then, the last recorded exceedance for the annual standard was one, recorded in 1983. Monitoring data from ADEQ, PDDRWS and Arizona Electric Power Cooperative (AEPCO) analyzers are provided in **Appendix C.2**. These monitors included coulometric, flame photometric and fluorescent monitors. Currently there are no operating ambient SO_2 monitors in the Douglas area. Due to the lack of an existing monitoring network, and as outlined in Director John Seitz's October 18, 2000, Memorandum, "Redesignation of Sulfur Dioxide Nonattainment Areas in the Absence of Monitored Data," redesignation for this area does not require eight current consecutive quarters (two years) of quality-assured, violation-free data (See **Appendix B.3**).

3.2 Historical Data Analysis

A review of the SO_2 monitoring data in the nonattainment area verifies that:

a. There have not been any recorded exceedances of either the 24-hour or annual SO_2 NAAQS in Douglas since 1984.
b. During the network's history, annual average SO_2 levels were generally one-half of the NAAQS ($80 g/m^3$).
c. There have not been any recorded exceedances of the 3-hour secondary SO_2 NAAQS in the Douglas area since 1984 (Also see **Appendix C.2**).

[9] Air Quality Report, Air Quality Division, 1970.

4.0 CONTROL MEASURES

4.1 Reasonably Available Control Technology for SO_2 Major Sources in the Douglas Nonattainment Area

Reasonably Available Control Technology (RACT) is the emissions control level for sources located in SO_2 nonattainment areas. RACT is determined by the technological and economic feasibility of the control.[10]

4.1.1 Reasonably Available Control Technology (RACT) #1: AAC Rule 18-2-715

Standards of Performance for Existing Primary Copper Smelters; Compliance and Monitoring.

Technology Description:
PDDRWS was subject to all the requirements in R18-2-715(A)-(E).[11] PDDRWS submitted a notice of intent to apply for a Nonferrous Smelter Order (NSO) for the Douglas smelter on March 14, 1985, to EPA and the State of Arizona. Upon receipt of the denial of the NSO on April 17, 1986, the PDDRWS smelter was scheduled for closure, which was completed on January 15, 1987.

Estimated SO_2 Emission Reduction:
The closure of the Douglas smelter in 1987 resulted in 300,000 tpy SO_2 emission reduction from stack and fugitive emissions.

Responsible Agency and Authority for Implementation:
ADEQ was the responsible agency with authority designated from:

- ARS §49-104
- ARS §49-422
-

Implementation Schedule:
Compliance with the rule by PDDRWS was effective with the facility's shutdown date, January 14, 1987.

Level of Personnel and Funding Allocated for Implementation:
No additional personnel is required.

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[10] US EPA Office of Air and Radiation, Office of Air Quality Planning and Standards, "SO_2 Guideline Document," February 1994.

[11] ADEQ promulgated site specific requirements in the AAC R18-2-715 (See **Appendix B.1**), known as a Multi-Point Rollback (MPR) Rule, for all existing primary copper smelters (See **Section 1.2**). MPR included a compliance date of January 14, 1986, in R18-2-715(D). PDDRWS was pending a nonferrous smelter order (NSO) determination from EPA at the time the rule was promulgated. Therefore, no site specific requirements were listed for this facility in the MPR rule.

Enforcement Program:

ADEQ is responsible for enforcing performance standards for existing primary copper smelters through inspections, issuance of compliance correspondence (Notices of Opportunity to Correct (NOCs), Notices of Violations (NOVs), Orders, etc.), and the development of other escalated enforcement actions as facts dictate.

Monitoring Program:

For purposes of determining compliance, ADEQ required PDDRWS to install, calibrate, maintain, and operate a measurement system for continuously monitoring SO_2 concentrations and for stack gas volumetric flow rates.[12] Measurement of stack gas volumetric flow in the outlet of any particular piece of SO_2 control equipment was approved prior to May 18, 1984, during the review of the compliance plan as required by AAC R18-2-715.02(B)(1). In addition, the measurements for continuous monitoring (CEMS) were taken and recorded by taking a minimum of one measurement of SO_2 concentration and stack gas flow rate reading from the effluent of each affected stack, outlet or other approved measurement location in each 15-minute period. An hour of smelter emissions was considered to have been continuously monitored if the emissions from all monitored stacks, outlets, or other approved measurement locations are measured for at least forty-five minutes of any hour in accordance with the requirements of AAC R18-2-715.

As required by AAC R18-2-715.01(C)(l), PDDRWS measured at least 95 percent of the hours during which emissions occurred in any month, and the smelter also complied with the requirement to measure any of the twelve consecutive hours of emissions per R18-2-715.01(C)(1). ADEQ did not issue a NOV for any monitoring violation to this facility, according to the Air Quality Divisions' compliance file.

As required by 40 CFR 60 Subpart P - Standards of Performance for Primary Copper Smelters, PDDRWS maintained records of all average hourly emissions measurements. The records of such emissions were retained for at least two years following the date of measurement. All of the following emission measurement results were expressed as pounds per hour of SO_2, and were summarized monthly and submitted to the Director of the ADEQ within twenty days after the end of each month:

a. The annual average of the month;
b. The total number of hourly periods during the month in which measurements were not taken and the reason for loss of measurement for each period;
c. The number of three-hour emissions averages which exceeded each of the applicable emissions levels listed in R18-2-715.01(F) for the compliance periods ending on each day of the month being reported;
d. The date on which a cumulative occurrence limit listed in R18-2-715.01(F) was exceeded if such exceedance occurred during the month being reported. A summary report is provided in **Appendix D.1**.

Permit #0263-83 for the PDDRWS copper smelter was issued on March 10 , 1983. The previous permit for PDDRWS expired on December 31, 1982. On May 15, 1985, the Phelps Dodge Corporation

[12] Only applicable for stacks emitting five percent or more of the allowable annual average SO_2 emissions.

applied directly to EPA for a second period NSO for PDDRWS.[13] An NSO may have been issued by the State for PDDRWS if the EPA found that the facility was unable to comply with the SIP requirements because the requirements were not demonstrated to be reasonably achievable.[14] EPA denied the NSO application. The denial was published in the Federal Register on April 17, 1986 (Vol. A9 FR pg 3004-9), "Proposed Decision To Deny a Non-Ferrous Smelter Order to Phelps Dodge Corporation, Douglas, AZ; Section 119 of the Clean Air Act." The smelter was closed within one year of the denial, on January 15, 1987.

4.1.2 Reasonably Available Control Technology (RACT) #2: AAC Rule 18-2-715.02

Standards of Performance for Existing Primary Copper Smelters; Fugitive Emissions

Technology Description:
AAC 18-2-715.02 was required for all applicable sources as of January 14, 1986. The rule required sources to measure and evaluate fugitive emissions from various smelters.

Estimated SO_2 Emission Reduction:
The closure of the Douglas smelter in 1987 resulted in 300,000 tpy SO_2 emission reduction, including stack and fugitive emissions.

Responsible Agency and Authority for Implementation:
ADEQ was the responsible agency with authority designated by:

- ARS §49-104(A)(11)
- ARS §49-422
-

Implementation Schedule:
Compliance with the rule by PDDRWS was effective with the facility's shutdown date, January 15, 1987.

Level of Personnel and Funding Allocated for Implementation:
No additional personnel is required

Enforcement Program:
ADEQ is responsible for enforcing performance standards for existing primary copper smelters through inspections, issuance of compliance correspondences (NOCs, NOVs, and orders), and the development of other escalated enforcement actions as facts dictate.

Monitoring Program:
See Section 4.1.1

[13] CAA §119 (1)(c)(1)

[14] CAA §119 (1)(C)(3)

4.2 Controls for Other Point Sources in the Douglas Nonattainment Area

1. Chemical Lime: Although the source's permits contains limits for other criteria pollutants, there are no current federal or state SO_2 emission limits for lime plants (See **Appendix C.1** for emissions data).

2. Maddux & Sons, Coleman Pit: Maddux & Sons operates portable crushing and screening equipment at the Coleman Pit in Douglas, Arizona. The Coleman Pit is a Class II source, operating under a crushing and screening general permit. This source has actual SO_2 emissions of one ton or less per year. The permit limits the SO_2 emissions from the combustion of fuel in their internal combustion engine to not more than 1.0 pound per million btu of heat input. The permit also prohibits the use of high sulfur oil (See **Appendix C.1** for emissions data).

3. APS, Fairview Generating Station: In accordance with AAC R18-2-719, the APS facility complies with RACT because the standard for SO_2 emissions limitations is at no more than 1,300 tpy. The source's permit, however, limits the potential to emit (PTE) from the existing equipment at the Fairview Generating Station to 700 tpy of SO_2. Actual emissions, however, are minimal, at less than 3 tpy (See **Appendix C.1** for actual emissions data).

4.3 Controls for Area and Mobile Source in the Douglas Nonattainment Area

As Table C.2 in Appendix C indicates, these source categories are considered minor.

5.0 CONTINGENCY MEASURES

5.1 Prevention of Significant Deterioration (PSD)

ADEQ has a PSD permitting program (See AAC R18-2-406, **Appendix B.1**) that was established to preserve the air quality in areas where ambient standards have been met by requiring stationary sources to undergo preconstruction review before the facility is constructed, modified, or reconstructed and to apply Best Available Control Technology (BACT).[15] This program will apply to any major source wishing to locate in the area, once redesignated to attainment (See **Chapter 7.0**, "Maintenance Plan").

[15] AAC R18-2-406, "Permit Requirements for Sources Located in Attainment and Unclassifiable Areas."

6.0 CONFORMITY PROVISIONS

Section 176(c)(1)(A) of CAA requires SIPs to contain information regarding the State's compliance with conformity requirements. As stated in 40 CFR 93.153(b), "Conformity determinations for Federal actions related to transportation plans, programs and projects developed, funded, or approved under title 23 U.S.C. or the Federal Transit Act (40 U.S.C. 1601 et seq.) must meet the procedures and criteria of 40 CFR part 51, subpart T, in lieu of the procedures set for in this subpart." 40 CFR 93.103(b) waives transportation conformity for SO_2 nonattainment areas, but general conformity for the Douglas, Cochise County area must still be addressed to assure SO_2 emissions from any Federal actions or plans do not exceed the rates outlined in 40 CFR 93.153(b)(1). Criteria for making determinations and provisions for general conformity as outlined in 40 CFR 93.153 can be located in R18-2-1438 of the Arizona Administrative Code. There are no Federal plans or actions affecting air quality currently in the Douglas, Cochise County area, nor are any foreseen through the year 2015.

7.0 MAINTENANCE PLAN

Section 107(d)(3) of CAA requires that nonattainment areas have a fully-approved maintenance plan meeting the requirements of CAA §175(a) before they can be redesignated to attainment. Section 175(a) of CAA further requires such a SIP revision provide for maintenance of the NAAQS for at least ten years after the redesignation to attainment. A subsequent SIP revision providing for maintenance of the NAAQS for an additional ten years is due eight years into the first ten-year maintenance period.

As indicated in Director John Seitz's Memorandum, "Redesignation of Sulfur Dioxide Nonattainment Areas in the Absence of Monitored Data," dated October 18, 2000, four specific requirements for demonstration of maintenance are necessary: (1) future emission inventory projections, (2) dispersion modeling to show no SO_2 violations are projected for the maintenance period, (3) commitment for PSD requirements, and (4) commitment to resume monitoring. These requirements are outlined in the following sections.

7.1 Emissions Inventories

Arizona does not anticipate any new plans to construct additional SO_2 point sources within the Douglas nonattainment area. However, should growth occur, ADEQ's permit program limits all emissions as part of the construction of new point sources or the upgrading of existing sources.

ADEQ projects actual emissions of SO_2 from mobile sources may grow as the population of Cochise County grows. Based on ADES projections, an approximate 28.4 percent increase in the population in Cochise County between 1995 and 2015 would correlate to the following trends in SO_2 emissions for 2015[16]:

Table 7.1 Sulfur Dioxide Emission Projections for 2015 in Cochise County

Type of Source	1985 Tons of SO_2	1995 Tons of SO_2	Multiplier (based on population growth projections)	Projected Tons SO_2 for 2015
Area and Mobile Sources [17]	684	385	1.284	494 tons SO_2
Point Sources	333,240	5287	1.00	5287 tons SO_2
Annual Total	**333,924 tons**	**5,672 tons**		**5781 tons**

SOURCE: EPA NET inventory report, 1997

As a comparison to **Table 7.1**, when PDDRWS was in operation in 1985, the source emitted 330,000 tons of SO_2 during that year. The following equation shows projected emissions for the year 2015 to be less than

[16] The 1995 population of Cochise County was projected as 112,000 in 1995, and the 2015 population is projected to be 143,793, thus giving the 28.4percent increase in population and emissions.

[17] As consistent with EPA AIR*Data*, emissions "Area Source" emissions includes mobile sources.

1.73 percent of the 1985 levels:

$$\frac{\textbf{5,781 tons in 2015}}{\textbf{333,924 tons in 1985}} = \textbf{1.73 percent}$$

7.2 Dispersion Modeling

In the event that new point sources are considered during the maintenance period, ADEQ commits to doing the appropriate modeling before any permitting actions are finalized.

7.3 PSD Permit Requirements

AAC R18-2-406, *Permit Requirements for Sources Located in Attainment and Unclassified Areas*, will apply after redesignation for any new point source (See **Appendix B.1**).

7.4 Commitment to Resume Monitoring

Since SO_2 NAAQS monitoring began in the nonattainment area in 1970, average ambient annual levels were generally half of the NAAQS of $80g/m^3$. There have not been any recorded exceedances of the 24-hour primary SO_2 NAAQS in Douglas since 1984. As such, there is no current monitoring for SO_2 within the nonattainment area. However, ADEQ is prepared to resume monitoring in accordance with Director John Seitz's October 18, 2000, Memorandum, "Redesignation of Sulfur Dioxide Nonattainment Areas in the Absence of Monitored Data," outlining the requirements for resuming monitoring (See **Appendix B.3**). ADEQ commits to resume monitoring before any major source of SO_2 emissions commences operation.

7.6 Contingency Measures

The current permit program places limits on SO_2 emissions for existing sources (See **Chapter 4.0** for further explanation). Secondly, as explained in **Section 7.3**, should an existing facility want to upgrade or increase SO_2 emissions, they would be subject to the PSD program (See **Section 5.1**). Finally, should a new facility be constructed in the Douglas nonattainment area, the facility would also be subject to PSD required in Director John Calacgni's Memorandum, "Procedures for Processing Requests to Redesignate Areas to Attainment."

8.0 REFERENCES

Arizona Copper Smelter Handbook, Arizona Mining Association, Phoenix, Arizona, April 20, 1982.

Arizona Testing Manual for Air Pollutant Emissions (Revision E), Arizona Department of Air Quality, May 15, 1989.

"Attainment Determination Policy for Sulfur Dioxide Nonattainment Areas," Memorandum from Director Sally L. Shaver to Regional Office Air Division Directors, U.S. Environmental Protection Agency, January 26, 1995.

Breathing Easier: A Report on Air Quality in California, Arizona, Nevada, & Hawaii, U.S. Environmental Protection Agency, EPA-909-R-95-001, Region 9, Air and Toxics Division, San Francisco, California, May 1995.

National Annual Industrial Sulfur Dioxide Emission Trends 1995- 2015, U.S. Environmental Protection Agency, EPA 454-R-95-001, Air and Radiation, Research Triangle Park, N.C., June 1995.

"Procedures for Processing Requests to Redesignate Areas to Attainment," Memorandum from Director John Calcagni to the Regional Office Air Division Directors, U.S. Environmental Protection Agency, September 4, 1992.

"Redesignation of Sulfur Dioxide Nonattainment Areas in the Absence of Monitored Data," Memorandum from Director John R. Seitz to the Regional Office Air Division Directors, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, October 18, 2000.

"Section 107 Designation Policy Summary," Memorandum from Director Sheldon Meyers to the Regional Office Air Division Directors, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Washington DC, April 21, 1983.

Sulfur Dioxide Guideline Document, U.S. Environmental Protection Agency, EPA-452/R-94-008, Research Triangle Park, North Carolina, February 1994.

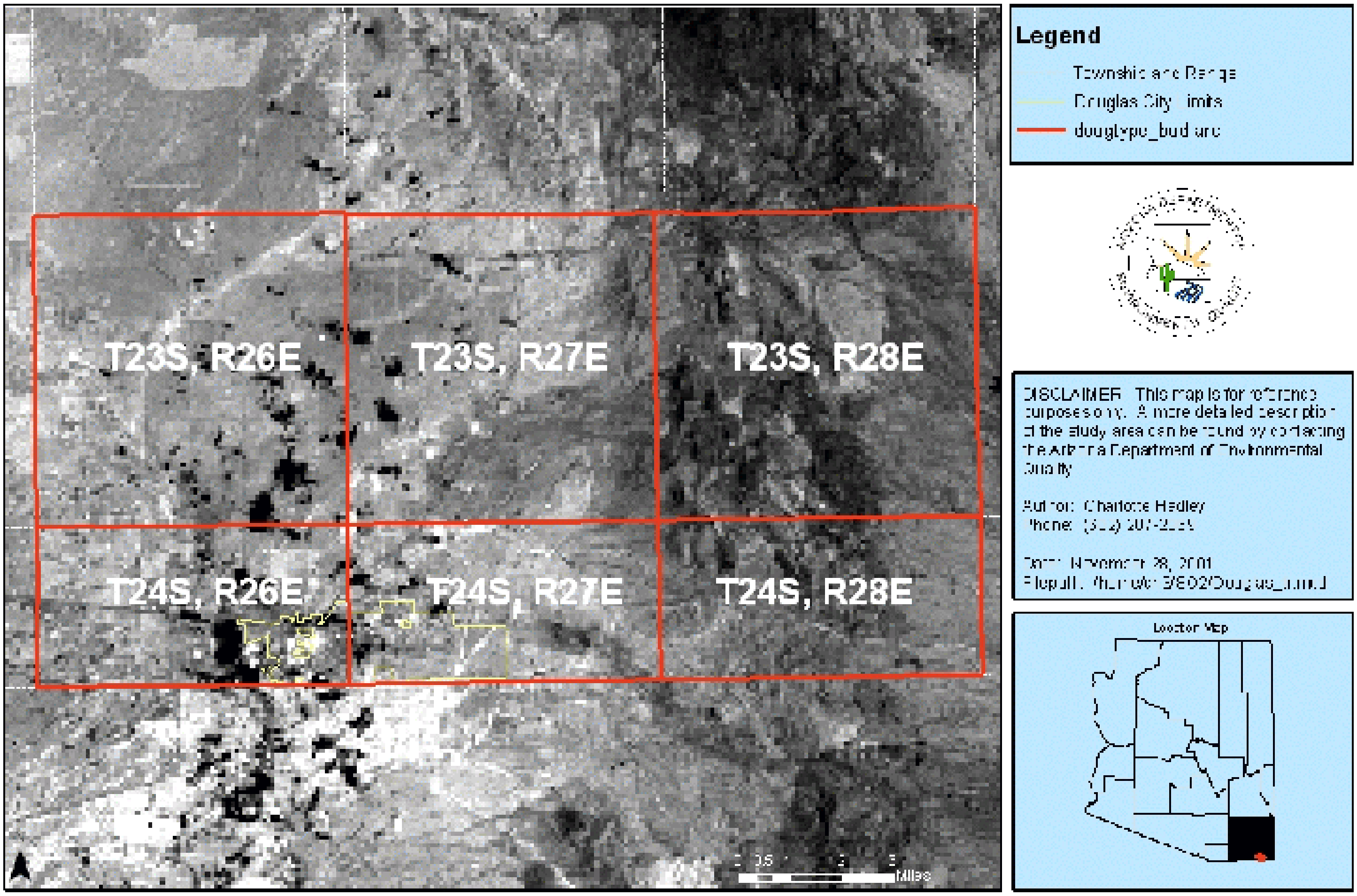
Supplemental D to Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (AP- 42 5th Edition), U.S. Environmental Protection Agency, EPA-454-F-9903, Department of Commerce, National Technical Information Service, Springfield, Virginia, August 31, 1998.

LIST OF APPENDICES

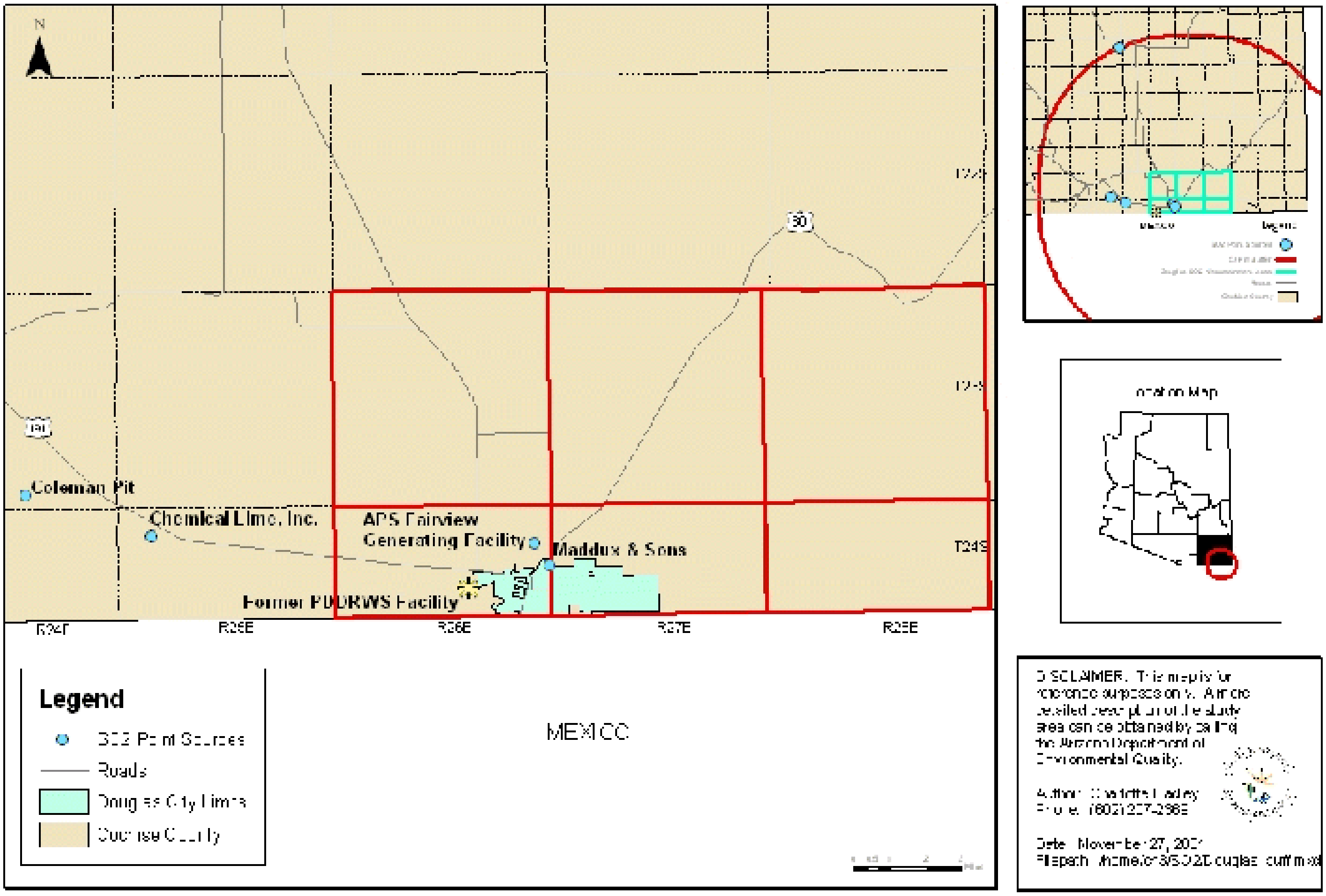
APPENDIX A

Photographs and Map of Area

Township and Range for Douglas SO2 Nonattainment Area



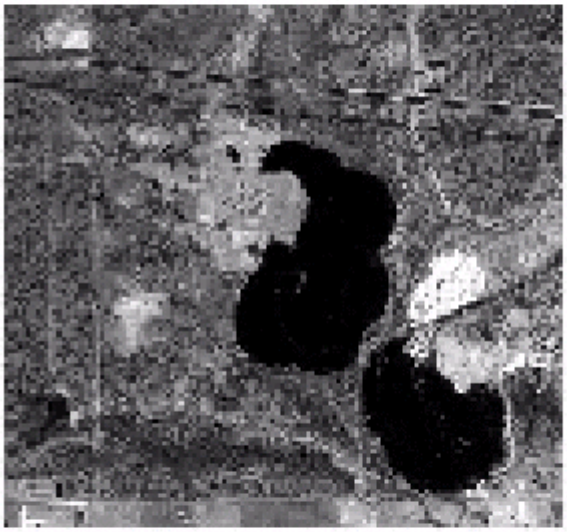
Douglas Sulfur Dioxide Nonattainment Area and 50 Kilometer Buffer



Aerial Photography
Phelps-Dodge Reduction Works Smelter Site

Phelps-Dodge Douglas Reduction Works Smelter in operation, December 1972.

SOURCE: Land-shots, Inc.



Site of former PDDRWS facility after shutdown and dismantle, taken July 4, 2000.

SOURCE: Space Imaging, Inc.
IKONOS Satellite

APPENDIX B

SIP Support Information

Section B.1 Relevant Arizona Administrative Codes (AAC)

- **AAC R18-2-202** (Sulfur Oxides)
- **AAC R18-2-403** (Permits for Sources Located in Nonattainment Areas)
- **AAC R18-2-406** (Permit Requirements for Sources Located in Attainment and Unclassifiable Areas)
- **AAC R18-2-715** (Standards of Performance for Existing Primary Smelters
- **AAC R18-2-715.01** (Standards of Performance for Existing Primary Copper Smelters; Compliance and Monitoring)
- **AAC R18-2-715.02** (Standards of Performance for Existing Primary Copper Smelters; Fugitive Emissions)

Section B.2 ADEQ Air Quality Division Organizational Chart

Section B.3 EPA Guidance Memoranda

- "Section 107 Designation Policy Summary," April 21, 1983, Director Sheldon Meyers
- "Procedures for Processing Requests to Redesignate Areas to Attainment," September 4, 1992, Director John Calcagni
- "Attainment Determination Policy for Sulfur Dioxide Nonattainment Areas," January 26, 1995, Director Sally L. Shaver
- "Redesignation of Sulfur Dioxide Nonattainment Areas in the Absence of Monitored Data," October 18, 2000, Director John Seitz.

APPENDIX C

Emissions Inventory and Monitoring Network Data

#	**Section C.1**	**Douglas Nonattainment Area Emissions Inventory - Point Sources (Table C.1)**
#	**Section C.2**	**Douglas Nonattainment Area Emissions Inventory - Area and Mobile Sources for Years 1985 - 1998 (Table C.2)**
#	**Section C.3**	**Douglas Nonattainment Area Emissions Inventory - Area and Mobile Sources for Year 1999 (Table C.3)**
#	**Section C.4**	**Douglas Nonattainment Area Emissions Projections - Area and Mobile Sources for Years 2000 - 2015 (Table C.4)**
#	**Section C.5**	**Ambient Air Monitoring Data (Table C.5)**

Table C.1: Annual Point Source Emissions Inventories

Emissions Inventory: Arizona Public Service (APS), Fairview Generating Station *

Year of Inventory	SO_2 (tpy)
1990	0.48
1996	0
1998	2.24
1999	1.41

Emissions Inventory: Chemical Lime, Inc. *

Year of Inventory	SO_2 (tpy)
1990	212.22
1993	268.01
1994	412.71
1995	346.33
1996	363.97
1997	684.48
1998	724.47
1999	744.55

Emissions Inventory: Maddux & Sons, Coleman Pit *

Emissions data for this facility with the exception of years 1996, 1998,1999 and 2000 is unavailable. In accordance with AAC R18-2-327(B)(3)(a) facilities with less than one ton of emissions are exempt from annual reporting of emissions.

Year of Inventory	SO2 (tpy)
1996	1.00
1998	.25
1999	0.41
2000	1.08

Table C.2: Annual Area and Mobile Source Emissions Inventories for Years 1985 through 1998

SOURCE	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Fuel Combustion Industrial - Coal	**163**	**195**	**57**	**51**	**59**	**32**	**33**	**31**	**32**	32	32	31	32	31
Fuel Combustion Industrial - Oil	**6**	**9**	**8**	**7**	**10**	**10**	**8**	**8**	**5**	5	4	3	3	3
Fuel Combustion - Commercial/Institution Oil	**6**	**5**	**7**	**6**	**5**	**5**	**3**	**2**	**2**	1	1	N/A	N/A	N/A
Fuel Combustion - Residential Wood	**5**	**3**	**4**	**4**	**3**	**3**	**2**	**3**	**2**	3	2	2	2	3
Fuel Combustion - Residential Other	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	1	1	1	1	1
Waste Disposal and Recycling - Incineration	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	3	3	3	3	3
Waste Disposal and Recycling - Open Burning	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	3	3	3	3	3
Light Duty Gas Vehicles and Motorcycles	**83**	**83**	**89**	**85**	**101**	**96**	**87**	**88**	**83**	79	54	51	51	52
Light Duty Gas Trucks	**36**	**37**	**41**	**40**	**45**	**43**	**39**	**38**	**36**	43	32	39	41	41
Heavy Duty Gas Vehicles	**8**	**8**	**9**	**8**	**9**	**9**	**8**	**8**	**7**	8	6	6	6	6
Diesels	**252**	**266**	**293**	**291**	**330**	**326**	**295**	**302**	**217**	57	48	52	54	53
Off-Highway, Non-Road Gasoline	**3**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	4	4	4	4	4
Off-Highway, Non-Road Diesel	**76**	**79**	**83**	**87**	**91**	**95**	**98**	**102**	**106**	110	114	118	121	125
Aircraft	**3**	**3**	**3**	**3**	**3**	**4**	**3**	**3**	**3**	3	3	3	3	3
Railroads	**24**	**26**	**28**	**30**	**32**	**33**	**40**	**41**	**42**	39	38	39	41	41
Other Combustion	**12**	**11**	**20**	**34**	**43**	**7**	**9**	**9**	11	28	24	29	15	17
TOTAL SO_2 Tons per Year	**684**	**735**	**652**	**655**	**740**	**673**	**637**	**644**	**557**	**419**	**368**	**385**	**380**	**387**

Table C.3: Area and Mobile Source Emissions Inventories for 1999

SOURCE	1999
Fuel Combustion Electric Utility	0
Fuel Combustion Industrial	36
Fuel Combustion - Other	3
Petroleum and Related Industries	0
Other Industrial Processes	0
Waste Disposal and Recycling	6
Highway Vehicles	259
Off-Road Vehicles	155
Other Combustion	17
TOTAL SO_2 Tons Per Year	**476**

Table C.4: Area and Mobile Source Emissions Projections for 2000 through 2015

*Emissions Projections for Year:	Total SO_2 Ton Per Year
2000	57.2
2005	60.8
2010	64.2
2015	67.4

** Projections based on expected population growth from ADES*

Table C.5: Monitoring Network Data*

Monitoring Network Data: Year 1987

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	No. of Annual and 24-hr. Exceedances	Number of 1-Hr. Samples
ADEQ					
1.2 mi. N of Smelter	2	473	64	0	8551

Monitoring Network Data: Year 1986

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	No. of Annual and 24-hr. Exceedances	Number of 1-Hr. Samples
Phelps-Dodge					
0.75 mi. N. of Smelter	42	1065	217	0	8712
Curtis	22	987	165	0	8713
Fir	24	742	168	0	8715
F Ave. & 9th St.	25	629	159	0	8718
Queen	31	1135	310	0	8698
Mexican Border	20	384	108	0	2207
Mobile IV	28	1135	274	0	8710
SEAMC Hospital	46	1406	242	0	8712
Pirtleville	31	1249	178	0	8706
McNeal	4	520	88	0	3216
ADEQ					
1.2 mi. N. of Smelter	34	1144	194	0	8707
Lazy KJ Ranch	13	1011	129	0	8678
AEPCO					
Dragoon	0	35	11	0	5489
Kansas Settlement	0	29	8	0	4261

Monitoring Network Data: Year 1985

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	No. of Annual and 24-hr. Exceedances	Number of 1-Hr. Samples
Phelps-Dodge					
Curtis	36	1240	248	0	8671
Fir	36	934	233	0	8653
F Ave. & 9th St.	34	987	237	0	8689
Queen	42	1048	246	0	8593
Mobile IV	35	1205	293	0	8673
SEAMC Hospital	65	1258	290	0	8679
Pirtleville	50	1039	281	0	8664
McNeal	10	800	114	0	6616
ADEQ					
1.2 mi. N. of Smelter	57	1162	300	0	3299
AEPCO					
Dragoon	0	79	18	0	7002
Kansas Settlement	0	52	10	0	5624

Monitoring Network Data: Year 1984

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	No. of Annual and 24-hr. Exceedances	Number of 1-Hr. Samples
Phelps-Dodge					
0.75 mi. N. of Smelter	48	1093	254	0	6384
Curtis	35	1153	275	0	6372
Fir	24	812	157	0	6382
F Ave. & 9th St.	26	1127	231	0	6288
Queen	32	1100	223	0	6354
Mobile IV	26	1231	262	0	6392
SEAMC Hospital	59	1381	278	0	6385
Pirtleville	36	1074	241	0	6365
McNeal	6	254	60	0	5159
ADEQ					
1.2 mi. N. of Smelter	36	1311	288	0	8355
AEPCO					
Dragoon	3	131	21	0	4749
Kansas Settlement	14	183	105	0	3156

Monitoring Network Data: Year 1983

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	No. of Annual and 24-hr. Exceedances	Number of 1-Hr. Samples
Phelps-Dodge					
0.75 mi. N. of Smelter	27	917	207	0	6404
Curtis	17	1643	228	0	6526
Fir	16	760	223	0	6540
1012 G Street	17	1389	199	0	6535
Queen	24	2796	372	1	6423
Mobile IV	18	1014	186	0	6534
SEAMC Hospital	35	1074	225	0	6528
Pirtleville	20	935	194	0	6537
McNeal	1	168	24	0	5104
ADEQ					
1.2 mi. N. of Smelter	25	822	737	0	6046
AEPCO					
Dragoon	2	79	13	0	2115
Kansas Settlement	2	118	21	0	2253

Monitoring Network Data: Year 1982

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	No. of Annual and 24-hr. Exceedances	Number of 1-Hr. Samples
Phelps-Dodge					
0.75 mi. N. of Smelter	27	917	207	0	6404
Curtis	17	1643	228	0	6526
Fir	16	760	223	0	6540
1012 G Street	17	1389	199	0	6535
Queen	24	2796	372	1	6423
Mobile IV	18	1014	186	0	6534
County Hospital	35	1074	225	0	6528
Pirtleville	20	935	194	0	6537
Pinedo Farm	1	168	24	0	5104
ADEQ					
1.2 mi. N. of Smelter	25	822	737	0	6046
County Hospital	49	1229	250	0	2451
2.6 WSW of Town	2	217	31	0	5338
AEPCO					
Dragoon	2	79	13	0	2115
Kansas Settlement	2	118	21	0	2253

Monitoring Network Data: Year 1981

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	No. of Annual and 24-hr. Exceedances	Number of 1-Hr. Samples
Phelps-Dodge					
0.75 mi. N. of Smelter	59	2201	328	0	8720
Curtis	37	1826	270	0	8720
Fir	25	1056	170	0	8715
1012 G Street	34	1729	262	0	8722
Queen	39	1284	222	0	8706
Mobile III	35	1467	265	0	7177
Mobile IV	43	1467	225	0	1523
SEAMC Hospital	67	2245	341	0	8705
Pirtleville	46	1501	369	1	8700
McNeal	5	755	126	0	5011
ADEQ					
1.2 mi. N. of Smelter	62	1529	425	1	7716
AEPCO					
Dragoon	6	N/A	24	0	N/A
Kansas Settlement	4	N/A	24	0	226

Monitoring Network Data: Year 1980

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	No. of Annual and 24-hr. Exceedances	Number of 1-Hr. Samples
Phelps-Dodge					
0.75 mi. N. of Smelter	**45**	**1511**	**283**	**0**	**8724**
Curtis	**24**	**1554**	**237**	**0**	**8720**
Fir	**18**	**926**	**204**	**0**	**8686**
1012 G Avenue	**29**	**1520**	**259**	**0**	**8726**
Queen	**30**	**1292**	**283**	**0**	**8680**
Mobile III	**22**	**1423**	**257**	**0**	**8721**
SEAMC Hospital	**45**	**1729**	**309**	**0**	**8742**
Pirtleville	**40**	**1677**	**280**	**0**	**8709**
McNeal	**4**	**283**	**71**	**0**	**5236**
ADEQ					
1.2 mi. N. of Smelter	**38**	**1479**	**307**	**0**	**7420**
County Hospital	**33**	**1696**	**280**	**0**	**7909**
McNeal	**1**	**244**	**31**	**0**	**3370**
AEPCO					
Dragoon	**7**	**N/A**	**24**	**0**	**N/A**
Kansas Settlement	**6**	**N/A**	**14**	**0**	**N/A**

Monitoring Network Data: Year 1979

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	No. of Annual and 24-hr. Exceedances	Number of 1-Hr. Samples
Phelps-Dodge					
0.75 mi. N. of Smelter	48	1920	270	0	8703
Curtis	39	1816	521	1	8718
Fir	24	812	204	0	8691
1012 G Avenue	37	1423	244	0	8704
Queen	29	1082	236	0	8678
Mobile II	44	1239	299	0	8610
Mobile III	94	935	136	0	108
NW	67	1441	367	1	8704
Pirtleville	45	1302	396	1	8705
McNeal	9	1300	197	0	6825
ADEQ					
2 km NNW of Smelter	43	1785	471	3	6912
U.S. 666	42	1276	392	1	6517
AEPCO					
Dragoon	10	N/A	57	0	N/A
Kansas Settlement	11	N/A	44	N/A	N/A

*** SOURCE FOR ALL DATA: ADEQ Air Quality Annual Reports**

Monitoring Network Data: Year 1978

Monitor	Annual Ave.	Max 3-hr.	24-hr. Max	Number of Samples
Phelps-Dodge				
0.75 mi. N. of Smelter	42	1213	249	8730
Curtis	28	1527	275	8731
Fir	21	2078	259	8722
Fairgrounds	16	741	139	7118
Queen	18	1275	169	1508
1010 G Avenue	29	1039	197	8727
Mobile II	23	777	163	1126
Mobile	46	1449	320	7275
Pirtleville	37	1109	246	8704
McNeal	8	922	115	3234
1.22 mi. NW of Smelter	55	1711	288	8725
ADEQ				
2 km NNW of Smelter	25	951	189	6541
U.S. 666, 2 km NNE of Smelter	32	1069	236	4877
AEPCO				
Dragoon	6	N/A	42	N/A
Kansas Settlement	9	N/A	50	N/A

Monitoring Network Data: Year 1977

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	Number of Samples
Phelps-Dodge				
0.75 mi. N. of Smelter	38	1546	211	8586
Curtis	27	2009	389	8713
Fir	29	1800	344	8726
Fairgrounds	13	891	225	8731
1012 G Avenue	28	1538	354	8694
Martin	13	1031	312	5911
Mobile	32	1224	241	2678
1.22 mi NW of Smelter	48	1658	257	8719
Pirtleville	40	1685	354	8711
ADEQ				
2 km NNW of Smelter	35	1292	214	7053

U.S. 666, 2 km NNE of Smelter	41	1879	272	6466

Monitoring Network Data: Year 1976

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	Number of Samples
Phelps-Dodge				
0.75 mi. N. of Smelter	39	1677	430	8729
Curtis	31	1546	261	8704
Fir	33	1100	247	8741
Fairgrounds	17	1188	181	8754
1012 G Avenue	31	1768	382	8754
Martin	14	1039	183	8737
1.22 mi. NNW of Smelter	51	1406	262	8738
Pirtleville	43	1511	308	8729
ADEQ				
2 km NNW N. of Smelter	43	1233	221	5373
U.S. 666, 2 km NNE of Smelter	39	1767	377	6654

Monitoring Network Data: Year 1975

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	Number of Samples
Phelps-Dodge				
0.75 mi. N. of Smelter	94	710	688	340
Cochise College*	89	462	411	55
1012 G Avenue	100	434	363	328
Pirtleville	92	576	540	337
15th Street Park	86	222	210	45
ADEQ				
2 km NNW of Smelter	86	150	146	11
U.S. 666, 2 km NNE of Smelter	86	150	146	11
* station closed 2-75				

Monitor	Annual Ave.	Max 3-hr.	Ave. 24-hr.	Number of Samples

Monitoring Network Data: Year 1974

Monitor	Annual Ave.	Max 3-hr.	Max 24-hr.	Number of 24-hr. Exceedances
ADEQ				
2 km NNW of Smelter	130	5284	1069	44
U.S. 666, 2 km NNE of Smelter	79	5667	1174	38

Monitoring Network Data: Year 1973

Monitor	Annual Ave.	Max 3-hr.	Max 24-hr.	No. of 24-hr. Exceedances
ADEQ				
NE1*	**46**	**3605**	**556**	**5**
NNE2**	**90**	**5385**	**1077**	**20**
NNW2	**107**	**7408**	**1547**	**52**
*** station closed 4-11-73 and relocated to NNE2 site**				
**** station opened on 4-11-73**				

Monitoring Network Data: Year 1972

Monitor	Annual Ave.	Max 3-hr.	Ave. Max 24-hr.	Percent Data Recovery
ADEQ				
NE1	**89**	**6974**	**1046**	**69.6**
NNW2*	**56**	**7435**	**3768**	**67.1**
*** sampling began on 3/14/72**				

Monitoring Network Data: Year 1971

Monitor	Annual Ave.	Max 3-hr.	Ave. Max 24-hr.	Percent Data Recovery
ADEQ				
NE1*	55	4914	633	85.3
ESE3**	57	2317	457	86.3
* station opened on 4/28/71				
** station closed on 4/29/71				

Monitoring Network Data: Year 1970

Monitor	Annual Ave.	Max 3-hr.	Ave. Max 24-hr.	Percent Data Recovery
ADEQ				
ENE4*	51	1751	485	70
ESE3	44	1780	463	79
* station closed on 11/24/70				

*** SOURCE FOR ALL DATA: ADEQ Air Quality Annual Reports**

November 28, 2001

RESPONSIVENESS SUMMARY

to

Testimony Taken at Oral Proceeding and Written Comments Received on Douglas Sulfur Dioxide State Implementation and Maintenance Plan

The oral proceeding on Douglas Sulfur Dioxide State Implementation and Maintenance Plan was held at 4:00 p.m., Tuesday, November 6, 2001, at Cochise Community College, Douglas, Arizona. No oral comments were received during the proceeding, nor did the Arizona Department of Environmental Quality (ADEQ) received any written comments during the public comment period, which ended November 6, 2001. ADEQ did make some grammatical corrections and clarified certain phrases throughout the document.

* Source: ADEQ Air Quality Division - Compliance Section, Technical Services Unit