FINAL

STATE IMPLEMENTATION PLAN
for the
NOGALES PM_{10} NONATTAINMENT AREA

Prepared by

Office of Air Quality
Arizona Department of Environmental Quality
3033 North Central, Phoenix, Arizona 85012

June, 1993

TABLE OF CONTENTS

	Table of Contents	i
	Tables	iii
	Figures	iv
	Appendices	v
	Acronyms	vi
1.0	**INTRODUCTION**	**1**
1.1	Purpose and Organization	1
1.2	Regulatory Background	2
1.2.1	State Adoption	4
1.3	Study Area Definition	8
1.3.1	Nogales Arizona	8
1.3.2	Nogales, Sonora	8
1.3.3	Integrated Border Environmental Plan	8
1.3.4	Climate	9
1.3.5	Population	9
1.3.6	Economy	11
1.4	General SIP Approach	13
1.5	Plan Contents	15
2.0	**DATA BASE DEVELOPMENT**	**16**
2.1	Background	16
2.2	Determining Impact of Mexican Emissions	16
2.3	Nogales Intensive Monitoring Study	16
2.4	Meteorlogical Data	17
2.5	Design Value - 24-Hour and Annual	17
2.5.1	Design Value - Nogales	17
2.5.2	Desing Value - Background Organ Pipe Nat. Mounment	17
3.0	**PM10 EMISSION INVENTORY FOR POINT AND AREAL SOURCES - NOGALES, ARIZONA**	**21**
3.1	Background	21
3.2	Methodology	21
3.2.1	Methodology - 1989 Base-year Inventory	22
3.2.2	Methodology - 1995 Attainment-year Inventories	23
4.0	**DESCRIPTION OF THE PROPOSED COMMITMENTS TO IMPLEMENT REASONABLE AVAILABLE CONTROL MEASURES (RACM)**	**30**
4.01	Locally-Implementing Jurisdictions	30
4.02	Control Measures Deemed Not Reasonably Available	30
4.1	City of Nogales RACM	31
4.2	Santa Cruz County RACM	46
4.3	ADEQ RACM	63
4.4	Rio Rico RACM	68
4.5	U.S.Customs Service RACM	69

5.0 DESCRIPTION OF THE AIR QUALITY MODEL OR EQUIVALENT METHOD 71

6.0 RESULTS OF THE AIR QUALITY MODEL OR EQUIVALENT METHOD AND DEMONSTRATION OF ATTAINMENT 72

7.0 MAINTENANCE OF THE NAAQS 73

8.0 CONTINGENCY PLAN 74

9.0 CONFORMITY PROCEDURE 75

10.0 AMBIENT PM_{10} SAMPLING 75

11.0 PRECONSTRUCTION REVIEW 76

12.0 SOURCE EMISSIONS AND STATE ACTION REPORT 76

12.1 Annual Source Emissions and State Action Report . . 76
12.2 Sources Subject to Emissions Reporting 76

13.0 AIR POLLUTION EMERGENCY EPISODES 77

14.0 REFERENCES 78

LIST OF TABLES

Table 1.0 Weather Data for Nogales, Arizona 10

Table 1.1 Population Data for Nogales, Arizona . . 11

Table 1.3 Arizona Labor Market Area Employment Structure for Nogales 12

Table 1.4 Labor Force Data for Nogales, Arizona . . 12

Table 1.5 Growth Indicator for Nogales, Arizona . . 13

Table 2.0 Historic Monitoring Results, Nogales, Arizona 18

Table 2.1 Monitoring Results of Nogales Intensive Study 20

Table 3.0 Annual Emissions Inventory - Base Year 1989 26

Table 3.1 Annual Emissions Inventory - Attainment Year 1995 27

Table 3.2 Daily Emissions Inventory - Base Year 1989 28

Table 3.3 Daily Emissions Inventory - Base Year 1995 29

LIST OF FIGURES

Figure 1.0 PM_{10} Non-Attainment Areas in Arizona . . . 5

Figure 1.1 Nogales PM_{10} Non-Attainment Area 6

Figure 1.2 City of Nogales 7

Figure 2.0 Location of Air Quality Monitors 19

Figure 3.0 City of Nogales 24

Figure 3.1 Gridded Nogales PM_{10} Non-Attainment Area 25

APPENDICES

APPENDIX A	Community Profile - Nogales, Arizona
APPENDIX B	Work Plan for Ngales PM_{10} and Air Toxics Studies, as an element of International Border Environmental
APPENDIX C	1988 Engineering Science Emissions Inventory
APPENDIX D	Nogales PM_{10} Intensive Monitoring Study
APPENDIX E	Computations and Assumptions Used in Estimating Existing and Future Emissions
APPENDIX F	**PM_{10} Moderate area SIP Guidance: Final Staff Work Product, issued by EPA, April 2, 1991**
APPENDIX G	RACM as Implemented in the Nogales PM_{10} Non-Attainment Area by the Arizona Department of Transportation
APPENDIX H	Supporting Documentation for RACM as Implemented by Local Jurisdictions
APPENDIX I	Documentation of City's Efforts Toward Enforcing Existing Code
APPENDIX J	Historical Border Crossing Truck Volume
APPENDIX K	1992 State and Local Air Monitoring Stations [SLAMS] Network Review and SIP Monitoring Requirements
APPENDIX L	Signed Local RACM Resolutions by City of Nogales and Santa Cruz County
APPENDIX M	Public Participation and Responsiveness Summary

ACRONYMS

ADEQ	Arizona Department of Environmental Quality
A.A.C.	Arizona Administrative Code
CFR	Code of Federal Regulation
CMB	Chemical Mass Balance
EPA	Environmental Protection Agency
ES	Engineering Science
F	Fahrenheit
NAAQS	National Ambient Air Quality Standard
PM_{10}	Particulate Matter of 10 microns or less in diameter
PSD	Prevention of Significant Deterioration
SIP	State Implementation Plan
TSP	Total Suspended Particulates
μg/m3	Micrograms per cubic meter

1.0 INTRODUCTION

1.1 Purpose and Organization

This document is the State Implementation Plan (SIP) for the Nogales PM_{10} Nonattainment Area where violations of the National Ambient Air Quality Standards (NAAQS) for particulate matter of 10 microns or less (PM_{10}) were recorded. The SIP identifies sources of PM_{10} pollution and describes strategies to control these emissions within the boundaries of the nonattainment area - an approximately 80 square mile area with Nogales at its southern center. The SIP also documents that the State of Arizona, through the Office of Air Quality of Department of Enrivironmental Quality, is complying with other provisions of the Clean Air Act (CAA), as amended November 15, 1990.

States were originally required to submit PM_{10} SIPs under Section 110 of the 1977 Clean Air Act. The 1990 Clean Air Act amended Section 110 to strengthen the requirements for SIPs. In addition, Section 189 of the CAA requires the State to submit plans for PM_{10} nonattainment areas to EPA by November 15, 1991. This plan must include:

1. A program providing for permitting of the construction and operation of new and modified major stationary sources of PM_{10} in conformance with Section 189 (a)(1)(A) of the Act (due June 30, 1992, and not yet a part of this document);

2. A demonstration including air quality modeling, OR EQUIVALENT DEMONSTRATION, that the plan will provide for attainment of the PM_{10} NAAQS by December 31, 1994 or a demonstration that attainment by that date is impracticable; and

3. Provisions to ensure that reasonably available control measures (RACM) for the control of PM_{10} will be implemented no later than December 10, 1993.

The <u>1993 State Implementation Plan [SIP] for the Nogales PM_{10} Nonattainment Area</u> (the nonattainment area) is designed to fulfill requirements number 2 and 3 above. The Office of Air Quality is committed to sending the stationary source permitting program to EPA under a separate cover on or before the deadline of November 15, 1993.

The remaining sections in this chapter are organized as follows:

Section 1.2	Contains information concerning the regulatory background of the Clean Air Act, PM_{10} NAAQS rulemaking, and the grouping of planning areas;
Section 1.3	Describes the Nogales PM_{10} Nonattainment Area:

geographical setting and topography, climate, population and economy;

Section 1.4 Presents the general SIP approach; and

Section 1.5 Outlines the plan's contents for **chapters 2–14.**

1.2 Regulatory Background

The 1970 Clean Air Act instituted ambient air quality standards for six pollutants:

carbon monoxide;
nitrogen oxides (NO_x);
particulate matter (PM_{10});
lead;
sulphur dioxide; and
ozone.

Standards or air quality concentration levels were set, based upon criteria to protect human health and welfare. Measured concentrations above these levels for any of the six pollutants are legally defined to be unhealthful

The 1977 amendments to the Clean Air Act (CAA) required the EPA, at five year intervals, to review and, if appropriate, revise the criteria on which each NAAQS is based. In response to these requirements, the EPA reviewed the criteria upon which the particulate matter NAAQS were based.

At that time, the NAAQS for particulate matter included the healthful level for the size range of particles collected by the hi-volume sampler and was referred to as total suspended particulates (TSP). New information on particulates then became available that showed negative health effects are directly related to concentrations in the smaller-size particle range. In response to the information, EPA revised the NAAQS for particulates. The The revised primary (health) and secondary (welfare) standards for particulates focused on a much smaller size range than the old TSP based standard. TSP was large enough to be blocked and expelled by the respiratory system/

A new reference method for the collection and monitoring of these fine particles was developed. The particle matter collected by the new monitors are nominally of an aerodynamic diameter of 10 microns* or less and hence, the term PM_{10}. The size range defined by the collection characteristics of the new ambient reference method has a 50% collection efficiency (D50) at 10 microns.

---

* 10 microns is approximately the width of a human hair.

The new standard became effective on July 31, 1987 (52 FR 24634). The final EPA rulemaking included the following changes to the particulate NAAQS:

1. A new indicator for ambient particulate matter that includes only those particles with an aerodynamic diameter less than or equal to a nominal 10 microns (PM_{10}); replaces TSP indicator

2. A new 24-hour average PM_{10} standard of 150 $\mu g/m^3$, with no more than one expected exceedance per year; replaces the 24-hour average primary TSP standard of 260 micrograms per cubic meter (260 $\mu g/m^3$)

3. A new annual PM_{10} standard of an expected annual average mean of 50 $\mu g/m^3$; replaces the annual average TSP standard of 75 $\mu g/m^3$ geometric mean; and

4. The new secondary (welfare) standard for PM_{10} was now identical to the primary 24-hour average PM_{10} standard of 150 $\mu g/m^3$.

As a result of the lack or the unavailability of PM_{10} data, the EPA developed a procedure for estimating the probability of nonattainment of PM_{10} NAAQS, using TSP or PM_{10} data. Based on the probability of exceeding PM_{10} standards (24-hour and annual), EPA designated three types of areas:

1. Group I areas (95 percent or higher probability);

2. Group II areas (20 percent to 95 percent probability or insufficient data to make a determination); and

3. Group III areas (less than 20 percent probability).

Before the Clean Air Act Amendments of 1990, all PM_{10} areas nationwide were categorized by these three designations.

In order to definitively determine PM_{10} areas as being in attainment or nonattainment, the 1990 CAA redesignated the three types of areas. By operation of law, all Group I PM_{10} areas and Group II areas where violations were measured during 1987 through 1989 were designated as nonattainment for PM_{10}. All Group II and Group III areas without violations of the standard were classified as "not classifiable" and "attainment", respectively. All three categories of areas are found within the State of Arizona.

After designating an area as being in nonattainment of the standard, EPA can further classify PM_{10} nonattainment areas as moderate, serious, severe or extreme. However, all nonattainment areas are initially designated as moderate by operation of law. **Figure 1.0** locates PM_{10} nonattainment areas within Arizona. When a state cannot demonstrate that a moderate nonattainment area can

come into compliance with the PM_{10} NAAQS by December 31, 1994, EPA will change the designation to serious.

The Nogales PM_{10} Nonattainment Area is shown in **Figure 1.1.** The boundary of the nonattainment area consists of the area east of Longitude 111 degrees located in Township 23 South, Ranges 27 and 28 East, and Township 24 South, Ranges 27 and 28 East. **Figure 1.2** shows the boundaries of Nogales within the PM_{10} nonattainment area.

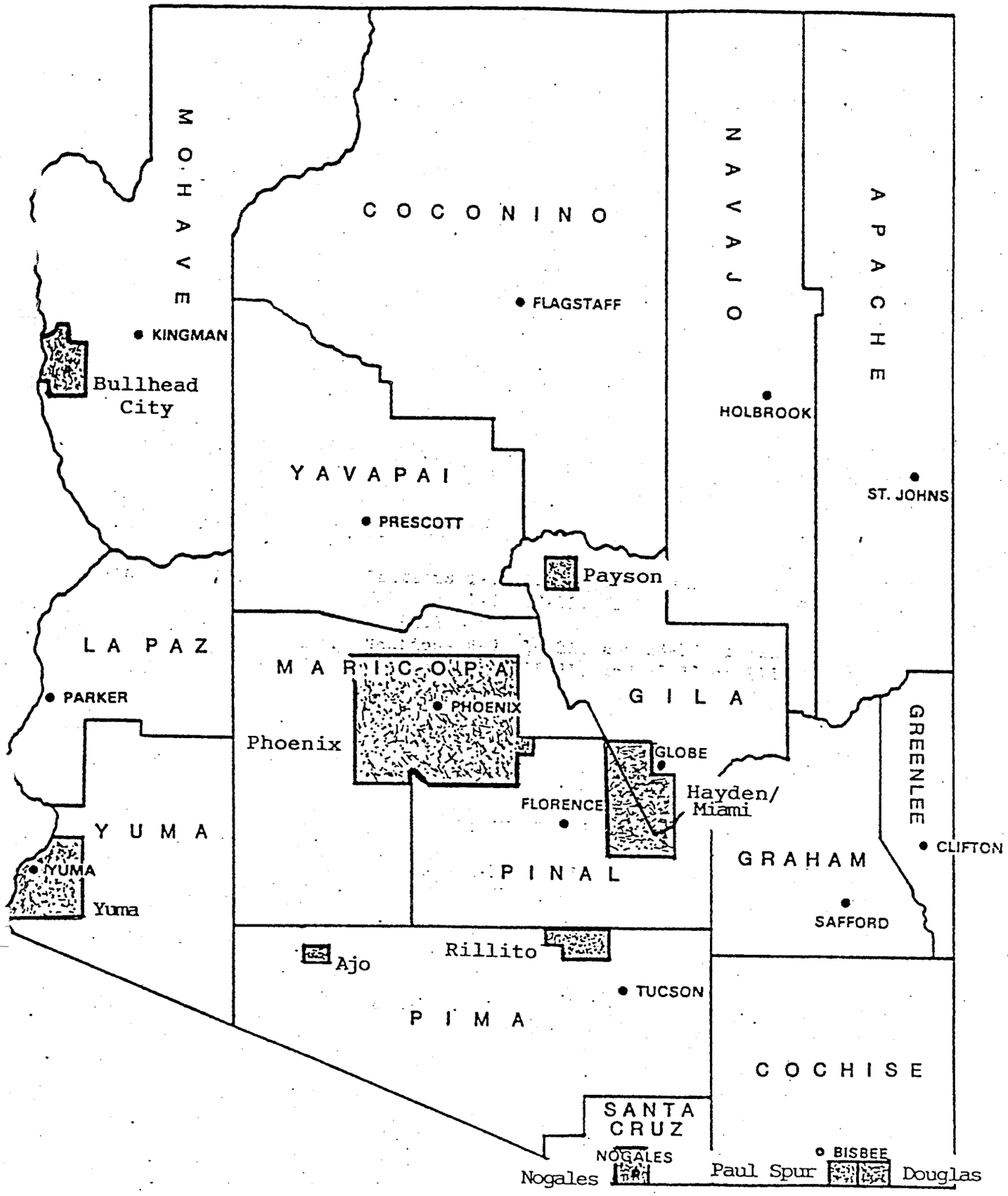
1.2.1 State Adoption

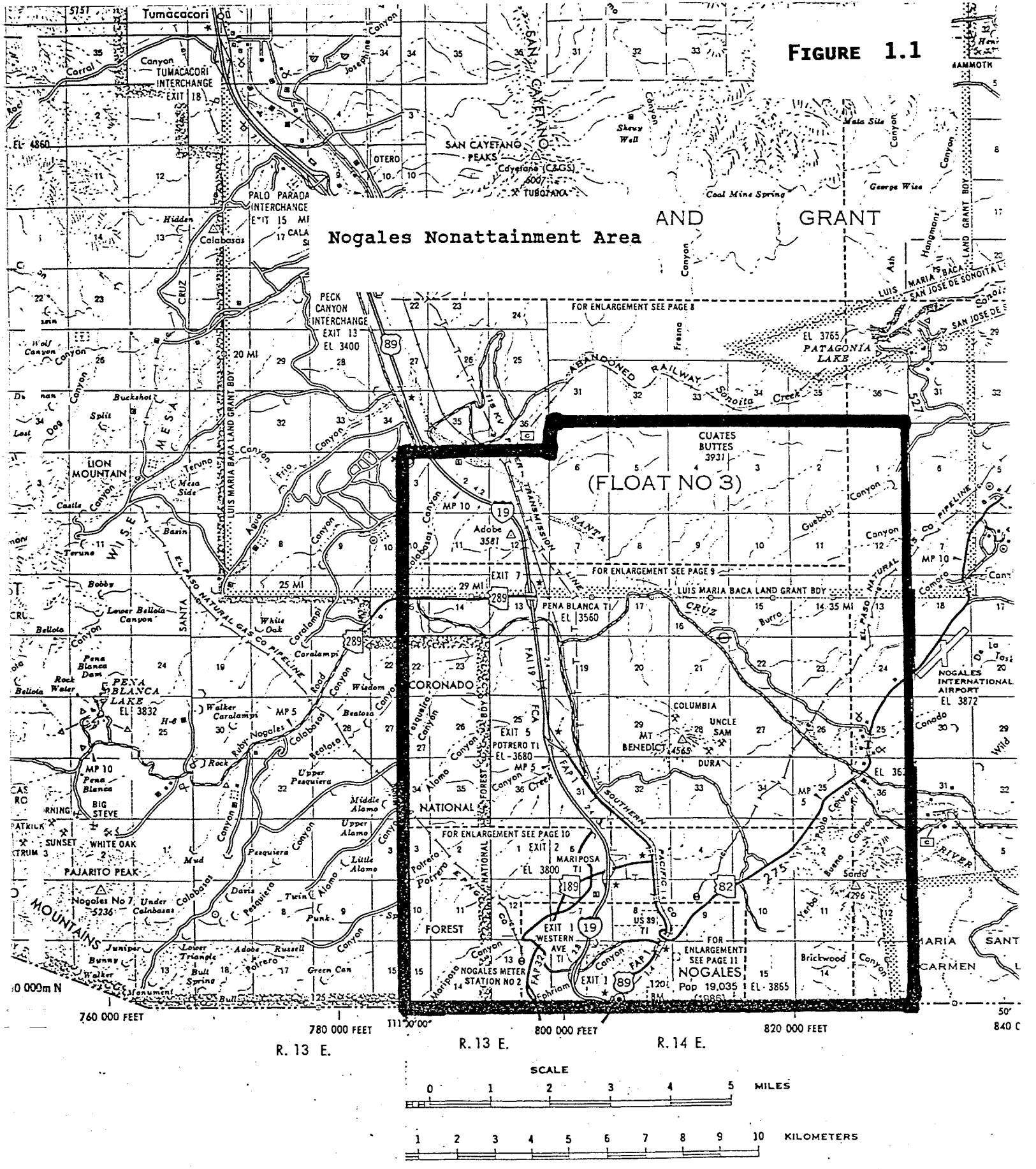
§ 110 (a) of the Clean Air Act provides that States shall adopt and submit to the Administrator of the Environmental Protection Agency [EPA] State Implementation Plan [SIP] revisions. While the Act does not expand upon the method by which a State adopts SIP revisions, CFR § 51.55 is clear that a State must demonstrate that it has legal authority to enforce all control measures contained in the SIP revision. Otherwise, locally implemented control measures may be repealed or inadequately enforced both to the detriment of Reasonably Further Progress.

In 1992, the Fortieth Legislature of Arizona clarified the State's role in adopting SIP revisions and expanded the powers of the State to assure adequate implementation and enforcement of local control measure. A.R.S. § 49-404 states that the Director of the Arizona Department of Environmental Quality shall adopt revisions to the SIP "...in conformity with federal regulations and guidelines..." He may also "...adopt rules that decscribe procedures for adoption of revisions to the state implementation plan". A.R.S. § 49-406 (I) and (J) authorizes the county attorney and ultimately the state attorney general to seek redress in superior court if a SIP control measure is not implemented as was described in a local resolution. Copies of the entire text of these two statutes are found in **Exhibit 1** following the Completeness Checklist.

FIGURE 1.0

PM_{10} NONTATTAINMENT AREAS IN ARIZONA



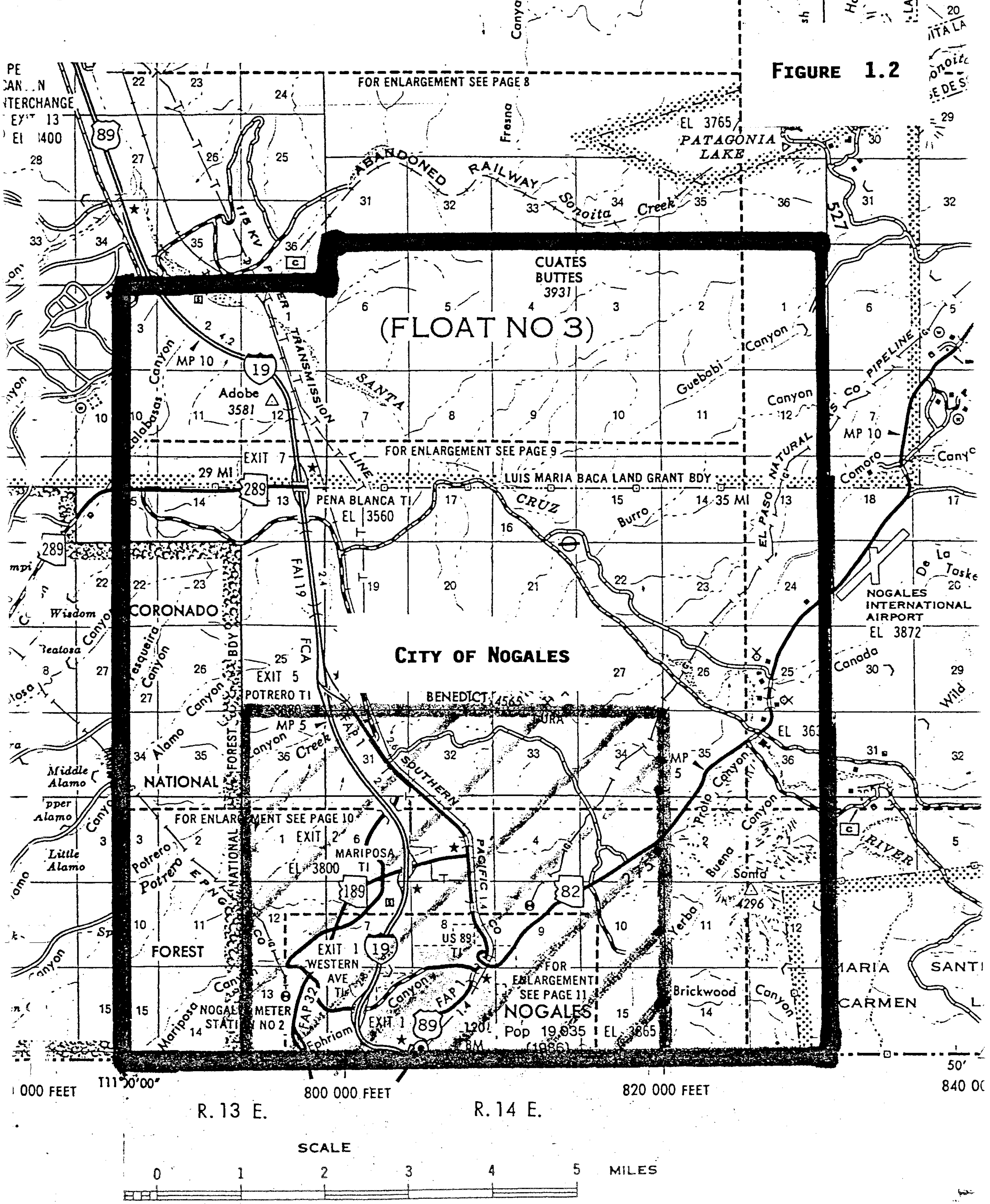


RIC METHODS, PHOTOGRAPHY 1973
Y NOS AND USGS
TION, 1927 NORTH AMERICAN DATUM
SYSTEM, CENTRAL ZONE
MERCATOR SYSTEM, ZONE 12

LIMITED

GENERAL HIGH ILABLE FOR PUBLIC USE AT NOMINAL COST.
V. JACKSON ST., PHOENIX, ARIZONA 85007

Nogales Nonattainment Area



1.3 Study Area Definition

1.3.1 Nogales, Arizona

Nogales, Arizona is situated in southern Arizona at the southern terminus of Interstate 19, on the border with the United Mexican States. Nogales, because of its border location, is a major port of entry with Mexico and shares environmental and socioeconomic concerns with its sister city, Nogales Sonora to the South.

Nogales, Arizona serves as both the economic capital and county seat of Santa Cruz County, the smallest and southernmost of Arizona's counties. This city is situated in a mountainous setting at an elevation of 3,865 feet above sea level. Nogales was established in 1880 by Jacob and Isaac Isaacson, who built a trading post along the border. Two years later, Nogales was the site of the first rail connection between Mexico and the United States, Nogales was incorporated in 1893. A community profile of Nogales, developed by the Arizona Department of Commerce, can be found in **Appendix A.**

1.3.2 Nogales, Sonora

The Mexican Government promoted the border region through the maquiladora progra, initiated in 1965. The term refers to the export-oriented processing and assembly plants located in the Mexican border area that is use inputs and materials. Most of the plants are part of production-sharing arrangements with U.S. firms that take advantage of local production factors and the proximity to suppliers and consumers in the United States.

Nogales, Sonora has enjoyed the economic benefits of the Mexican maquiladora program - but at a cost. As maquiladora industries and other sectors of the economy in Nogales, Sonora have grown, the added economic activity and accompanying population increases have produced substantial strain on the Border Area's infrastructure. Many new housing settlements or Colonias have been created, many of which do not have water, sewerage, or paved roads. Population estimates for such areas may be underestimated.

1.3.3 Integrated Border Environmental Plan

The entire border area of Mexico and United States will undergo significant socioeconomic change due to the proposed North American Free Trade Agreement [NAFTA]. To plan for the increased environmental pressures on both sides of the border from the proposed treaty, the Mexican and American governments in 1992 negotiated the Integrated Border Environmental Plan [IBEP] First Stage, 1992-1994. The Plan establishes, in part, specific cooperative efforts of governments at all levels and the private sector, in seeking solutions to the Border Area's priority environmental problems. IBEP also sets out general provisions on

implementation and a funding plan to help make the Border Environmental Plan fully effective. **Appendix B** describes air quality elements of IBEP 1992-94 that are proposed for the Nogales area to assess PM_{10} and air toxics levels and sources.

These efforts parallel the efforts and commitments contained in the 1993 State Implementation Plan [SIP] for the Nogales PM_{10} Nonattainment Area. It may generally be thought of that the SIP addresses solely air quality issues on the Arizona side of the border, while IBEP establishes a mechanism is address those issues south of the border.

1.3.4 Climate

Nogales, Arizona and vicinity experience typical Sonoran Desert climate, with hot summers and very mild winters. The hottest months of the year are June and July, when the average daily maximum temperature is in the low 90's degrees F. January is the coolest month of the year; the average daily minimum temperature is around 27° F and the average daily maximum is around 63° F.

Rainfall generally occurs in two seasons. The wettest month is July when monsoon thunderstorms produce an average of 4.33 inches of rain. Pacific winter storms in December produce an average 1.32 inches. The driest month is May when an average of 0.12 inches fall. The average yearly precipitation is 15.49 inches of rain. Weather data for Nogales is listed in **Table 1.0**.

1.3.5 Population

The population data for the Nogales area were compiled from data developed by the Population Statistics Unit of the Arizona Department of Economic Security (ADES). **Table 1.1** presents U.S. census population counts for 1980 and local source estimates for 1990. For comparison, population counts in Table 1.2 are also provided for Nogales, Sonora and the entire State of Arizona.
It must be noted that population estimates for Nogales, Sonora may be low. Unofficial estimates for that city have been as high as 200,000 persons.

Table 1.0

WEATHER DATA FOR NOGALES, ARIZONA

Month	Average* Temperature (°F) Daily Max	Daily Min	Average* Total Precipitation (Inches)
January	63.2	27.4	0.95
February	66.1	28.9	0.68
March	69.8	32.9	0.76
April	77.8	38.5	0.31
May	85.6	44.4	0.12
June	93.7	64.4	0.36
July	93.2	63.8	4.33
August	90.4	61.6	3.83
September	89.4	54.9	1.53
October	82.1	43.4	0.80
November	72.1	32.6	0.50
December	64.9	27.9	1.32
Year	79.0	42.5	15.49

Average Total snow, sleet and hail annually: 2.4 inches

* Based on a thirty year average

Table 1.1

POPULATION DATA FOR NOGALES, ARIZONA

	1980	1990	1980-1990 Compound Percentage Change	1995	2000
Nogales (city limits)	15,683	19,489	+24.3%	22,930	26,760
Santa Cruz County	20,459	29,676	+45.1%	35,350	41,250
Nogales, Sonora	65,603	102,104			
Arizona	2,716,546	3,665,228	+34.9%		

SOURCES: Arizona Department of Economic Security, U.S. Census Bureau and estimates from the Mexican Census Bureau found in Integrated Environmental Plan for the Mexican-U.S. Border Area (First Stage, 1992-1994, U.S. EPA

Recent growth trends in the Nogales area indicate that for the entire county, growth rates are higher than the State as a whole. According to preliminary 1990 Census data, the population density of the City of Nogales is approximately 3.7 persons per household.

1.3.6 Economy

International commerce is an important facet of the Nogales economy. The location of Nogales at the U.S.-Mexico border places Nogales as a vital retail and commerce hub for Northern Mexico. Forty percent of Nogales sales tax revenues are generated from the 49,000 Mexican shoppers crossing the border on an average day.

Nogales has the largest twin-plant maquiladora operations in Arizona with an annual payroll of over $100 million. Over 14% of the workforce is employed in manufacturing, one of the highest percentages in Arizona. The concept utilizes American manufacturing plants located on both sides of the border with over 24,000 employees to take advantage of favorable wage and operating differential costs and excellent transportation and distribution networks.

Nogales continues as the largest port of entry for winter vegetables in the U.S. with more than 70 produce firms bringing up to 800 truckloads of produce with an estimated wholesale value of $20 to 25 million per day during the season. **Tables 1.2, 1.3 and 1.4** present more economic data for Nogales and vicinity.

Table 1.3

ARIZONA LABOR MARKET AREA EMPLOYMENT STRUCTURE FOR NOGALES

	1990 Nogales
Agriculture & Mining	4.5%
Construction	4.9
Manufacturing	12.3
Transportation, Communication & Public Utilities	8.0
Wholesale Trade	10.3
Retail Sales	23.6
Finance, Insurance & Real Estate	4.4
Services	22.6
Public Administration	9.5

Source: U.S. Census Bureau; 1992 Arizona Dept. of Commerce

Table 1.4

LABOR FORCE DATA FOR NOGALES, ARIZONA

	1980	1989	1990
Civilian Labor Force	6,415	8.944	9,033
Employed	5,627	7,924	7,715
Unemployed	788	1,060	1,318
Unemployment Rate	12.3%	11.8%	14.6%

Source: Arizona Department of Economic Security

Table 1.5

GROWTH INDICATORS FOR NOGALES, ARIZONA

	1988	1989	1990
Postal Receipts ($)	898,796	1,071,429	1,109,785
New Bldg. Permits Issued*	201	35	104
School Enrollment**	5,880	5,920	5,962
Net assessed Valuation ($)	52,504,143	54,346,307	65,128,785

* Includes Rio Rico
** Nogales Unified School District No.1

1.4 General SIP Approach

Requirements for moderate PM_{10} areas focus on the following:

1. Assessing the severity of the problem including monitoring for PM_{10}, compiling a list of PM_{10} sources, analysis of periods of high concentrations of particulate matter and conducting a chemical analysis of the particulate matter collected as samples, if necessary (chemical analysis was not conducted in this nonattainment area);

2. An analysis using EPA approved ambient air quality modeling technologies that conclusively demonstrates that with the implementation of Reasonably Available Control Measures (RACM), attainment or nonattainment would be achieved by December 31, 1994 were it not for emissions generated in Mexico and affecting the Nogales PM_{10} Nonattainment Area.

3. Determination of the RACM necessary to reduce PM_{10} emissions, providing for demonstrating attainment of the PM_{10} NAAQS by December 31, 1994 were it not for emissions generated in Mexico and affecting the Nogales PM_{10} Nonattainment Area. RACM is required by the Clean Air Act to be in place by December 10, 1993 so reductions can be credited toward the attainment demonstration date of December 31, 1994.

4. The following requirements must be fulfilled:

   a. A complete description of the control measure; reduction estimates are not provided because due to the high percentage of PM_{10} emissions generated in Mexico, the

1993 State Implementation Plan [SIP] for the Nogales PM_{10} Nonattainment Area can demonstrate that the area would attain the PM_{10} National Ambient Air Quality Standards [NAAQS] were it not for PM_{10} emissions generated in Mexico and demonstrate this requirement without necessitating any emissions reductions;

b. Evidence that the measure was properly adopted by the jurisdiction(s) with the legal authority to commit to and execute such a program;

c. Evidence that funds to implement the measure are obligated or an acceptable schedule;

d. Evidence that all necessary approvals have been obtained from all appropriate government entities;

e. A schedule for completion of planning, engineering, development, start of construction (if applicable), and for the start of operation which has been adopted by the implementing agency in an appropriate enforceable form; and

f. A description of the monitoring program to assess the effectiveness of the measure and to allow for in-place corrections or alterations to obtain full effectiveness;

5. A list of contingency measures that can be implemented in the event a violation of the PM_{10} standards occurs after the attainment date;

6. A procedure to assess if transportation plans, programs and projects conform to the SIPs purpose of eliminating or reducing the severity and number of violations of the PM_{10} NAAQS;

7. Legally enforceable procedures for requiring owners or operators of stationary sources to maintain records of and periodically report to the State:

   a. Information on the nature and amount of emissions from the stationary sources; and

   b. Other information, as necessary, to enable the State to determine whether the sources are in compliance with applicable portions of the control strategy;

8. An air pollution emergency plan to prevent the occurrence of ambient air pollutant concentrations which would cause significant harm to the health of the public.

1.5 Plan Contents

Chapter 2 describes the monitoring and meteorological data collection program conducted by the Office of Assessment, Arizona Department of Environmental Quality to assess the PM_{10} problem of the Nogales area;

Chapter 3 describes the PM_{10} emissions source inventory of the nonattainment area conducted by the Arizona Department of Environmental Quality and an overview of its methodology.

Chapter 4 discusses the proposed Reasonably Available Control Measures (RACM) for entities responsible for controlling PM_{10} emissions within the nonattainment area.

Chapter 5 describes how attainment will be demonstrated.

Chapter 6 presents the demonstration of attainment for the nonattainment area.

Chapter 7 contains the State's contingency plan if future violations of the PM_{10} standard occur.

Chapter 8 describes the conformity procedures to review the impacts of transportation projects on the air quality of the Nogales area.

Chapter 9 contains the ADEQ annual monitoring network review and results of that review.

Chapter 10 describes the State preconstruction review program and status.

Chapter 11 contains the State's commitment to report sources subject to emissions reporting under 40 CFR 51.321-322.

Chapter 12 highlights the State's air pollution emergency episode plan.

Chapter 13 lists the references used in completing this SIP.

Appendices will be used with this document to provide supplemental information, technical documentation, public comments, and the State's responses to those comments. Appendices are intended to be an integral part of this Plan and are listed on **Page** _____.

2.0 DATA BASE DEVELOPMENT

2.1. Background

Routine sampling for particulate matter in the ambient air in Nogales, Arizona has been conducted by the State of Arizona at a monitor site at the Nogales Post Office since 1985 **[Figure 2.0, site 2]**. The Post Office site was chosen as the Nogales State and Local Area Monitoring Site [SLAMS] because it is located in the central business/residential district. Primary sources of PM_{10} in Nogales include motor vehicle traffic reentrainment of fugitive dust and diesel tailpipe emission. Thus, it meets the objectives of monitoring high population exposure and high concentrations for a neighborhood scale site. Also, there is an extensive PM_{10} database going back to 1985 for this station.

Ambient PM_{10} air concentrations in Nogales have exceeded the annual PM_{10} health standard 13 times since 1985. **Table 2.0** presents the historic monitoring results for the Post Office site. The highest 24-hour and annual monitored values since monitoring began are 244 $\mu g/m^3$ and 76 $\mu g/m^3$ respectively. The monitoring results indicate a slow downward trend in PM_{10} pollution levels.

2.2 Determining Impact of Mexican Emissions

<u>The PM_{10} Emissions Inventory Data for the Nogales Planning Area</u> prepared in October, 1987 for EPA by Engineering-Science of Pasadena, California **[Appendix C]** estimated PM_{10} emissions on both sides of the U.S.-Mexico Border. Results of the inventory indicate that an estimated 94% of emissions in Ambos Nogales are generated in Mexico.

2.3 Nogales Intensive Monitoring Study

The intensive monitoring study was developed in part to validate the previous estimated impact of Mexican emissions upon Nogales, Arizona. In addition to the SLAM site at the Post Office, two additional dichotomous samplers were also installed at the border and the City/County Complex to measure PM_{10} in two size ranges: fine (0-2.5 microns) and coarse (2.5-10 microns) **[Figure 2.0, Sites 1 and 3]**.

The sites were located in a general array with increasing distance from the border. The study results, found in **Table 2.1** indicate that the average PM_{10} levels decrease with distance from Mexico. In combination with time-lapse photography, the results show a clear flow of air pollution northward across the border into Arizona.

Also, X-ray fluorescense was performed on valid particulate samples to determine elemental constituents of the mass. The analysis demonstrates that a large portion was crustal and coarse. The fine matter generally from combustion sources (2-5 and less)

contributes less, but also plays a role. The full Nogales Intensive Monitoring Study is found in **Appendix D.**

2.4 Meteorological Data

The Office of Assessment of the Arizona Department of Environmental Quality began monitoring wind speed January, 1992 from its wind monitor located at the Nogales Post Office. From this full-year's data, wind speeds are lowest in the month of September with 0.5% of time at wind speeds above 9.5 m.p.h. Highest wind speeds occur in February when 16.6% of the time wind speeds exceed 9.5 m.p.h.

Generally the wind direction is out of the south/southwest during the spring, summer and fall switching slightly to south/southeast in remaining months.

2.5 Design Values - 24-Hour and Annual for Background and Nogales

2.5.1 - Nogales

The 24-hour design values are determined by using the lookup method as the highest measured value for 24 hours over the three-year period 1989 through and 1991. The high value of 244 $\mu g/m^3$ occurred on December 24, 1989. The highest annual average over that three-year period is the annual design value, or 55 $\mu g/m^3$. For comparison, the 24-hour and annual PM_{10} National Ambient Air Quality Standard [NAAQS] is 150 $\mu g/m^3$ and 50 $\mu g/m^3$ respectively. The lookup method is explained in PM_{10} Moderate Area SIP Guidance, US Environmental Protection Agency, June, 1987.

2.5.2 - Background Organ Pipe National Monument

Organ Pipe National Monument is chosen as the background monitor site for Southern Arizona. Organ Pipe is is located near Ajo in western Pima County. The background site measures air quality isolated from any local emissions source and is understood as that level of air pollution always present throughout a large extended region, such as Southern Arizona. Thus, monitor sites in urban areas or near stationary sources measure the increased pollutants from localized sites added to the background air pollutant levels.

The 24-hour design value of 20 $\mu g/m^3$ for Organ Pipe is taken from the same Nogales high-value day of December 24, 1989. The highest annual average over the 1989-1991 period is 18 $\mu g/m^3$.

Table 2.0 Historic PM_{10} Ambient Air Quality Monitoring Data - Nogales, Arizona

Year	High (ug/m^3)	2nd High (ug/m^3)	Arithmetic Mean (ug/m^3)	Number of Exceedances of 24-hour Standard	# of Samples	Type of Monitor
1985	110	88	56[2,3]	0	19	S A 3 2 1 A
1986	209	162	76[2]	3	41	SA321A
1987	232	166	72	4	47	SA321A/B
1988	155	147	69[2]	1	45	SA321B
1989	244	168	63[2]	2	58	SA321B
1990	175	108	52[2]	1	52	SA321B
1991	164	149	24	1	57	DICHOT
1992	153	146	54[2]	1	53	DICHOT

[1] 24-Hour average standard is 150 ug/m^3
[2] Exceeds annual average standard of 50 ug/m^3
[3] Not enough data to calculate valid annual average

Map of Nogales Monitoring Sites
Figure 1

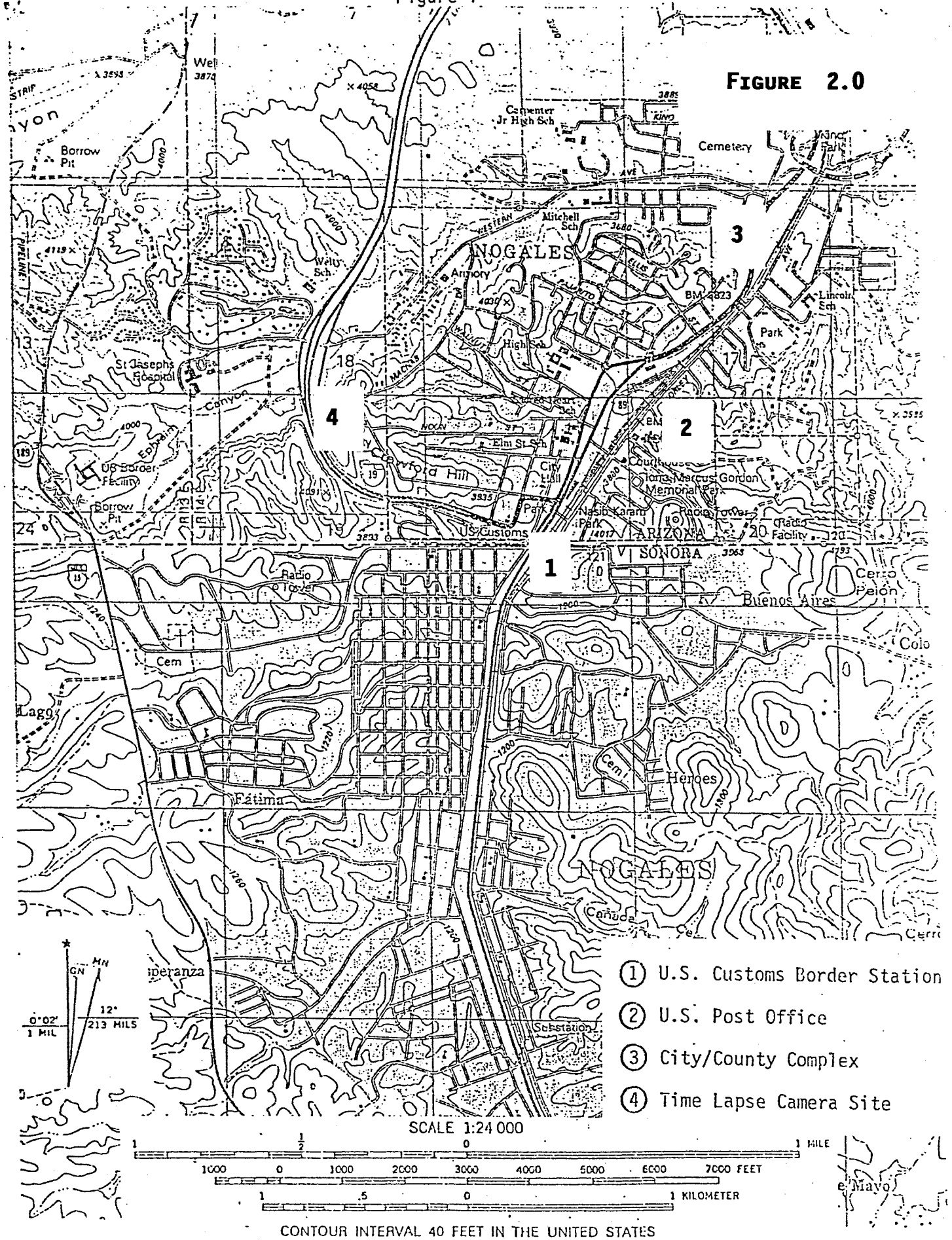


TABLE 2.1

24-Hour PM10 Average Concentrations (ug/m^3)
Nogales, Arizona
October - December, 1988

	BORDER	P.O.	COUNTY
10/3	110.2	--	51.7**
10/6	134.2	92.1	41.0
10/9	112.4	57.5	41.6
10/12	108.8	61.6	43.5
10/15	13.8	7.4	10.1
10/18	69.9	42.2	33.0
10/21	25.8	18.3	12.3
10/27	97.8	53.8	61.1*
10/30	131.6	101.5	42.2
11/2	96.7	83.7	64.5
11/5	201.4	130.8	74.7
11/8	65.3	54.2	59.6
11/11	107.6	82.1**	62.3
11/17	102.8	55.9	49.2
11/20	47.8	47.5	30.8
11/23	176.2*	146.7	84.0
11/26	13.7	12.1	7.9
11/29	71.7	--	64.0
12/2	168.9	--	61.6
12/8	22.6	--	18.9
12/11	80.4	--	47.2
12/14	84.4	--	61.2
12/17	174.8	155.4	73.2
12/20	146.3	119.6**	57.2
Average (of Valid Data)	95.2	70.0	47.3

* Fine filter damaged; data invalid

** Coarse filter damaged; data invalid

3.0 TOTAL PM_{10} EMISSION INVENTORY FOR POINT AND AREAL SOURCES - NOGALES PM_{10} NONATTAINMENT AREA

Section 188 (c)(1) of the Clean Air Act as amended in 1990 stipulates that PM_{10} nonattainment areas classified as Moderate [such as the Nogales area] shall attain the PM_{10} National Ambient Air Quality Standard as expeditiously as possible, but no later than December 31, 1994. In accordance with 40 CFR § 51.114, 1989 base-year and January 1, 1989 baseline 24-hours emissions inventories were conducted within the boundaries of the Nogales PM_{10} Nonattainment Area **[Figure 1.1]**. Emissions were then projected to the attainment-year of 1995 [annual demonstration] and December 31, 1994 for a 24-hour attainment demonstration.

3.1 Background

The Clean Air Act Amendments of 1990 granted border areas [such as Nogales] certain waivers to Part D requirements of the Act. Section 179 B stipulates that if the Nonattainment Area Plan can demonstrate that the State "would have attained the national ambient air quality standard for PM_{10} by the applicable attainment date [December 31, 1994], but for emissions emanating from outside the United States", reclassification provisions for such areas would not apply. Therefore, the Nonattainment Area Plan will demonstrate that emissions generated in Nogales, Arizona are a small portion of the total Ambos Nogales emissions. Furthermore, the Plan will show the area to meet Section 179 B requirements without the need to estimate reductions from Reasonably Available Control Measures [RACM].

[Section 5.0] lists RACM already implemented or proposed to be implemented in the Nogales Nonattainment Area by the statutory deadline of December 10, 1993.

3.2 Methodology

The emissions inventory for the Nogales nonattainment area generally relied upon reports and data resources listed below:

1. <u>PM_{10} Emissions Inventory Data for the Nogales Planning Area</u> **[Appendix C]** prepared in October, 1987 for EPA by Engineering-Science of Pasadena, California;

2. <u>Nogales Urban Area Transportation Study, Final Report, Final Report, September, 1991</u>, prepared by Parsons Brinckerhoff Quade & Douglas, Inc., Tucson, Arizona for the City of Nogales;

3. <u>Draft I-19 Corridor Study, Task 4: Future Conditions, September, 1992</u>, prepared by JHK & Associates for the Arizona Department of Transportation;

4. Traffic counts compiled by the Arizona Department of Transportation [ADOT];

5. United States Geological Survey [USGS] 7.5 Series Topographic Maps;

6. General Highway Map, Santa Cruz County, Arizona, Revised 1992, Federal Highway Administration;

7. Aerial Photographs, August, 1991, Scale: 1=500, provided by ADOT.

Below are overviews of the methodology for developing the 1989 base-year and 1995 attainment-year emission inventories. **Tables 3.0 and 3.1** list annual emissions by source category for the base and attainment years. The twenty four-hour emssions inventory are assumed to be the annual amounts divided by 365 days. **Tables 3.2 and 3.3** list 24-hour emissions by source category for January 1, 1989 and December 31, 1994 respectively.

Appendix E provides detailed methodology and includes all assumptions and computations used in estimating existing and future emissions.

3.2.1 Methodology - 1989 Base-year Inventory

1989 Base-year PM_{10} emissions for the Nogales PM_{10} Nonattainment Area are calculated based, in part, upon information contained in the document, PM_{10} Emissions Inventory Data for the Nogales Planning Area **[Appendix C]** and updated to 1989 using specific growth factors. The 1987 Inventory focused upon urban areas of Nogales and did not cover the full boundaries of the PM_{10} nonattainment area. Therefore, emissions from rural Santa Cruz County were not evaluated at that time.

Both the base-year and attainment-year emissions inventory in the Plan disaggregate the Nogales Nonattainment Area into the same one-mile square Township sections for urban Nogales as were used in the 1987 Inventory. The rural areas of Santa Cruz County were likewise divided, except for the area [labeled **FS**] within the boundaries of the Coronado National Forest and the **Rio Rico Unit.** Urban Nogales areas taken from the 1987 Inventory are labeled as numbers and rural Santa Cruz County areas are labeled as letters **[Figure 3.1]**.

Once the area has been disaggregated into sections, activity levels for each source category contained in each section are estimated/updated using the above listed data resources. For each section, emission factors taken from the 1987 Inventory for areal and vehicular-entrained fugitive sources are then multiplied by activity levels for such sources. The product is an estimate of PM_{10} emissions for such fugitive source categories within each section.

The section emissions are then aggregated to compile total areal and vehicular-entrained PM_{10} emissions for the entire nonattainment area.

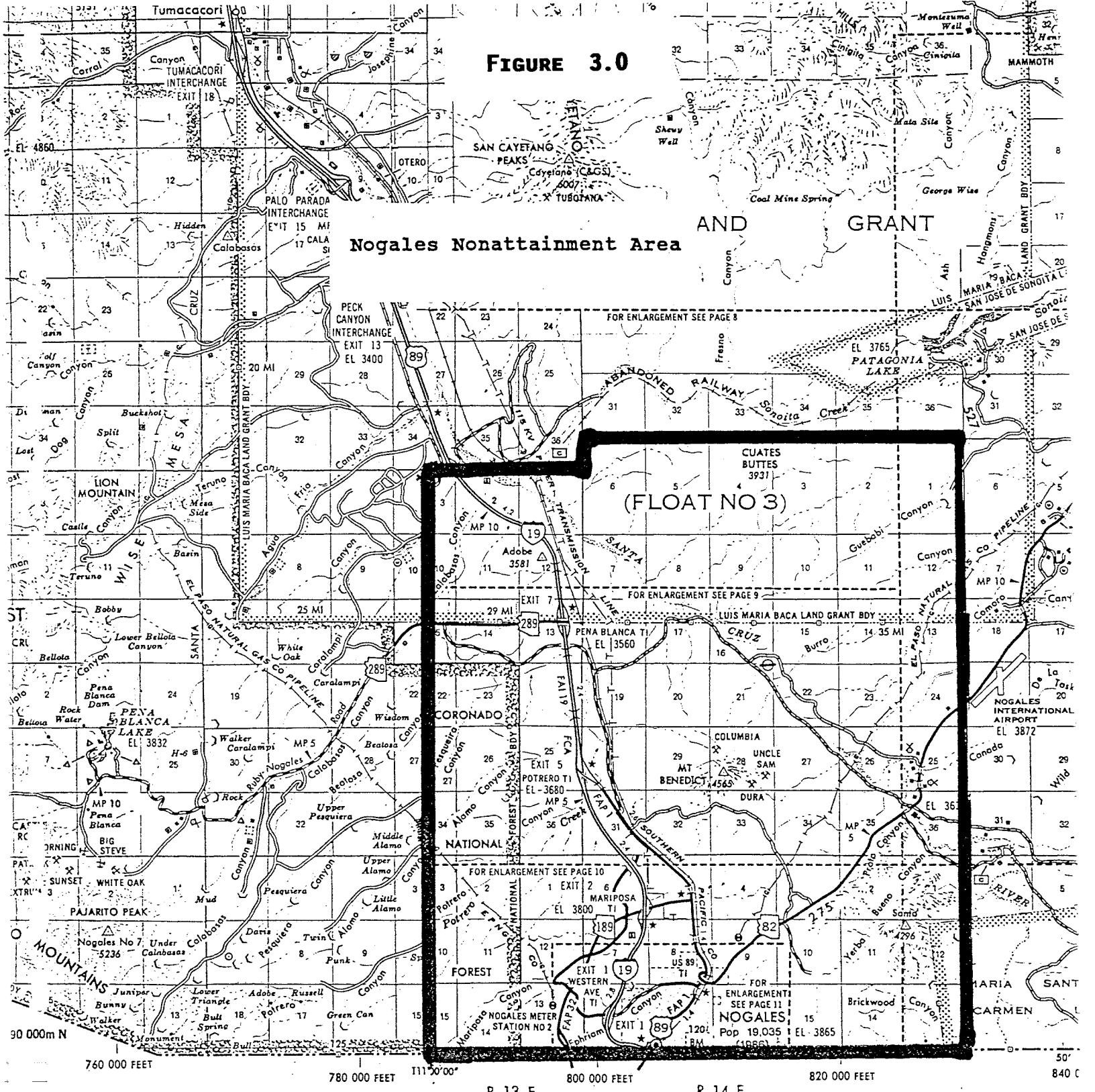
Vehicular tailpipe emissions were computed using EPA's Particulate Model.
Emissions from the nine minor and/or portable permitted stationary sources were taken from permits on file at ADEQ's Air Quality Permits Unit in Phoenix.

3.2.2 Methodology - 1995 Attainment-year Inventory

In the projection of 1995 emissions, it has been assumed that RACM, as proposed, will yield no reduction in emissions because emissions reductions were not calculated.

FIGURE 3.0

Nogales Nonattainment Area



RIC METHODS, PHOTOGRAPHY 1973
Y NOS AND USGS
TION, 1927 NORTH AMERICAN DATUM
SYSTEM, CENTRAL ZONE
MERCATOR SYSTEM, ZONE 12

LIMITED

GENERAL HIGH ILABLE FOR PUBLIC USE AT NOMINAL COST.
V. JACKSON ST., PHOENIX, ARIZONA 85007

Nogales Nonattainment Area

FIGURE 3.1

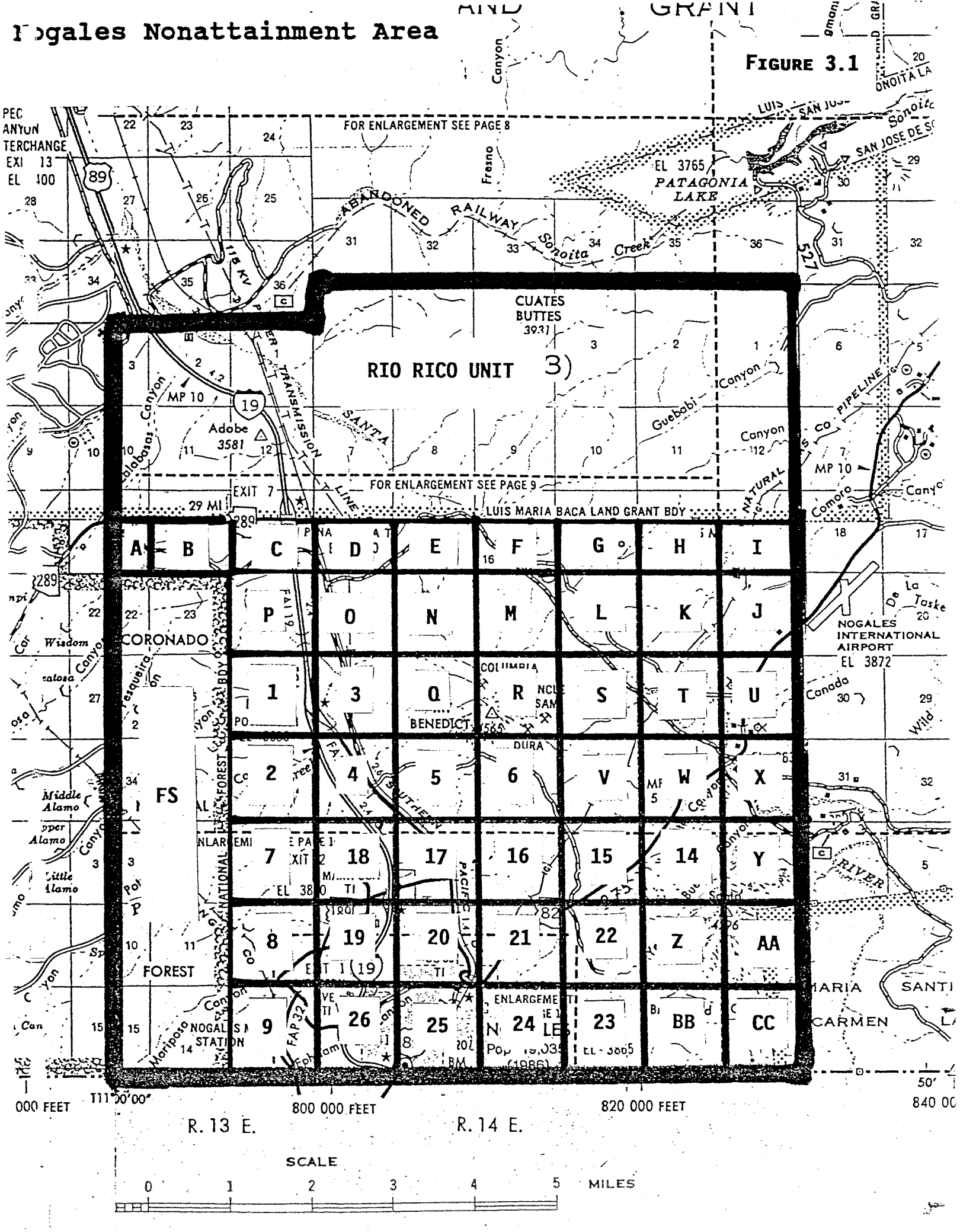


Table 3.0

ANNUAL EMISSIONS INVENTORY - BASE-YEAR 1989
NOGALES PM_{10} NONATTAINMENT AREA

ACTIVITY	ACTIVITY LEVEL PER YEAR		(tons/yr) PM_{10} EMISSIONS
FREEWAYS - BRAKES, TIRES, EXHAUST	41,892	1000 VMT	6.7
ARTERIALS - B T EX	74,544	1000 VMT	12.2
LOCAL STREETS - B T EX	6,200	1000 VMT	1.3
FREEWAYS FUGITIVES	41,892	1000 VMT	15.5
ARTERIALS FUGITIVES	74,544	1000 VMT	145.4
LOCAL STREETS FUGITIVES	6,200	1000 VMT	12.1
UNPAVED FUGITIVES	941	1000 VMT	389.0
CLEARED AREAS	5623	ACRES	91.7
TRUCK TERMINAL & STAGING AREAS	140	ACRES	7.0
LOCOMOTIVE EXHAUST			1.3
FIREPLACES & WOODSTOVES	330,000	LBS.OF FUEL	2.5
NATURAL GAS USAGE	792	10^6 CU. FT.	0.8
CONSTRUCTION FUGITIVES	51.5	ACRES	4.5
STATIONARY SOURCES	9	SOURCES	36.0
TOTAL			**726.0**

Table 3.1

ANNUAL EMISSIONS INVENTORY - ATTAINMENT-YEAR 1995
NOGALES PM_{10} NONATTAINMENT AREA

ACTIVITY	ACTIVITY LEVEL PER YEAR		(tons/yr) PM_{10} EMISSIONS
FREEWAYS - BRAKES, TIRES, EXHAUST	86,459	1000 VMT	13.9
ARTERIALS - B T EX	113,472	1000 VMT	17.6
LOCAL STREETS - B T EX	10,944	1000 VMT	1.7
FREEWAYS FUGITIVES	86,459	1000 VMT	32.0
ARTERIALS FUGITIVES	113,472	1000 VMT	221.3
LOCAL STREETS FUGITIVES	10,944	1000 VMT	21.3
UNPAVED FUGITIVES	1281	1000 VMT	529.0
CLEARED AREAS	5623	ACRES	91.7
TRUCK TERMINAL & STAGING AREAS	140	ACRES	7.0
LOCOMOTIVE EXHAUST			1.3
FIREPLACES & WOODSTOVES	330,000	LBS.OF FUEL	2.5
NATURAL GAS USAGE	792	10^6 CU. FT.	0.8
CONSTRUCTION FUGITIVES	51.5	ACRES	4.5
STATIONARY SOURCES	11	SOURCES	41.0
TOTAL			**985.6**

Table 3.2

DAILY EMISSIONS INVENTORY - BASE-YEAR 1989
NOGALES PM_{10} NONATTAINMENT AREA

ACTIVITY	ACTIVITY LEVEL PER DAY		(lbs/day) PM_{10} EMISSIONS
FREEWAYS - BRAKES, TIRES, EXHAUST	114.8	1000 VMT	36.7
ARTERIALS - B T EX	204.2	1000 VMT	66.8
LOCAL STREETS - B T EX	17.0	1000 VMT	7.1
FREEWAYS FUGITIVES	114.8	1000 VMT	84.9
ARTERIALS FUGITIVES	204.2	1000 VMT	796.7
LOCAL STREETS FUGITIVES	17.0	1000 VMT	66.3
UNPAVED FUGITIVES	2.6	1000 VMT	2131.5
CLEARED AREAS	5623	ACRES	502.5
TRUCK TERMINAL & STAGING AREAS	140	ACRES	38.4
LOCOMOTIVE EXHAUST			7.1
FIREPLACES & WOODSTOVES	904	LBS.OF FUEL	13.7
NATURAL GAS USAGE	2.2	10^6 CU. FT.	4.4
CONSTRUCTION FUGITIVES	51.5	ACRES	24.7
STATIONARY SOURCES	9	SOURCES	197.3
TOTAL			**3978.0**

Table 3.3

DAILY EMISSIONS INVENTORY - ATTAINMENT-YEAR 1995
NOGALES PM_{10} NONATTAINMENT AREA

ACTIVITY	ACTIVITY LEVEL PER DAY		(lbs/day) PM_{10} EMISSIONS
FREEWAYS - BRAKE, TIRES & EXHAUST	236.9	1000 VMT	76.
ARTERIALS - B T EX	310.9	1000 VMT	96.4
LOCAL STREETS - B T EX	30.0	1000 VMT	9.3
FREEWAYS FUGITIVES	236.9	1000 VMT	175.3
ARTERIALS FUGITIVES	310.9	1000 VMT	1212.6
LOCAL STREETS FUGITIVES	30.0	1000 VMT	116.7
UNPAVED FUGITIVES	3.5	1000 VMT	2899.0
CLEARED AREAS	5623	ACRES	502.5
TRUCK TERMINAL & STAGING AREAS	140	ACRES	38.4
LOCOMOTIVE EXHAUST			7.1
FIREPLACES & WOODSTOVES	904	LBS.OF FUEL	13.7
NATURAL GAS USAGE	2.2	10^6 CU. FT.	4.4
CONSTRUCTION FUGITIVES	51.5	ACRES	24.7
STATIONARY SOURCES	11	SOURCES	224.7
TOTAL			**5400.5**

4.0 DESCRIPTION OF THE PROPOSED COMMITMENTS TO IMPLEMENT REASONABLY AVAILABLE CONTROL MEASURES

4.01 Locally-Implementing Jurisdictions

This chapter discusses EPA's recommended PM_{10} Reasonably Available Control Measures [RACM], as found in **Appendix F** and presents proposed measures to reduce PM_{10} in the Nogales Nonattainment Area by local jurisdictions. Both the Santa Cruz County Board of Supervisors and the Nogales City Council approved resolutions to document and maintain the present level of RACM implementation, and to commit to fully implement new RACM by December 10, 1993. The measures are included in this section; the signed resolutions are found in **Appendix L.**

Also provided in this section are other RACM, as committed to by the Arizona Department of Environmental Quality, U.S. Customs Service, and Rio Rico, Inc., a private landowner that has restricted recreational use in some of its landholdings. Control measures implemented by the Arizona Department of Transportation are found in **Appendix G.** Supporting documentation for the locally implemented measures is found in **Appendix H.**

Notably absent from the jurisdictions involved in implementing RACM is the U.S. Border Patrol. The Border Patrol discontinued a practice of dragging dirt roads in October, 1992. Dragging is used to detect fresh footprints of illegal aliens crossing into the United States and can generate significant quantities of dust into the air. Approximately 1 1/2 miles of border road within the PM_{10} Nonattainment Area will no longer be dragged because it was ineffective. The road is now wired for movement sensors that detect any human movement. The Patrol is called out roughly about 3-4 times a week.

4.02 Control Measures Deemed Not Reasonably Available

RACM, addressing smoke from wood combustion, were not included as local commitments. In the development of the emissions inventory, sales of wood for stoves and fireplaces and wood-cutting permits issued by the U.S. Forest Service would indicate insignificant burning per season. A check with Citizen's Utility further revealed that virtually no resident within the nonattainment area uses wood burning as a sole source of heat. Almost every home is hooked up to natural gas or propane.

EPA's RACM Number 8, **[see Appendix F]** was not considered RACM due to the warmer climate of the Nogales area. The measure, as defined by EPA, is to "require improved material specification for and reduction of usage of control sand or salt (e.g., require use of coarse, nonfriable material during snow and ice season". Likewise, RACM Number 15 was excluded because there are insignificant tilled agricultural acreage in the Nogales PM_{10} Nonattainment Area.

4.1 City of Nogales RACM

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number:NOG #1; see also NOG #10

Control Measure:Pave, vegetate, or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.

Target Source:Fugitive dust from trackout onto paved surfaces

Responsible Agency: City of Nogales Street Department

Ordinance/Policy/ Procedure/Operations: Ongoing operations of the City Street Department

Implementation schedule/Operation:**Ongoing, but City commits to paving the remainder of unpaved streets within the City limits within 5 years.** Specific projects will be implemented within the timeframes set below.

Authority Citation: Provide for the general welfare of the City's residents and visitors.

Financing and Man-power Resources: **Proposed $176,000 budget for repair and maintenance of all streets within the City for FY 93-94; Additional proposed $80,000 set aside for capital acquisition including a paving machine and a milling machine to recycle asphalt.** Budget is approximately 10% higher than FY 92-93 and has been rising by approximately 5-10% per year over the last 5 years.

As paving projects progress, City's one water truck can water the fewer miles of remaining unpaved surfaces more frequently.

Technical Documentation

Committed Level of Effort: **The City of Nogales commits to paving the remainder of its unpaved streets by January 1, 1998. The City since 1989 has paved an average of 2 miles of road per year and**

commits to maintaining that level of effort.

For FY 92-93 the City is entering into an Intergovernmental Agreement [IGA] with the County to chip seal 1.5 miles of Royal Rd. The City also commits to at least use chemical dust palliatives on 2.2 miles of Vista del Cielo. Presently the City waters the area once per day. In the coming years, the residents in the area of Vista del Ciela hope to create an improvement district to pave the remainder of the unpaved roads there. **The City also will enter into an IGA with the County to chip seal 900' of Hohokam from the County Sheriff's office to the County detention facility. The City also commits to using Community Block Development Grant [CDBG] funds to to pave approximately 3/4 mile of West La Quinta Rd.**

Past completed paving or chip sealing projects since 1989 have included:

- Hohokam Rd. 900 ft. from unpaved to chip seal - 1992;
- La Quinta Rd.
- La Caminita/Yucca Drive South - 2 miles paved
- Bristol Dr.
- Target Range Rd. unpaved to chip seal

Methods of Monitoring Implementation and Effectiveness:

The City commits to reporting to ADEQ the progress of paving/chip sealing the remainder of its unpaved roads within the boundaries of the City. Roads remaining to be paved include Frank Reed Rd; Kino Rd.; and Kelsey Rd. near the Junior High School.

NOTE: Frank Reed Rd. is slated to be paved in FY 93-94 using ADOT federal monies that may be withheld under potential EPA sanctioning.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #2

Control Measure: Require dust control plans for construction or land clearing projects.

Target Source: Construction dust

Responsible Agency: Planning and Zoning Department; City Engineer; Building Inspector

Ordinance/Policy/
Procedure/Operation: Ordinance: **Amending the Development and Building Code to require a dust control element to grading and construction permit applications and providing for inspection of/compliance to such elements. Existing procedure is to informally stipulate construction dust mitigation control with follow-up inspection through site plan and grading permit approval/compliance. Grading permit required whenever 300 cubic yards or more of dirt are moved.**

Implementation
schedule: December 10, 1993, to improve existing RACM ordinances

Authority Citation: Development Code 8-5-6; 8-16-10; 8-16-13 and 8-16-20 **[see Appendix H];**

Financing and Man-
power Resources: **Will use existing 2 full-time-employees [FTE's] to review added dust control elements. Currently one inspector will have new responsibility for a formalized dust control inspection process.**

Technical Documentation

Committed Level of Effort: **The city commits to including a dust**

control element to its existing development codes requiring that grading and construction plans include a dust control element. Any new land modifications that entail the clearing, blading, moving or otherwise disturbing of land shall require a permit. If more than 300 cubic yards of dirt are moved, the application for the permit shall include a detailed plan through which the applicant will commit to a strategy to suppress emissions of dust. Approved strategies may include but not be limited to any or all of the following:

- **phasing of the project;**
- **paving of vehicle access routes; and/or**
- **chemical dust stabilization, limiting equipment access and staging areas to specific areas of the site.**

Methods of Monitoring Implementation and Effectiveness:

Grading permit application will continue to be reviewed by City Engineer. Existing Code requires applicant to fulfill grading and site plan conditions or risk forfeiture of surety bond. **Upon approval and during construction inspection will be tracked as to compliance with the approved dust control element.**

The City commits to recording and filing the results of all dust control inspection.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #3; also See SCC #3

Control Measure: Require haul trucks to be covered.

Target Source: Dust generated from waste and construction materials in haul trucks during transit.

Responsible Agency: **City Street Department commits to requiring that City haul trucks to be covered in 1994; All haul trucks within the PM_{10} Nonattainment Area of the County shall be covered by 1995 enforced by County Sheriff's Department and the City Police Department as a traffic citation.**

Ordinance/Policy/
Procedure: Ordinance

Implementation
schedule: December 10, 1993

Authority Citation: General health and welfare of city residents and visitors.

Financing and Man-
power Resources: Proposed $176,000 FY 93-94 Street and Road Maintenance Budget

Technical Documentation

Committed Level of Effort: **City Street Department commits to requiring that City haul trucks to be covered in 1994; All haul trucks within the PM_{10} Nonattainment Area of the County shall be covered by 1995 enforced by County Sheriff's Department and the City Police Department as a traffic citation.**

Methods of Monitoring Implementation and Effectiveness:

See above.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #4

Control Measure: Provide for traffic rerouting or rapid clean up of temporary (and not readily preventable) sources of dust on paved roads (water erosion, mud/dirt carry out areas, material spills, skid control sand). Delineate who is responsible for clean up.

Target Source: Track out of mud and dirt onto paved high-volume traffic areas from constuction or heavy rainfall.

Responsible Agency: Nogales Street Department

Ordinance/Policy/
Procedure/Operation: Existing operation will become written policy.

Implementation
schedule: December 10, 1993

Authority Citation: Promote safety and general welfare for city residents.

Financing and Man-
power Resources: Included within proposed FY 93-94 Nogales City Proposed Budget of $176,000 for repair and maintenance of city streets. Currently use two crews of three employees each.

Technical Documentation

Committed Level of Effort: **A new written policy will commit the City to the current practice of following Arizona Department of Transportation Protocols of warning and speed signage for road construction areas. Policy will commit the City to the current weekday cleanup response time target of 24-hours on heavily travelled City streets after cessation of rainfall.**

Methods of Monitoring Implementation and Effectiveness:

Communication procedures and responsible personnel will become written into the above Street Department policy.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #5

Control Measure: Prohibit permanent unpaved haul roads, and parking or staging areas at commercial, municipal, or industrial facilities.

Target Source: Track-out from unpaved areas onto paved roadways and prevention of dust entrained into the air from heavy vehicular traffic over unpaved surfaces.

Responsible Agency: Nogales Street Department has authority over the City's equipment yard; Nogales Planning and Zoning Department has authority over potential new unpaved parking, hauling and staging areas within the City's boundaries.

Ordinance/Policy/
Procedure/Operation: Operations - City yard; Ordinance currently prevents new unpaved parking, hauling, staging area

Implementation
schedule: Already implemented

Authority Citation: Development Code 8-19-6; Section 600; **[see Appendix H]**

Financing and Man-
power Resources: **City will use dust palliatives at the diesel refueling area of the equipment yard through expenditures of the FY 93-94 proposed City Budget of $176,000 for street repair and maintenance.**

Technical Documentation

Committed Level of Effort: The City's equipment yard is already chip sealed in the high traffic areas; parking areas there are paved. The City will commit to using dust palliatives in the diesel refueling area that is currently unpaved.

The City's Development Code currently prohibits the creation of any new unpaved haul roads, staging or parking areas.

Methods of Monitoring Implementation and Effectiveness:

Approval of site plans and follow-up inspection certification by the City Engineer are dependent upon implementation of Development Code 8-19-6 and Section 600 requirements.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #6

Control Measure: Develop traffic reduction plans for unpaved roads. Use of speed bumps, low speed limits, etc., to encourage use of other (paved roads).

Target Source: Entrained dust from vehicular traffic over unpaved roads.

Responsible Agency: The Nogales Street Department

Ordinance/Policy/
Procedure/Operation: Operations

Implementation
schedule: Not applicable. The City would encounter liability problems with the use of speed bumps. Speed limits are generally unenforceable in remote areas where unpaved roads are generally located. Therefore the City commits to paving the remainder of its existing unpaved roads by 1998. **[See NOG #1]**. The Development Code prohibits the creation of any new unpaved road **[Appendix H], Section 600]**.

Authority Citation: Not applicable

Financing and Man-
power Resources: Not applicable

Technical Documentation

Committed Level of Effort: Not applicable

Methods of Monitoring Implementation and Effectiveness:

Not applicable.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #7

Control Measure: Limit Use of Recreational vehicles on open land (e.g. confine operations to specific areas, require use permits, outright ban).

Target Source: Fugitive dust entrained by recreational vehicles operated on open unpaved surfaces.

Responsible Agency: Since the City has insignificant open areas and recreational vehicle use, the County and areas outside the County will be targeted.

Ordinance/Policy/
Procedure/Operation: Not applicable

Implementation
schedule: Not applicable

Authority Citation: Not applicable

Financing and Man-
power Resources: Not applicable

Technical Documentation

Committed Level of Effort: Not applicable

Methods of Monitoring Implementation and Effectiveness:

Not applicable

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #9

Control Measure: Require curbing and pave or stabilize (chemically or with vegetation) shoulders of paved roads.

Target Source: Prevents loading of dirt and mud onto paved surfaces with high traffic volumes

Responsible Agency: Nogales Planning and Zoning Department

Ordinance/Policy/
Procedure/Operation: Ordinance: Development Standards Code Section 8-8-2 entitled, Streets currently in force. Operations: Street Department for paving and repaving projects.

Implementation
schedule: Already implemented.

Authority Citation: Development Standards Code, Section 8-8-2; also to provide for general welfare of City's residents and visitors through the maintenance of city streets.

Financing and Man-
power Resources: Two full-time employees review site and development plans; City Engineer conducts follow-up inspections.

Technical Documentation

Committed Level of Effort: **City commits to continue its current level of enforcement of the Development Standards Code that requires MAG standards of curbs and pavement for single family residential uses on less than one-acre parcels.**

Methods of Monitoring Implementation and Effectiveness:

The City commits to recording enforcements actions taken against infractions of City's Development Standards Code as it relates to dust control.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #10; **Completely accounted for in explanation of NOG #1**

Control Measure: Pave or chemically stabilize unpaved roads.

Target Source: Entrained dust from vehicular traffic over unpaved roads.

Responsible Agency:

Ordinance/Policy/
Procedure:

Implementation
schedule:

Authority Citation:

Financing and Man-
power Resources:

Technical Documentation

Committed Level of Effort:

Methods of Monitoring Implementation and Effectiveness:

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #11; **see also NOG #5**

Control Measure: Pave, vegetate, or chemically stabilize unpaved parking areas.

Target Source: Entrained dust from vehicular traffic over unpaved parking surfaces.

Responsible Agency: The Planning and Zoning Department oversees the enforcement of the Development Code which prohibits the creation of any new unpaved parking areas. The Nogales Street Department implements paving projects for parking areas of City facilities.

Ordinance/Policy/
Procedure: Ordinance, City Development Code prohibits new unpaved parking areas and prohibits nuisance dust from any existing development, Section 8-5-6 of the Development Standards Code. Operations, for paving projects of City parking facilities.

Implementation
schedule: Ongoing

Authority Citation: City Development Standards and Development Code preventing new unpaved parking areas.

Financing and Man-
power Resources: **The City commits to continue to pave or chip seal unpaved parking areas of City parks and other facilities as funds become available.**

Technical Documentation

Committed Level of Effort: Already implemented. In the last three years, parking areas of Memorial Park and Neighborhood Center have been paved. Fletcher Park can be watered more frequently now that the City's one water truck has fewer remaining areas to water - as paving projects progress.

Methods of Monitoring Implementation and Effectiveness:

The City is currently pursuing legal action against what is perceived to be a major contributor of trackout of mud/dirt onto Grand Avenue **[see Appendix I]**.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #12

Control Measure: Require dust control measures for material storage piles.

Target Source: Wind blown dust emanating from piles of dirt and fill material

Responsible Agency: Generally under the jurisidiction of the Arizona Department of Environmental Quality. There are no known material storage piles under the City's control.

Ordinance/Policy/
Procedure: Not applicable.

Implementation
schedule:

Authority Citation:

Financing and Man-
power Resources:

Technical Documentation

Committed Level of Effort:

Methods of Monitoring Implementation and Effectiveness:

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #13

Control Measure: Provide for storm water drainage to prevent water erosion onto paved roads.

Target Source: Loading of dirt and mud onto heavy vehicular traffic areas.

Responsible Agency: Planning and Zoning Department through the Development Code, **Section 8-16-23 see Appendix H]**; The Nogales Street Department maintains and stabilized existing erosion areas.

Ordinance/Policy/
Procedure: Ordinance, Section 8-16-23 requiring water retention on new developments; Ongoing operations for existing problem areas.

Implementation
schedule: **For FY 1993-94, the City commits to stabilizing the number one erosion problem area at Meadow Hills/Yucca Drive with a culvert and concrete to prevent further erosion of the road surface.** Erosion areas in the Vista del Cielo will be addressed in the next four years through the creation of an improvement district for the area.

Authority Citation: Development Code Section 8-16-23

Financing and Man-
power Resources: For existing areas, the FY 93-94 proposed City Budget of $176,000 for street repair and maintenance and/or moneys from Santa Cruz County Flood Control District.

Technical Documentation

Committed Level of Effort: **The City will continue to require on-site water retention in accordance with Section 8-16-23. The City commits to repairing erosion areas at Meadow Hills/Yucca Drive by Mid-1994 with a culvert and concrete to prevent further erosion of the roadway.**

Methods of Monitoring Implementation and Effectiveness:

The city monitors compliance through information placed into a Drainage Report submitted to the City Engineer **[Section 8-16-23]**.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: NOG #14

Control Measure: Require revegetation, chemical stabilization, or other abatement of wind erodible soil, including lands subjected to water mining, abandoned farms, and abandoned construction sites.

Target Source: Wind-blown dust from disturbed unpaved surfaces.

Responsible Agency: Planning and Zoning Department through inspection of the City Building Inspector/City Engineer.

Ordinance/Policy/
Procedure: Ordinance.

Implementation
schedule: December 10, 1993

Authority Citation: **Amending the Grading Requirements of the Development Code, Section 8-16-10 to require a dust control plan stipulating that after 180 days of permit issuance, the permit holder must successfully reseed the area within and under the authority of the permit.**

Financing and Man-
power Resources: City will use existing Planning and Zoning Department personnel.

Technical Documentation

Committed Level of Effort: **Amending the Grading Requirements of the Development Code, Section 8-16-10 to require a dust control plan stipulating that after 180 days of permit issuance, the permit holder must successfully reseed the area within and under the authority of the permit.**

Methods of Monitoring Implementation and Effectiveness:

Inspection, logging and annual reporting of enforcement of related activities to be conducted by existing City Planning and Zoning personnel

4.2 Santa Cruz County RACM

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #1; see also SCC #10

Control Measure: Pave, vegetate, or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.

Target Source: Fugitive dust from trackout onto paved surfaces

Responsible Agency: Santa Cruz County Public Works Department

Ordinance/Policy/
Procedure/Operations: Ongoing operations

Implementation
schedule: Ongoing

Authority Citation: A.R.S. 11-251

Financing and Man-
power Resources: FY 92-93; total Santa Cruz County Streets and Roads budget of $1,326,000, of which $150,000 will go to chip sealing projects [approximately 20-25 miles] within the boundaries of Santa Cruz County. Streets and roads budget has been increasing approximately 3-5% per year over the last 5 years.

Technical Documentation

Committed Level of Effort: **The County commits to chip seal at least 1 mile of unpaved roads per year in the next two years within the boundaries of the PM_{10} nonattainment area. The average length of new chip sealing completed over the last five years has been approximately 2-3 miles. This includes:**

- **an IGA with Nogales to chip seal 1.5 miles of Royal Rd. and certain residential streets adjoining Royal Rd.**

  Over the last five years the County has chip sealed/paved

approximately 2-3 miles of previously unpaved roads every year.

This includes:

- **1.5 miles of South River Rd. east of I-19.**
- **An IGA with Nogales to chip seal or pave 1/4 mile of Hohokam Dr. at the County Sheriff's Complex;**
- **Paving 5/8 mile of Dan Foltz Rd.**

Methods of Monitoring Implementation and Effectiveness:

The County has an informal policy of redoing the chip sealed areas every 2-5 years as the surface deteriorates.

The County commits to recording the extent of any new paving projects within the Nogales PM_{10} Nonattainment Area.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #2

Control Measure: Require dust control plans for construction or land clearing projects.

Target Source: Construction dust

Responsible Agency: County Planning and Zoning Department;

Ordinance/Policy/
Procedure/Operation: Ordinance: **Amending the County Development and Building Code to require a grading permit that would include a dust control element for excavations occurring on 1 acre or more on sites located within the boundaries of the Nogales PM_{10} Nonattainment Area of Santa Cruz County. The grading permit would be necessary for any excavation, whether or not construction is planned for the parcel. Grading and construction permit applications would be approved by the Planning and Zoning Department with follow-up inspection/permit compliance by the existing two inspectors. Successful hydroseeding after completion of grading and/or construction would also be require pursuant to existing Article 19, Landscaping of the County Development Code.**

Existing procedure is to informally stipulate construction dust mitigation control in site plan only with follow-up inspection and compliance. Landscaping/hydroseeding presently required only if construction planned.

Implementation
schedule: December 10, 1993, to improve existing RACM ordinances

Authority Citation: Article 19 Landscaping, Screening, and Buffering of the County Development Code **[see Appendix H];**

Financing and Man-
power Resources: **Will use existing 2 full-time planning and zoning personnel for review and will use two full-time building inspectors for inspection and compliance.**

Technical Documentation

Committed Level of Effort: **The county commits to including a dust control element to its existing development codes requiring that grading and construction plans include a dust control element for sites within the boundaries of the Nogales PM_{10} Nonattainment Area of Santa Cruz County. Any new land modifications that entail the clearing, blading, moving or otherwise disturbing of land shall require a grading permit. If more than 1 acre is disturbed, the application for the permit shall include a detailed plan through which the applicant will commit to a strategy to suppress emissions of dust. Approved strategies may include but not be limited to any or all of the following:**

- **phasing of the project;**
- **paving of vehicle access routes; and/or**
- **chemical dust stabilization, limiting equipment access and staging areas to specific areas of the site.**

Methods of Monitoring Implementation and Effectiveness:

Grading permit application will be reviewed by County Planning and Zoning Department. Code would require applicant to fulfill grading and site plan conditions or risk forfeiture of surety bond. Upon approval and during construction inspection will be tracked as to compliance with the approved dust control element.

The City commits to recording and filing the results of all dust control inspections.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #3

Control Measure: Require haul trucks to be covered.

Target Source: Dust generated from waste and construction materials in haul trucks during transit.

Responsible Agency: County Public Works Department haul trucks to be covered in 1994; All haul trucks within County - 1995 to be enforced by County Sheriff's Department as traffic citation.

Ordinance/Policy/
ProcedureOperation : County policy for County haul trucks; Ordinance for all other haul trucks used within the County

Implementation
schedule: December 10, 1993

Authority Citation: A.R.S. 11-251

Financing and Man-
power Resources:

Technical Documentation

Committed Level of Effort: **The County commits to developing, approving and implementing by December 10, 1993 an internal written policy that all County-owned haul trucks will be covered with a tarp or other suitable enclosure in such a manner so as to prevent or minimize fugitive dust.**

The County commits to approving and implementing an ordinance to become effective by January 1. 1995 requiring all haul trucks within the boundaries of the Nogales PM_{10} Nonattainment Area of Santa Cruz County to be covered with a tarp or other suitable enclosure in such a manner so as to prevent fugitive dust.

Methods of Monitoring Implementation and Effectiveness:

Sheriff's Office to issue traffic citations and the number of citations will be logged and reported to ADEQ.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #4

Control Measure: Provide for traffic rerouting or rapid clean up of temporary (and not readily preventable) sources of dust on paved roads (water erosion, mud/dirt carry out areas, material spills, skid control sand). Delineate who is responsible for clean up.

Target Source: Track out of mud and dirt onto paved high-volume traffic areas from constuction or heavy rainfall.

Responsible Agency: Santa Cruz County Public Works Department

Ordinance/Policy/
Procedure/Operation: Existing written policy is that Arizona Department of Transportation [ADOT] specifications requires contractors to submit Traffic Control Plan for County road projects regarding signage, traffic control, flagman, etc.

Presently there are unwritten County Public Works policies regarding rerouting of traffic [as necessary according to professional judgment]; requiring water trucks whenever dirt is moved; and necessity of road closure after rainstorm/necessity of sweepers and cleanup before road reopening.

Implementation
schedule: Already implemented; December 10, 1993 for written County Public Works policy of 24-hour cleanup response time.

Authority Citation: ADOT specifications for road construction projects; for road cleanup after rainfall - provide for safety and general welfare of County residents and visitors.

Financing and Man-
power Resources: After rainfall, County dispatches generally 3-4 Public Works employees with the number reaching as high as 15 employees. Sheriff's Office can also dispatch up to 12 people during flooding situations.

Technical Documentation

Committed Level of Effort: **A new written policy will commit the County Public Works Department to a response time for the cleanup of dirt/mud on heavily travelled roads to 24-hours after cessation**

of rainfall.

Methods of Monitoring Implementation and Effectiveness:
Communication procedures and responsible personnel, as identified in the County's Emergency Operations Plan, will be incorporated into the above County Public Works written cleanup policy to be developed.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #5; see also SCC #11

Control Measure: Prohibit permanent unpaved haul roads, and parking or staging areas at commercial, municipal, or industrial facilities.

Target Source: Track-out from unpaved areas onto paved roadways and prevention of dust entrained into the air from heavy vehicular traffic over unpaved surfaces.

Responsible Agency: Santa Cruz County Public Works Department for jurisdiction over the County's equipment yards. Santa Cruz County Planning and Zoning Department for any ordinance regarding the regulation of unpaved staging and parking areas not under County control.

Ordinance/Policy/
Procedure/Operation: Operations - Surfacing County equipment yards; Existing written policy is the adoption of Maricopa Association of Governments [MAG] standards when applicable for parking requirements with a minimum standard of gravel required for site plan approval.

Implementation
schedule: RACM Already implemented for parking areas under County Control, but RACM will be improved by December 10, 1993 by clarifying in the Development Code when paving or gravel is required for parking or maneuvering vehicles on privately-owned parcels.

Authority Citation: Existing adoption of Maricopa Association of Governments [MAG] Standards

Financing and Man-
power Resources: **County will use a portion of its FY 92-93 Roads Budget of $150,000 to newly chip seal and pave surfaces beginning at the County Sheriff's Complex extending to the County Maintenance Facility in Nogales. The County would use existing manpower for approval and inspection of new paving/gravel requirements.**

Technical Documentation

Committed Level of Effort: **Approximately 15,000 square feet of surface at the County Sheriff's/Juvenile Detention**

Facility/equipment yard on Hohokam Dr. will be chip sealed. Also, the County commits to newly chip seal 50' of access road at the County Sheriff's Office/Detention Complex in Nogales and paving 3000 sq. ft. of parking at the County complex on Congress Drive. In 1990, 3000 sq. ft. of the County's Animal Control Facility was paved.

Four or five years ago paving was not required on County facilities, but the Americans with Disabilities Act [ADA] has effectively prevented gravel parking at any public facility.

Ordinance amendment will require paving when 16 or more parking spaces are indicated by MAG Standards and require gravel when less than 16 spaces required for sites located within the boundaries of the Nogales PM_{10} Area of Santa Cruz County.

Methods of Monitoring Implementation and Effectiveness:

Approval of site plans and follow-up inspection certification will continue to be within the responsibility of the County Planning and Zoning Department. The County commits to recording the extent of any new paving projects within the Nogales PM_{10} Nonattainment Area.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #6

Control Measure: Develop traffic reduction plans for unpaved roads. Use of speed bumps, low speed limits, etc., to encourage use of other (paved roads).

Target Source: Entrained dust from vehicular traffic over unpaved roads.

Responsible Agency: The Santa Cruz County Public Works Department

Ordinance/Policy/
Procedure/Operation: Operations

Implementation
schedule: Ongoing.

Authority Citation: A.R.S. 11-251

Financing and Man-
power Resources: Typical cost of sign replacement is $65/sign; includes materials and manpower.

Technical Documentation

Committed Level of Effort: The County currently has approximately 300 various yellow advisory signs throughout the county on unpaved roads. Signs such as Open Range, Curve Ahead, 15 MPH or 20 MPH are used to control speeds on high volume unpaved roads on an as needed basis.

Use of speed bumps would present liability problems to the County and are not proposed.

Methods of Monitoring Implementation and Effectiveness:

Other than chain-closing the roads or the use of speed bumps, these methods have very little enforceability.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #7

Control Measure: Limit Use of Recreational vehicles on open land (e.g. confine operations to specific areas, require use permits, outright ban).

Target Source: Fugitive dust entrained by recreational vehicles operated on open unpaved surfaces.

Responsible Agency: The County Planning and Zoning Department; County Sheriff's Department

Ordinance/Policy/
Procedure/Operation: Amendment to Development Code

Implementation
schedule: December 10, 1993

Authority Citation: A.R.S. 11-251.17 and 11-251.51

Financing and Man-
power Resources: Not applicable

Technical Documentation

Committed Level of Effort: **The County will amend its Development Code to stipulate that no person shall cause, suffer, or allow a vacant parcel located within the boundaries of the Nogales PM_{10} Nonattainment Area of Santa Cruz County, or an urban or suburban open area located within such area to be driven over or used by motor vehicles, to such a degree or extent so as to cause or contribute to visible dust emissions which then cross property lines to cause damage to health, to animals, or vegetation, or other forms of property, or which can cause any excessive soiling or otherwise detract from the enjoyment of neighboring property or operations occurring on neighboring property.**

Methods of Monitoring Implementation and Effectiveness:

Planning and Zoning and Sheriff's Department personnel will respond to complaints and make inspections. Infractions will be treated as traffic citation by Sheriff's Office.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #9

Control Measure: Require curbing and pave or stabilize (chemically or with vegetation) shoulders of paved roads.

Target Source: Prevents loading of dirt and mud onto paved surfaces with high traffic volumes

Responsible Agency: Santa Cruz County Planning and Zoning Department

Ordinance/Policy/
Procedure/Operation: Ordinance requiring curbing and paving [MAG Standards] currently applicable to Planned Area Developments in the County.

Implementation
schedule: Already implemented for Planned Area Developments, Article 12 of the Development Code. Improvements to the Code will be implemented by December 10, 1993.

Authority Citation: Maricopa Association of Government [MAG] Standards and the County Development Standards Code

Financing and Man-
power Resources: **The County will use existing 2 full-time planning and zoning personnel to review proposed dust control elements to site plan and grading permit appications. The County will use two full-time building inspectors for inspection and compliance.**

Technical Documentation

Committed Level of Effort: **Santa Cruz County commits to approving and implementing by December 10, 1993 an amendment to the County Development Code to require gravel on shoulders for rural subdivisions [lot size greater than 1 acre] located within the boundaries of the Nogales PM_{10} Nonattainment Area of Santa Cruz County and to require curbs and sidewalks [MAG Standards] in developments with lot sizes less than one acre within the boundaries of such nonattainment area.**

NOTE: Any more than 3 lots splits for any parcel would require a subdivision review.

Methods of Monitoring Implementation and Effectiveness:

The County will use Planning and Zoning personnel to review site plans and the County Engineer will conduct follow-up inspections.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #10; **Completely accounted for in explanation of SCC #1**

Control Measure: Pave or chemically stabilize unpaved roads.

Target Source: Entrained dust from vehicular traffic over unpaved roads.

Responsible Agency:

Ordinance/Policy/
Procedure:

Implementation
schedule:

Authority Citation:

Financing and Man-
power Resources:

Technical Documentation

Committed Level of Effort:

Methods of Monitoring Implementation and Effectiveness:

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #11; **Completely accounted for under SCC #5**

Control Measure: Pave, vegetate, or chemically stabilize unpaved parking areas.

Target Source: Entrained dust from vehicular traffic over unpaved parking surfaces.

Responsible Agency:

Ordinance/Policy/
Procedure:

Implementation
schedule: Ongoing

Authority Citation:

Financing and Man-
power Resources:

Technical Documentation

Committed Level of Effort:
Methods of Monitoring Implementation and Effectiveness:

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #12

Control Measure: Require dust control measures for material storage piles.

Target Source: Wind blown dust emanating from piles of dirt and fill material

Responsible Agency: Under the jurisidiction of the Arizona Department of Environmental Quality through Arizona Administrative Code R-18-2-407. There are no known material storage piles under the City's control.

Ordinance/Policy/
Procedure: Not applicable.

Implementation
schedule: Not applicable

Authority Citation:

Financing and Man-
power Resources: Not applicable

Technical Documentation

Committed Level of Effort: Not applicable

Methods of Monitoring Implementation and Effectiveness:

Not applicable

NOGALES SIP ADMINISTRATIVE AND TECHNICAL
RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #13

Control Measure: Provide for storm water drainage to prevent water erosion onto paved roads.

Target Source: Loading of dirt and mud onto heavy vehicular traffic areas.

Responsible Agency: Santa Cruz County Flood Control District

Ordinance/Policy/
Procedure: Operations

Implementation
schedule: **For FY 1993-94, the City commits to continuing its efforts toward preventing flood waters from loading roadways with silt by:**

- **removing debris, vegetation and sediment in water channels;**
- **setting up barricades to prevent vehicular trackout of mud during flood conditions;**

Authority Citation: A.R.S. Title 48, Chapter 21.

Financing and Man-
power Resources: For the entire county, the FY 93-94 County Budget for the Flood Control District is of $1,240,000, of which $910,000 will go for capital and heavy equipment and $330,000 for non-capital repairs and new projects. Projects include:

- Chula Vista Channel Project;
- Western Avenue - 200' of channel completed in 1992 and 2000' of channel lining to be completed in 1993.

Technical Documentation

Committed Level of Effort: **Amending the Development Code to require water detention facilities as necessary to prevent loading of water and debris onto the roadway in subdivisions and Planned Area Developments. The County will continue its operations repair and install new culverts at problem water runoff areas. The County commits to installing 12 24" culverts throughout the County for the control of water runoff during FY 1993-94.**

Methods of Monitoring Implementation and Effectiveness:

The county will yearly log and report all new storm water projects with the potential to prevent silt/mud loading onto roadways throughout the County. This includes construction major flood retention facilities as well as new canal. Planning and Zoning will review subdivision and PAD plans for compliance.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #14

Control Measure: Require revegetation, chemical stabilization, or other abatement of wind erodible soil, including lands subjected to water mining, abandoned farms, and abandoned construction sites.

Target Source: Wind-blown dust from disturbed unpaved surfaces.

Responsible Agency: Santa Cruz County Planning and Zoning Department through inspection of the County Engineer.

Ordinance/Policy/
Procedure: Ordinance.

Implementation
schedule: December 10, 1993

Authority Citation: Existing Development Code.

Financing and Man-
power Resources: Existing P&Z manpower.

Technical Documentation

Committed Level of Effort: **The County will amend its Development Code to stipulate that no person shall cause, suffer, or allow a vacant parcel located within the boundaries of the Nogales PM_{10} Nonattainment Area of Santa Cruz County, or an urban or suburban open area located within such area to be left unvegetated to such a degree or extent so as to cause or contribute to visible dust emissions which then cross property lines to cause damage to health, to animals, or vegetation, or other forms of property, or which can cause any excessive soiling or otherwise detract from the enjoyment of neighboring property or operations occurring on neighboring property.**

Methods of Monitoring Implementation and Effectiveness:

Sheriff's Department will issue traffic citation to owner of parcel if infraction occurs.

4.3 ADEQ RACM

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: DEQ #1

Control Measure: Reasonably Available Control Technology [RACT]

Target Source: Stack and fugitive PM_{10} from permitted stationary sources

Responsible Agency: Arizona Department of Environmental Quality

Ordinance/Policy/
Procedure: Permit Condition

Implementation
schedule: Duration of permit; permit expiration dates are as described below for each permitted source.

Authority Citation: A.R.S. 49-426

Financing and Man-
power Resources: Existing 14 FTE's in Office of Air Quality Permits & Compliance Section

Technical Documentation

Committed Level of Effort: As stated below for the duration of the permit; upon negotiating permit renewal, a new policy [DEQ #2 described next will become a standard condition on all permitted sources' haul roads and staging areas.

Methods of Monitoring Implementation and Effectiveness:

STATIONARY SOURCES 1989 & 1995

In 1989 and now, there are nine minor/portable sources permitted by

the Arizona Department of Environmental Quality within the boundaries of the Nogales PM_{10} Nonattainment Area. They are listed below with the yearly permitted stack and fugitive PM_{10} emission, permit expiration dates, source descriptions and Reasonably Available Technology [RACT:

1. Citizen's Utility 19.37 tons PM_{10}/yr.

   Permit Expiration Date: 1996

   Source description: Generator and turbines; no roads;

   RACT:

2. J.D's Sand & Gravel 3.35 tons PM_{10}/yr.

   Permit Expiration Date: 1994

   Source description: Mostly fugitives from rock crusher and storage piles

   RACT: Spray bars in use and/or material kept wet.; haul roads must be kept wet;

3. Royal Sterilization .01 tons PM_{10}/yr.

   Permit Expiration Date: 1995

   Source description: Boiler; no haul roads

   RACT: No controls; Only permitted for natural gas

4. Santa Cruz County .005 tons PM_{10}/yr.

   Permit Expiration Date: 1994

   Source description:

   RACT:

5. Tanner - Southern Concrete Batch .53 tons PM_{10}/yr.

   Permit Expiration Date: 1995

   Source description: Truck loading and use of aggregate bins;

RACT: Bag house, spray bars, or material must be wet; water truck must be used.

6. Tanner - Southern Concrete Batch 5.3 tons PM_{10}/yr.

Permit Expiration Date: 1994

Source description: Weigh hoppers and haul road and staging area vehicular traffic;

RACT: Baghouse, spray bars or keeping material wet;

7. Tanner - Southern Crusher #164 7.43 tons PM_{10}/yr.

Permit Expiration Date: 1995

Source description: Transfer points, screen and crusher;

RACT: Water truck, spray bars or keeping materials wet;

8. USDA Douglas Incinerator .01 tons PM_{10}/yr.

Permit Expiration Date: 1995

Source description:

RACT:

9. USDA Nogales Incinerator .04 tons PM_{10}/yr.

Permit Expiration Date: 1995

Source description:

RACT:

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: DEQ #2 **[see Appendix H]**

Control Measure: Reasonably Available Control Technology

Target Source: Haul roads and staging areas

Responsible Agency: ADEQ

Ordinance/Policy/
Procedure: Policy

Implementation
schedule: June 1, 1993

Authority Citation: A.R.S. 49-426

Financing and Man-
power Resources: Existing 14 FTE's in Office of Air Quality, Permits and Compliance Section

Technical Documentation

Committed Level of Effort: It shall be the policy of the Office of Air Quality of the Arizona Department of Environmental Quality that haul roads and staging areas of permitted sources within PM_{10} Nonattainment Areas shall be paved or treated with an EPA-approved chemical dust suppressant **[Appendix H]**.

Methods of Monitoring Implementation and Effectiveness: Using existing inspection personnel for permitted source inspections.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: DEQ #3

Control Measure: EPA RACM 12; Require dust control measures for material storage piles;

Target Source: Fugitive dust from material storage piles.

Responsible Agency: ADEQ

Ordinance/Policy/
Procedure: Rule R18-2-407; **[see appendix H]**

Implementation
schedule: Existing

Authority Citation: A.R.S. 49-422

Financing and Man-
power Resources: Existing 14 FTE's in Office of Air Quality, Permits and Compliance Section

Technical Documentation

Committed Level of Effort: Continue to maintain existing inspection and enforcement levels regarding dust control on material storage piles.

Methods of Monitoring Implementation and Effectiveness: Using existing inspection personnel for permitted source inspections.

4.4 Rio Rico RACM

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: Rio Rico #1

Control Measure: EPA RACM 7; Limit use of recreational vehicles on open land (e.g., confine operations to specific areas, require use permits, outright ban.

Target Source: Fugitive dust emissions from recreational use of vehicle over and through open lands.

Responsible Agency: Rio Rico Properties, Inc.

Ordinance/Policy/
Procedure: Policy

Implementation
schedule: Existing

Authority Citation: Control on private property.

Financing and Man-
power Resources: N/A

Technical Documentation

Committed Level of Effort: Rio Rico Properties, Incorporated is implementing its right to control use by outside parties on its private lands by requiring a use permit to recreate on its properties [portions of which are in the Nogales PM_{10} Nonattainment Area]. Particulars of permit conditions are described in the legal covenents contaied in the legal document **[Appendix H]**.

Methods of Monitoring Implementation and Effectiveness:
Private land owner monitors its own efforcement. E

4.5 U.S. Customs Service RACM

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: U.S Customs Service #1

Control Measure: Reduce idling time of diesel-powered vehicular traffic at border entrances.

Target Source: Diesel exhaust emissions

Responsible Agency: U.S. Customs Service

Ordinance/Policy/
Procedure: Capital improvement

Implementation
schedule: Capital improvements at Grand Avenue Entrance to be completed May, 1994; Mariposa entrance was completed in July, 1991;

Authority Citation: U.S. Customs authorized to implement methods to regulate entries into the country.

Financing and Man-
power Resources:Grand Avenue entrance improvements: $20.5 Million; Mariposa entrance improvements, $4.2 million.

Technical Documentation

Committed Level of Effort: Grand Avenue entrance improvements will reduce waiting and vehicular idling by increasing the throughput capicity from 4 north-bound lanes to 8 north-bound lanes. Mariposa entrance improvements include increasing the number of two auto lanes to four, and one truck lane to four. **Appendix J** presents the historical border crossing truck volumes.

Methods of Monitoring Implementation and Effectiveness:Capital improvement reduction maintain their effectiveness.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: U.S. Customs Service #2

Control Measure: Reduce idling time of diesel-powered vehicular traffic at border entrances.

Target Source: Diesel exhaust emissions

Responsible Agency: U.S. Customs Service

Ordinance/Policy/
Procedure: Procedure

Implementation
schedule: Line Release Program is two-three years old

Authority Citation:U.S. Customs authorized to implement methods to regulate entries into the country.

Financing and Man-
power Resources: No additional manpower necessary

Technical Documentation

Committed Level of Effort: Line Release Program allows repeat haulers with good records to be accorded expedited entry into the country, thus reducing idling for all waiting trucks

Methods of Monitoring Implementation and Effectiveness: N/A

5.0 DESCRIPTION OF THE AIR QUALITY MODEL OR EQUIVALENT METHOD

In accordance with § 179 B of the Clean Air Act Amendments of 1990, the 1993 State Implementation Plan [SIP] for the Nogales PM_{10} Nonattainment Area will demonstrate that the area would attain the National Ambient Air Quality Standards [NAAQS] by December 31, 1994 if not for the emissions generated in Mexico and affecting monitor readings of ambient PM_{10} pollutants in Nogales, Arizona. The Plan will demonstrate compliance with the § 179 B requirement with the assumption that no PM_{10} emissions reductions were derived from implementing the RACM described in Section 4.0.

Section 2.2 documented that Nogales, Arizona contributes approximately 6% of the emissions generated in Ambos Nogales. Nogales, Sonora contributes 94%. Ambient monitored readings from the Post Office site measure the effect of the local emissions as well as background pollutants, as measured by ADEQ at the remote Organ Pipe National Monument site.

Conceptually the attainment demonstration methodology is to subtract the background values from the monitored design values for Nogales, Arizona [the highest 24-hour reading and the highest annual average measured at the Post Office during the three-year period ending 1991]. Removing the background value would essentially approximate what the ambient levels would be if only locally generated emissions were involved. Nogales, Arizona's contribution would be 6% of this value. Adding back the Organ Pipe 24-hour and annual background readings would yield what the highest Nogales, Arizona ambient 24-hour monitored reading and highest Nogales, Arizona annual average would be if Mexican emissions were totally eliminated. See also Section 2.5 for an explanation of design values. For example:

> [(24-hour design value for Nogales - Background) x Nogales'emission fraction] + Background = 24-hour value without Mexican emissions.

Likewise for Annual:

> [(Annual design value for Nogales - Background) x Nogales' emission fraction] + Background = Annual value without Mexican emissions.

If the 24-hour and annual ambient values without Mexican emissions are lower than the NAAQS, the Plan will demonstrate compliance with § 179 B of the Clean Air Act Amendments of 1990. Section 6.0 presents the attainment demonstration.

6.0 RESULTS OF THE AIR QUALITY MODEL OR EQUIVALENT METHOD

The 24-hour design value for Nogales, Arizona, or the highest reading for a 24-hour period within the three-year period ending 1991 occurred on December 24. 1989 and is 244 $\mu g/m^3$. Using the 24-hour reading at Organ Pipe or 20 $\mu g/m^3$ for the same day is the background pollutants Nogales experienced that day. Therefore:

[(24-hour design value for Nogales - Background) x Nogales'emission fraction] + Background = 24-hour value without Mexican emissions.

or

[(244 - 20) x 0.06] + 20 = **33 $\mu g/m^3$**; the 24-hour PM_{10} National Ambient Air Quality Standard [NAAQS] is 150 $\mu g/m^3$. **Nogales would have attained the 24-hr PM_{10} NAAQS if not for Mexican emissions.**

The annual design value for Nogales, Arizona [the highest annual average over the three-year period ending 1991] is 55 $\mu g/m^3$. Organ Pipe's annual design value for that three-year period is 18 $\mu g/m^3$. Therefore:

[(Annual design value for Nogales - Background) x Nogales' emission fraction] + Background = Annual value without Mexican emissions.

or

[(55 - 18) x 0.06] + 18 = **20 $\mu g/m^3$**; the annual PM_{10} NAAQS is 50 $\mu g/m^3$. **Nogales would have attained the anuual PM_{10} if not for Mexican emissions.**

7.0 MAINTENANCE OF THE NAAQS

Section 110 of the Clean Air Act requires, among other items, that the State implementation maintain the primary PM_{10} NAAQS in the nonattainment area. If attainment is demonstrated, EPA recommends that the plan show maintenance of the PM_{10} standard for at least three years beyond the attainment date of December 31, 1994.

It is assumed that due to the North American Free Trade Agreement [NAFTA] the growth in population and PM_{10} emissions in Nogales, Sonora will continue to outstrip the growth north of the border. Therefore, Nogales, Arizona's emissions contribution will at least remain 6% of the total Ambos Nogales emissions. Also, it is assumed that background values would also remain the same. From Section 3.0, the yearly Nogales, Arizona emission growth rate = 6%. Therefore, the algebra to calculate what annual average and 24-hour monitored readings at the Post Office site would have to be before Nogales would not comply with § 179 B is:

$$[(x - 18) \times 0.06] + 18 = 50\ \mu g/m^3 \text{ Annual } PM_{10} \text{ NAAQS.}$$

$$x = 551\ \mu g/m^3 \text{ annual average, where}$$

[(551 - 18) x 0.06 is the Nogales component or 32 $\mu g/m^3$ when Nogales begins not to comply. The term [(55 - 18) x .06] or 2.22 $\mu g/m^3$ is the Nogales annual average ambient component at present design values. The ratio 32/2.22 would be the growth capacity [1989-1995] in Nogales's ambient/emissions component before Nogales would not comply with § 179 B.

Growth capacities for 24-hour NAAQS would be similar.

8.0 CONTINGENCY PLANS

The State commits to reevaluate this SIP and implement additional control measures in the event that:

1. A violation of the § 179 B of the Clean Air Act Amendments occurs in 1994 or after;

2. A new source of PM_{10} emissions is established in the Nogales PM_{10} Nonattainment Area and ADEQ believes there is a probability that the additional emissions will result in a violation of the § 179 B.

In consideration of the fact that RACM is fully implemented and the unlikely event of the nonattainment area of violating § 179 B [see Secion 7.0], and the State recommends that an existing RACM commitment such as the covering of haul trucks be additionally considered as a Contingency measure.

9.0 CONFORMITY PROCEDURE

The Arizona Department of Transportation has responsibility for determining that transportation projects within the Nogales PM_{10} Nonattainment Area conform to the State Implementation Plan. New transportation projects in the area will be reviewed for conformity during the National Environmental Protection Act [NEPA] requirements of such projects.

10.0 AMBIENT PM_{10} SAMPLING

Monitoring air quality in the Nogales area is conducted by the Arizona Department of Environmental Quality and reviewed annually to assure that data gathering equipment is sited, operated and maintained; and that data is gathered and evaluated based on the EPA requirements and criteria. An annual State and Local Air Monitoring Stations (SLAMS) review assures that air quality data in Nogales meets the following requirements.

- 40 CFR Parts 50 and 58 to monitor the effectiveness of the implemented control strategies;
- 40 CFR, Part 58.13 (Monitoring Criteria, Operating Schedule).
- 40 CFR Part 50, Appendices J & K;
- 40 CFR Part 58, Appendix A, Section 2;
- 40 CFR Part 58, Appendix A, Section 3.3 and 3.4.1;
- 40 CFR Part 58, Appendix A, Section 4.2 and 4.3;
- 40 CFR Part 58, Appendix A, Section 5.3 and 5.4;
- 40 CFR Part 58, Appendix D, Section 2.8
- 40 CFR Part 58, Appendix E, Section 8.

The 1992 State and Local Air Monitoring Stations [SLAMS] Network Review is found in **Appendix K.**

11.0 PRECONSTRUCTION REVIEW

All new sources and modifications to existing sources in Arizona are subject to state requirements for preconstruction review and permitting (see A.A.C., Title 18, Chapter 2, Articles 1, 2 and 3) All new major sources and modifications to existing major sources in Arizona are subject to the New Source Review (NSR) provisions of these rules, including Nonattainment Area Analysis (NAA) and Prevention of Significant Deterioration (PSD). The State NSR program was conditionally approved by EPA in 1982, and is in the process of being revised in accordance with the Clean Air Act Amendment and submitted to EPA before November 15, 1993 for full approval.

The PM_{10} PSD requirements for Arizona were not established at the time of the writing of this SIP. This is due to the unavailability of PM_{10} increments at the Federal level. Upon promulgation by EPA and within a reasonable time thereafter, the State will adopt the necessary rules to have a PM_{10} PSD program which meets the requirements of 40 CFR, Part 52.

12.0 SOURCE EMISSIONS AND STATE ACTION REPORT

12.1 Annual Source Emissions and State Action Report

On an annual basis, the ADEQ shall report to EPA, Region IX, information as specified in 40 CFR 51.323-326. Reports will be submitted by July 1 of each year for data collected and actions which took place during the period January 1 to December 31 of the previous year. Sources subject to emission reporting are described below.

12.2 Sources Subject to Emissions Reporting

Point sources are subject to the annual emissions reporting requirements of 40 CFR 51.321 if the facility emits 90.7 metric tons (100 tons) per year or more of PM_{10}. The reporting requirement begins with the reporting of calendar year 1988 emissions.

Annual emissions reporting requirements apply to any individual emission point within a facility if that point emits 22.7 metric tons (25 tons) per year or more. The reporting requirement begins with the reporting of calendar year 1988 emissions.

13.0 AIR POLLUTION EMERGENCY EPISODES

R18-2-220 prescribes the procedures the Director of the ADEQ shall implement in order to prevent the occurrence of ambient air pollutant concentrations which would cause significant harm to the health of the public. It stipulates that a Stage I air pollution alert shall be declared when any of the alert level concentrations listed in Table 13.0 are exceeded at any monitoring site and when meteorological conditions indicate that there will be a continuance or recurrence of alert level concentrations for the same pollutant during the subsequent 24-hour period.

A Stage II air pollution warning shall be declared when any of the warning level concentrations listed in Table 13.0 are exceeded at any monitoring site and when meteorological conditions that there will be a continuance or recurrence of concentrations of the same pollutant exceeding the warning level during the subsequent 24-hour period.

A Stage III air pollution emergency shall be declared when any of the emergency level concentrations listed in Table 13.0 are exceeded at any monitoring site and when meteorological conditions indicate that there will be a continuance or recurrence of concentrations of the same pollutant exceeding the emergency level during the subsequent 24-hour period.

Table 13.0
Summary of Emergency Episode and Significant Harm Levels

Pollutant	Averaging Time	Alert	Warn'g	Emergency	Significant Harm
Carbon Monoxide	1-hr	--	--	--	144
(mg/m3)	4-hr	--	--	--	86.3
	8-hr	17	34	46	57.5
Nitro Dioxide	1-hr	1,130	2,260	3,000	3,750
(µg/m3)	24-hr	282	565	750	938
Ozone (ppm)	1-hr	.2	.4	.5	.6
PM10 (µg/m3)	24-hr	350	420	500	600
Sulfur Dioxide	24-hr	800	1,600	2,100	2,620
µg/m3)					

14.0 REFERENCES

Aerial Photographs, Nogales Area, August, 1991, Scale: 1=500, provided by ADOT.

Control of Open Fugitive Dust Sources, US Environmental Protection Agency, EPA-450/3-88-008, Research Triangle Park, North Carolina, 1988.

Draft I-19 Corridor Study, Task 4: Future Conditions, September, 1992, prepared by JHK & Associates for the Arizona Department of Transportation;

General Highway Map, Santa Cruz County, Arizona, Revised 1992, Federal Highway Administration;

Nogales Urban Area Transportation Study, Final Report, Final Report, September, 1991, prepared by Parsons Brinckerhoff Quade & Douglas, Inc., Tucson, Arizona for the City of Nogales;

PM_{10} Emissions Inventory Data for the Nogales Planning Area **[Appendix C]** prepared in October, 1987 for EPA by Engineering-Science of Pasadena, California;

PM_{10} SIP Development Guideline, US Environmental Protection Agency, OAQPS, EPA-450/2-86-001, Research Triangle Park, North Carolina, June 1987.

PM_{10} Moderate Area SIP Guidance: Final Staff Work Product, issued by EPA, April 2, 1991.

Question and Answers for PM_{10}, Environmental Protection Agency, SO_2/Particulate Matter Programs Branch, Office of Air Quality Planning and Standards, issued August, 1991.

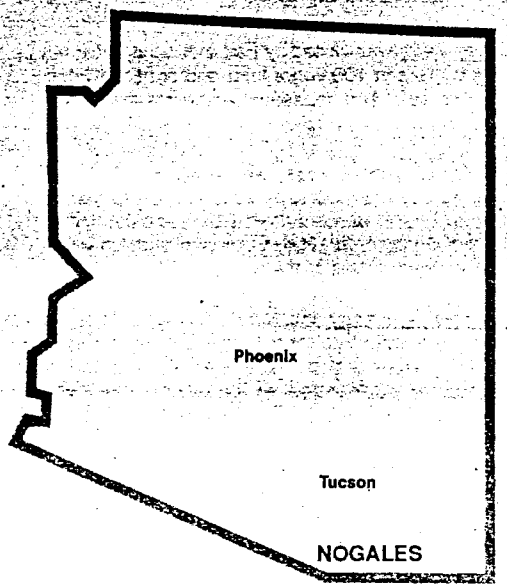
Traffic counts compiled by the Arizona Department of Transportation [ADOT];

United States Geological Survey [USGS] 7.5 Series Topographic Maps;

General Highway Map, Santa Cruz County, Arizona, Revised 1992, Federal Highway Administration;

APPENDIX A

COMMUNITY PROFILE - NOGALES ARIZONA



Arizona

Nogales Community Profile

INTRODUCTION

Nogales, Arizona and its twin city, Nogales, Sonora, Mexico are situated on the international border separating the United States and Mexico. The Arizona city serves as both the economic capital and the county seat of Santa Cruz County, the smallest and southernmost of Arizona's counties. The City is situated in a mountainous setting at an elevation of 3,865 feet above sea level. Nogales was established in 1880 by Jacob and Isaac Isaacson, who built a trading post along the border. Two years later, Nogales was the site of the first rail connection between Mexico and the United States. Nogales incorporated in 1893.

WEATHER

Month	Average Temperature (°F) Daily Max	Daily Min.	Average Total Precipitation (Inches)
January	63.2	27.4	0.95
February	66.1	28.9	0.68
March	69.8	32.9	0.76
April	77.8	38.5	0.31
May	85.6	44.4	0.12
June	93.7	53.9	0.36
July	93.2	63.8	4.33
August	90.4	61.6	3.83
September	89.4	54.9	1.53
October	82.1	43.4	0.80
November	72.1	32.6	0.50
December	64.9	27.9	1.32
Year	79.0	42.5	15.49

Average Total Snow, Sleet and Hail Annually: 2.4 inches
(Based on a thirty year average)

NOGALES EMPLOYMENT STRUCTURE

	Percent of Total
Agriculture	4.3%
Mining	0.2
Construction	4.9
Manufacturing	12.3
Transportation, Communication & Public Utilities	8.0
Wholesale Trade	10.3
Retail Trade	23.6
Finance, Insurance & Real Estate	4.4
Services	22.6
Public Administration	9.5

Source: U.S. Census Bureau

LABOR FORCE DATA

	1980	1989	1990
Civilian Labor Force	6,415	8,984	9,033
Employed	5,627	7,924	7,715
Unemployed	788	1,060	1,318
Unemployment Rate	12.3%	11.8%	14.6%

Source: Arizona Department of Economic Security

GROWTH INDICATORS

	1988	1989	1990
Postal Receipts ($)	898,796	1,071,429	1,109,785
New Building Permits Issued*	201	35	104
School Enrollment**	5,880	5,920	5,962
Net Assessed Valuation ($)**	52,504,143	54,346,307	65,128,785

* Includes Rio Rico
** Nogales Unified School District No. 1

PROPERTY TAX RATE PER $100 ASSESSED VALUE

	1988	1989	1990
Arizona State Tax	$0.47	$0.47	$0.47
County Flood Control	0.37	0.52	0.47
County Fire District	0.10	0.10	0.10
County	3.59	4.03	3.86
County Total	4.52	5.12	4.90
Unified Sch. Dist. #1	6.70	6.60	6.63
City of Nogales	0.00	0.00	0.00
Total	$11.22	$11.72	$11.53

Source:Arizona Tax Research Foundation

PRINCIPAL NOGALES ECONOMIC ACTIVITIES

International commerce is an important facet of the Nogales economy. The location of Nogales at the U.S.-Mexico border places Nogales as a vital retail and commerce hub for Northern Mexico. Forty percent of Nogales sales tax comes from the 49,000 Mexican shoppers crossing the border on an average day.

Nogales has the largest twin-plant maquiladora operations in Arizona with an annual payroll of over $100 million. Over 14 percent of the workforce is employed in manufacturing, one of the highest percentages in Arizona. The concept utilizes American manufacturing plants located on both sides of the border with over 24,000 employees to take advantage of favorable wage and operating differential costs and excellent transportation and distribution networks.

Nogales continues as the largest port of entry for winter vegetables in the U.S. with more than 70 produce firms bringing up to 800 truckloads of produce with an estimated wholesale value of $20 to 25 million per day during the season.

POPULATION

	1980	1990	1980-1990 Percentage Change
Nogales	15,683	19,489	+24.3%
Santa Cruz County	20,459	29,676	+45.1
Arizona	2,716,546	3,665,228	+34.9

Sources: Arizona Department of Economic Security
U.S. Census Bureau

Arizona
Department of Commerce
3800 N. CENTRAL AVE. • PHOENIX, ARIZONA 85012 • (602) 280-1321

FINANCE

	Offices		Offices
Security Pacific:	1	First Interstate Bank:	2
Arizona Commerce Bank:	1	Valley National Bank:	3
City Loan & Finance Co.:	1		

Santa Cruz County businesses are eligible for assistance in financing fixed assets through the Development Finance Division, Arizona Department of Commerce. Information on availability of industrial development bonds within the County may be obtained from the same source or from the Industrial Development Authority of the County of Santa Cruz; c/o Nogales-Santa Cruz Chamber of Commerce.

TRANSPORTATION

Highways:	U.S. 89 (I-19), AZ 82
Railroads:	Southern Pacific
Bus:	Citizens Auto Stage
Truck:	12 local companies and 25 interstate carriers
Airport:	Nogales International; 7,200-foot, paved, lighted runway

COMMUNICATIONS

Newspapers:	Daily:	The Nogales Daily Herald Arizona Daily Star (Tucson); Tucson Citizen; Arizona Republic (Phoenix)
	Weekly:	The Nogales International
Radio:	KFBR (1,000 watts), KAYN-FM	
Television:	KMSB, 2 Mexican stations	

UTILITIES

Electricity:	Citizens Utilities Co.
Natural Gas:	Citizens Utilities Co.
Telephone:	U.S. West
Water & Sewer:	Municipal

MEDICAL FACILITIES

Hospital:	1 (80 beds)	Physicians:	17
Dentists:	3	Chiropractor:	2
Podiatrist:	1	Opticians:	

GOVERNMENT SERVICES

Local Government:	Mayor, 6 Council Members
Police Department:	1 Chief, 33 officers, 12 civilians
Sheriff's Department:	23 certified officers, 19 civilians
Fire Department:	29 fulltime, 22 volunteers, 26 EMT's
Underwriters Rating:	Grade 6

EDUCATIONAL FACILITIES

	No.	Faculty	Enrollment
Public Elementary	4	116	2,657
Public Middle School	2	64	1,222
Public High School	1	84	1,658
Private Elementary	2	18	418
Private High School	1	16	295

Pima College has an extension in Nogales. There is also the Santa Cruz Training Center, 3 special education schools and 2 pre-schools.

CHURCHES

Catholic:	2	Baptist:	6
Protestant:	6	Other:	10
Church of Jesus Christ LDS:	1		

COMMUNITY FACILITIES

Museum:	1	Tennis Courts:	6
Art Gallery:	1	Recreation Centers:	3
Parks:	9	Pools:	3
Golf Courses:	3 (1-9 hole)	Athletic Fields:	8
Library:	1 (branches in Rio Rico and Tubac)		

SCENIC ATTRACTIONS

Santa Cruz County and the City of Nogales have 200 properties listed in the National Register of Historic Sites, two of which are of the Spanish colonial period: Tumacacori National Monument, and Tubac Presidio. Four other sites are the Old Tubac Schoolhouse (1885), Old Nogales City Hall (1914), Santa Cruz County Courthouse (1902), and Patagonia Railroad Station House (1900).

Tumacacori National Monument was visited by Father Kino in 1691, but its period of greatest activity began 100 years later and continued until about 1821. The ruins, grounds and museum, administered by the National Park Service, are open to the public.

Tubac Presidio, now a State Historic Park, was established by the Spanish in 1752. The village was first settled by Indian farmers, then by Spanish missionaries, soldiers and farmers. It was the repeated victim of Apache raids for about 100 years. In 1854, European and American mining interests established themselves in the area.

The Patagonia-Sonoita Creek Sanctuary, located in Patagonia 19 miles east of Nogales, is visited by people throughout the world for its highly diverse birdlife. Around 300 species of birds have been recorded at this rare stream bottom sanctuary surrounded by beautiful cottonwood trees.

Hilltop Art Gallery - local artists, exhibitions.

Pimeria Alta Historical Society Museum, a museum, library and archives on the history of Southern Arizona and Northern Sonora, located in the original City Hall of Nogales, Arizona. Exhibits, programs, speakers, trips to Mexico and Museum tours available.

Arizona Vineyards - 19th Century Winery. French rural wines made in Arizona.

Tubac Center of the Arts - visual and performing arts, and art gallery.

Nearby recreational areas include Pena Blanca Lake and Patagonia Lake. Excursions can also be taken to visit the ghost towns and mining camps in the area: Washington Camp, Duquesne, Mowry and Lochiel.

INDUSTRIAL PROPERTIES

Parks: 5 (500 acres) with utilities and transportation available. Contact the Nogales Chamber of Commerce.

LODGING AND MEETING FACILITIES

Motels:	19 with 800 units
Meeting Facilities:	6, with the largest seating 832 persons
Campgrounds:	4 (1-public; 3-private)

HOUSING

Current information on housing availability and prices can be obtained from the Public Housing Authority Section 8, FmHA; (602) 287-5979; or the Nogales-Santa Cruz County Chamber of Commerce.

This community profile was updated by the Arizona Department of Commerce.

For further information, contact:

Nogales Chamber of Commerce
Kino Park
Nogales, AZ 85621
(602)287-3685

Border Industrial Development Corporation
P.O. Box 1688
Kino Park
Nogales, AZ 85628
(602)287-3685

City of Nogales
1018 Grand Ave.
Nogales, AZ 85621
(602)287-6571

Reproduction of this publication for commercial use is prohibited by A.R.S. 39-121. Permission to reprint may be granted upon written request to the Arizona Department of Commerce

APPENDIX B

WORK PLAN FOR NOGALES PM_{10} AND AIR TOXICS STUDIES, AS AN ELEMENT OF INTERNATIONAL BORDER INVIRONMENTAL

Proposed Workplan For Nogales Area PM_{10}/HAPs Study For Federal Fiscal Years 1993, 1994

1993 2nd Quarter (January-March)

TASKS:

Develop a rough gridded emissions inventory of PM_{10} emissions in Nogales, Sonora and a list of HAP's sources and emissions on both sides of the border.

RESPONSIBILITIES:

- SEDESOL will provide available raw information on traffic volume, paved and unpaved road networks, industrial sources emissions, etc. ADEQ and SEDESOL will collaborate on emission estimates for sources lacking basic information, for example, residential emissions and small commercial operations.

- The preliminary gridded PM_{10} inventory will be jointly produced on computers at ADEQ's office. The preliminary HAPs inventory will be in the form of a list of sources, their locations and HAPs species emitted and will be prepared by ADEQ, SEDESOL, and Santa Cruz County.

NOTE: The purpose of the preliminary inventory in Sonora is to determine the location of a long term monitoring site. PM_{10} inventory refinements will be made throughout the study in parallel with efforts on the U.S. side of the border where the initial 1987 inventory prepared by Engineering Sciences, Inc. will be updated and improved. The goal is to develop comparable PM_{10} inventories on both sides of the border. For HAP's ADEQ will work with Santa Cruz County and SEDESOL to refine a list of HAPs sources and emissions throughout the study.

3rd Quarter (April-June):

TASKS:

- Review the PM_{10} emission inventory and available wind data to select the location of a long-term monitoring site in Nogales, Sonora.

- Commence operation of the long-term monitoring station for PM_{10}, HAP's, and wind in Sonora and add HAP's monitoring to the ADEQ monitoring station in the U.S.

- Select the locations for three additional wind sites.

RESPONSIBILITIES:

- ADEQ will summarize their 1992 wind data and obtain available wind field analyses from ASU.

- ADEQ and SEDESOL will select a monitoring site target area that provides similar representation as the ADEQ sampler in Nogales, U.S., that is, to measure the maximum average concentration to which the general public is exposed. SEDESOL will select the actual PM_{10}, HAP's, and wind monitoring site within the targeted area and will make arrangements for its installation and operation. ADEQ will install and calibrate the monitoring equipment and will train SEDESOL and Santa Cruz County staff responsible for their operation.

- ADEQ, SEDESOL, and Santa Cruz County will review factors affecting local air flow including information from ASU research and determine the target general location of the additional ADEQ wind sensors. SEDESOL and Santa Cruz County will select the actual sites within the targeted area and arrange for operation. ADEQ will install the instruments and train SEDESOL and Santa Cruz County staff on their operation.

- ADEQ will develop a contract for laboratory analysis of HAPS samples.

- ADEQ will repair monitoring equipment as necessary and will provide for PM_{10} analyses.

NOTE: For the long-term monitoring site, PM_{10} samples will be collected on the National every sixth day schedule and filter analyses will be performed for $Pm_{2.5}$ and $Pm_{2.5-10}$ mass, light transmittance, and chemical elements from x-ray florescence analysis. Tentatively HAPs samples will be collected on alternate PM_{10} sample days i.e. every 12th day, midnight to midnight.

4th Quarter (July-September)

TASKS:

- Draft a study plan for an intensive sampling study for the winter 93-94 season.

RESPONSIBILITIES:

- The three agencies will collaborate on a plan to establish three additional PM_{10} and two HAP's sampling sites. The plan will include sampling schedules, chemical species for analyses, identification of targeted sources and environmental risk assessment methods.

1994 1st Quarter (October-December '93)

TASKS:

- Conduct the intensive winter monitoring study. The network will have a total of five PM_{10} samplers, four HAP's, five wind sites, and possibly Carbon Monoxide, and time lapse photography provided by ADEQ.

RESPONSIBILITIES:

- SEDESOL and Santa Cruz County staff will select sites and arrange for equipment operation per the study plan for the intensive study.
- ADEQ will install the monitors and train SEDESOL and Santa Cruz County staff on operations.
- ADEQ will administer QA/QC program per study plan.
- ADEQ will perform data reduction, sample handling and analysis.

2nd Quarter (January-March)

TASKS:

- Complete winter intensive study
- Merge U.S. and Mexican gridded PM_{10} emission inventory data

RESPONSIBILITIES:

- ADEQ will merge the existing PM_{10} inventories

3rd Quarter (April-June)

TASKS:

- Compile data from intensive and long-term monitors.

RESPONSIBILITIES:

- ADEQ will compile the data and furnish it to participants.

4th Quarter (July-September)

TASKS:

- Final report drafted, reviewed, and finalized.

RESPONSIBILITIES:

- ADEQ will coordinate drafting the report with inputs and review by SEDESOL, Santa Cruz County, and ASU.

AQMHAPSN.WOR/GN

APPENDIX C

1988 ENGINEERING SCIENCE EMISSIONS INVENTORY

COLLECTION AND REDUCTION OF

PM_{10} EMISSIONS INVENTORY DATA FOR THE NOGALES PLANNING AREA

EPA CONTRACT No. 68-02-3888
WORK ASSIGNMENT 35

PREPARED FOR

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont St.
San Francisco, Ca. 94105

OCTOBER 1987

PREPARED BY

ENGINEERING-SCIENCE
DESIGN • RESEARCH • PLANNING
75 NORTH FAIR OAKS AVE. • P.O. BOX 7107 • PASADENA, CALIFORNIA 91109

NOGALES PLANNING AREA EMISSIONS INVENTORY

INTRODUCTION

The promulgation of a PM_{10} National Ambient Air Quality Standard will require the reassessment and upgrading of particulate matter emissions inventories in suspected PM_{10} non-attainment areas. This emissions inventory for the Nogales Planning Area in Arizona was conducted in response to these requirements. The overall emissions inventory project, which included the Maricopa and Pima Planning Areas and other small Planning Areas, involved the following three tasks.

1. Compilation of available data concerning source activity levels and emission factors for TSP, PM_{10}, and smaller size fractions.

2. Field testing and sample collection for emission factor development and data for use in existing emission factors.

3. Development of a microcomputer based emissions inventory data handling system and incorporation of the collected data into that system.

The results of tasks 2 and 3 above are described in the Maricopa and Pima Planning Areas report. This Nogales Planning Area emissions inventory report contains a summary of the emissions by source category, documentation of the activity levels and the emission factors used, and the potential emission reductions available from application of controls. Attached with the report is a data diskette containing the Planning Area emissions inventory. The data diskette can be accessed through the ASES software previousely submitted. The User's Guide to the Area Source Emissions System (ASES) is contained in the PM_{10} Emissions Inventory Report for the Maricopa and Pima Planning Areas. The ASES system allows report generation by grid square and groups of grid squares, and by source categories and pollutant categories. The system also allows easy modification of activity levels and emission factors and generation of new reports incorporating these modifications.

The Appendix to this report contains the silt content measurement analysis results of samples taken in the Nogales Planning Area.

SUMMARY

Figure 1 shows the major portion of the Nogales Planning Area as defined by the Arizona Department of Health Services and extended to include the town of Nogales, Sonora. The area extends to the north of Nogales, Az. beyond that shown in figure 1 to include the Interstate highway and new subdivisions. The Planning Area contains portions of four townships in Arizona, two of which extend into Mexico, and parts of two additional townships in Mexico at the south end of Nogales, Sonora. Each township has a grid ID number; townships in the Planning Area were subdivided into square mile sections, with each section identified by its legal section number.

Figure 2 shows the PM10 emission inventory on a bar chart by consolidated source category, and also shows the projected emissions by category following implementation of suggested control strategies. Table 1 lists this same information by individual source category and by particle size. Emissions from unpaved roads, alleys, and parking lots account for a majority of the PM_{10} totals. These totals are for the combined cities of Nogales, Arizona and Nogales, Sonora. Most streets in Nogales, Sonora are unpaved. The totals for Nogales, Arizona alone would show unpaved streets and roads contributing a much smaller percentage than for the two cities combined. Reentrained fugitive dust emissions from paved streets and roads are the next contributor, followed by wood burning (mostly in Nogales, Sonora), and locomotive emissions, also in Nogales, Sonora. Windblown dust contributed a relatively small proportion of the total PM10 emissions for Nogales.

Paving, curbing, and restriction of traffic to paved areas were estimated to reduce unpaved road, alley, and parking lot emissions by an estimated 90%. Reduction of wood burning and the substitution of natural gas for heating would reduce emissions from this category an estimated 90%.

Table 2 lists the emission factors used in the Nogales study.

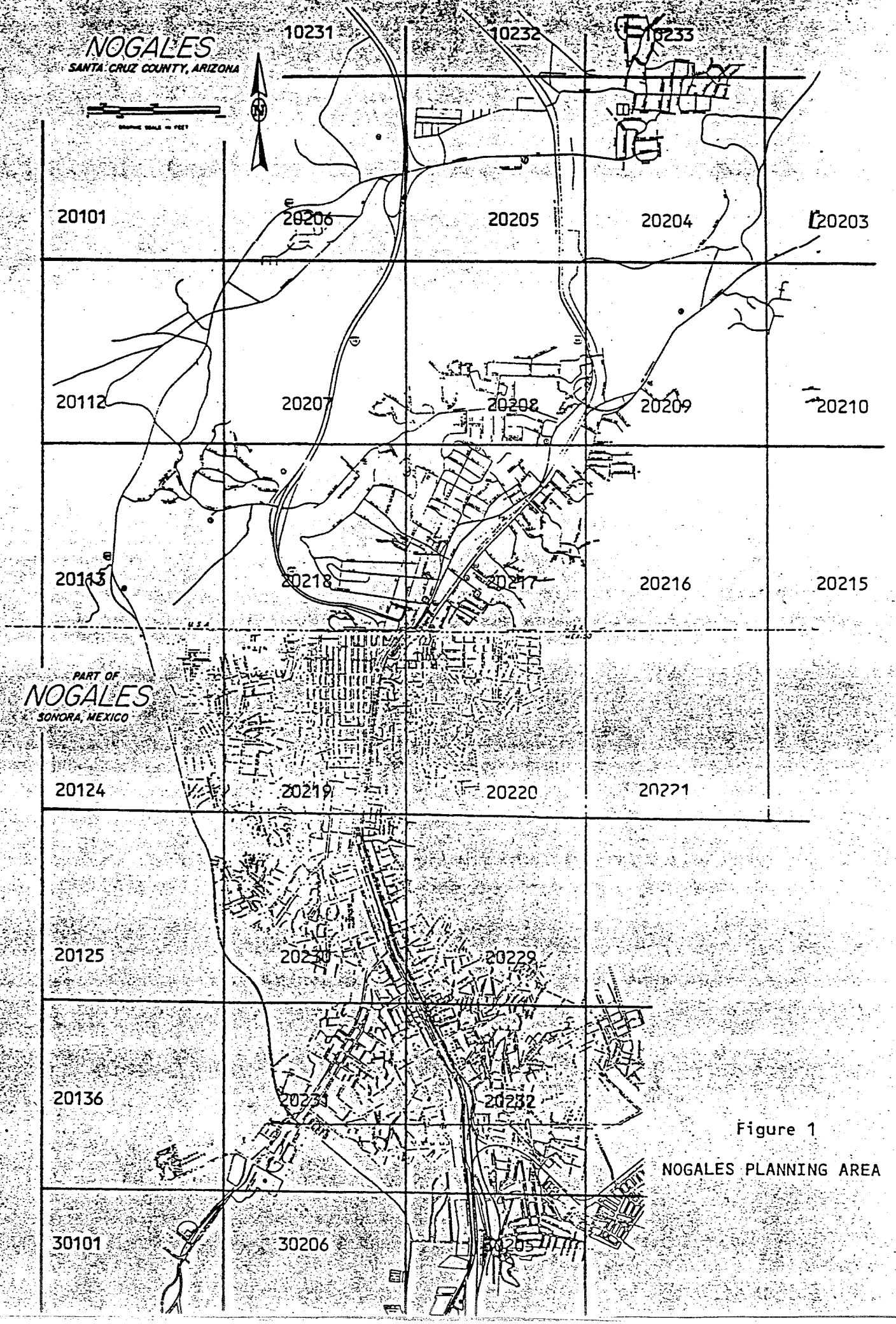


Figure 1

NOGALES PLANNING AREA

Fig. 2

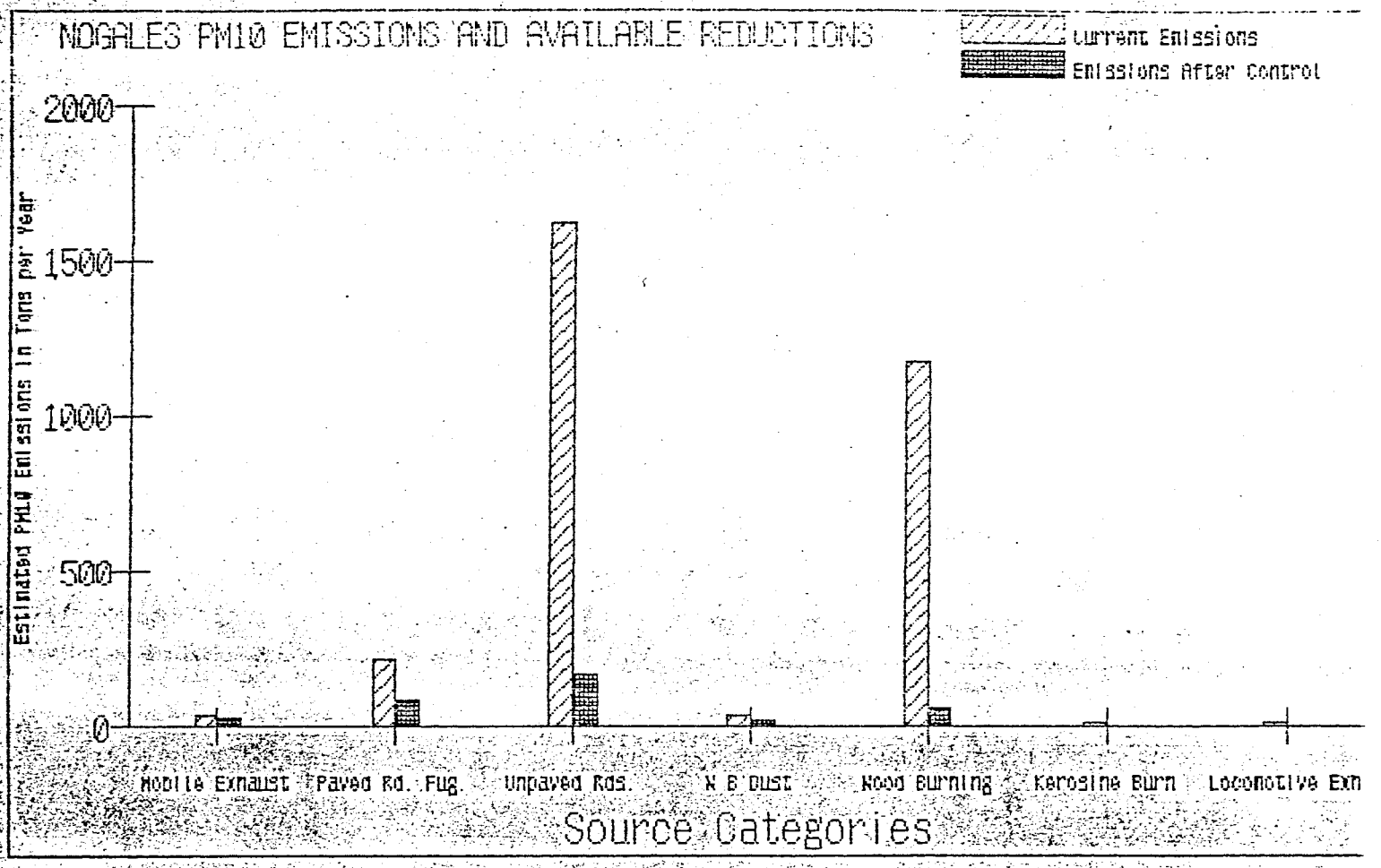

NOGALES PM10 EMISSIONS AND AVAILABLE REDUCTIONS
Current Emissions
Emissions After Control
Estimated PM10 Emissions In Tons per Year
2000
1500
1000
500
0
Mobile Exhaust
Paved Rd. Fug.
Unpaved Rds.
N B Dust
Wood Burning
Kerosine Burn
Locomotive Exh
Source Categories

Table 1

SUMMARY REPORT - ACTIVITY LEVELS AND EMISSIONS

File directories: B: (Activity values)
B: (Emission factors)

DATE: 01/04/80 TIME: 2:45

Emissions in tons per year

Activity	Call	Records	Total	Units	TSP	PM10	PM2.5	PM1	
102 FREEWAYS - EX B T	TOTAL	7	14,147	1000 VMT	4.3	4.0	3.1	2.6	0.0
103 ARTERIALS - EX B T	TOTAL	23	98,657	1000 VMT	25.4	30.7	23.5	18.6	0.0
105 LOCAL STREETS - EX B T	TOTAL	19	6,890	1000 VMT	2.6	2.4	1.7	1.2	0.0
112 FREEWAYS - FUG. DUST	TOTAL	7	14,147	1000 VMT	8.5	5.2	4.7	0.0	0.0
113 ARTERIALS - FUG DUST	TOTAL	23	98,657	1000 VMT	493.3	197.3	88.6	0.0	0.0
115 LOCAL STREETS - FUG DUST	TOTAL	19	6,890	1000 VMT	34.6	13.7	6.0	0.0	0.0
120 UNPAVED ROADS - FUG DUST	TOTAL	18	3,927	1000 VMT	3,614.8	1,621.5	427.8	0.0	0.0
160 CLEARED AREAS - WB DUST	TOTAL	31	2,005	ACRES	59.7	32.8	6.0	0.0	0.0
221 WOOD BURNING	TOTAL	12	78,158	TONS	1,641.3	1,172.6	781.8	195.5	0.0
242 FUEL USE (KEROSENE)	TOTAL	12	8,599	1000 GAL	10.7	10.0	7.8	5.4	0.0
275 LOCOMOTIVES - EXHAUST	TOTAL	9	1,080	LBS/1000 GAL	0.0	12.2	10.9	10.0	0.0
	* TOTAL	180			5,895.2	3,102.4	1,361.9	233.3	0.0

Table 2

EMISSION FACTOR FILE

Code	Activity description	Cell	Pollutant		Factor	Adjust
102	FREEWAYS - EX B T	0-00-00-0	11101	TSP	0.623	1.00
102	FREEWAYS - EX B T	0-00-00-0	11102	PM10	0.566	1.00
102	FREEWAYS - EX B T	0-00-00-0	11103	PM2.5	0.435	1.00
102	FREEWAYS - EX B T	0-00-00-0	11104	PM1	0.348	1.00
103	ARTERIALS - EX B T	0-00-00-0	11101	TSP	0.516	1.00
103	ARTERIALS - EX B T	0-00-00-0	11102	PM10	0.617	1.00
103	ARTERIALS - EX B T	0-00-00-0	11103	PM2.5	0.469	1.00
103	ARTERIALS - EX B T	0-00-00-0	11104	PM1	0.374	1.00
105	LOCAL STREETS - EX B T	0-00-00-0	11101	TSP	0.756	1.00
105	LOCAL STREETS - EX B T	0-00-00-0	11102	PM10	0.687	1.00
105	LOCAL STREETS - EX B T	0-00-00-0	11103	PM2.5	0.516	1.00
105	LOCAL STREETS - EX B T	0-00-00-0	11104	PM1	0.409	1.00
112	FREEWAYS - FUG. DUST	0-00-00-0	11101	TSP	1.200	1.00
112	FREEWAYS - FUG. DUST	0-00-00-0	11102	PM10	0.740	1.00
112	FREEWAYS - FUG. DUST	0-00-00-0	11103	PM2.5	0.670	1.00
113	ARTERIALS - FUG DUST	0-00-00-0	11101	TSP	10.000	1.00
113	ARTERIALS - FUG DUST	0-00-00-0	11102	PM10	4.000	1.00
113	ARTERIALS - FUG DUST	0-00-00-0	11103	PM2.5	1.800	1.00
115	LOCAL STREETS - FUG DUST	0-00-00-0	11101	TSP	10.000	1.00
115	LOCAL STREETS - FUG DUST	0-00-00-0	11102	PM10	4.000	1.00
115	LOCAL STREETS - FUG DUST	0-00-00-0	11103	PM2.5	1.800	1.00
120	UNPAVED ROADS - FUG DUST	0-00-00-0	11101	TSP	1,841.000	1.00
120	UNPAVED ROADS - FUG DUST	0-00-00-0	11102	PM10	826.000	1.00
120	UNPAVED ROADS - FUG DUST	0-00-00-0	11103	PM2.5	218.000	1.00
160	CLEARED AREAS - WB DUST	0-00-00-0	11101	TSP	59.200	1.00
160	CLEARED AREAS - WB DUST	0-00-00-0	11102	PM10	32.600	1.00
160	CLEARED AREAS - WB DUST	0-00-00-0	11103	PM2.5	5.900	1.00
221	WOOD BURNING	0-00-00-0	11101	TSP	42.000	1.00
221	WOOD BURNING	0-00-00-0	11102	PM10	30.000	1.00
221	WOOD BURNING	0-00-00-0	11103	PM2.5	20.000	1.00
221	WOOD BURNING	0-00-00-0	11104	PM1	5.000	1.00
242	FUEL USE (KEROSENE)	0-00-00-0	11101	TSP	2.500	1.00
242	FUEL USE (KEROSENE)	0-00-00-0	11102	PM10	2.300	1.00
242	FUEL USE (KEROSENE)	0-00-00-0	11103	PM2.5	1.750	1.00
242	FUEL USE (KEROSENE)	0-00-00-0	11104	PM1	1.250	1.00
275	LOCOMOTIVES - EXHAUST	0-00-00-0	11101	TSP	25.000	0.00
275	LOCOMOTIVES - EXHAUST	0-00-00-0	11102	PM10	22.500	1.00
275	LOCOMOTIVES - EXHAUST	0-00-00-0	11103	PM2.5	20.200	1.00
275	LOCOMOTIVES - EXHAUST	0-00-00-0	11104	PM1	18.500	1.00

DOCUMENTATION

The following sections document the data sources and assumptions used in developing the activity levels and emission factors used in this inventory. For the mobile source exhaust, brake and tire wear categories, and the mobile source fugitive dust from paved road categories, the emission factors, reliability of estimates, and potential for control were the same as used in the Pima Planning Area emissions inventory. Other source category emission factors used from that report are noted in the specific emission factor documentation. It was assumed in the inventory that fugitive dust emissions of particle size less than 1 micron were insignificant. The following paragraphs document the Nogales Planning Area emissions inventory methodology:

Freeways - Exhaust, Brake, and Tire Wear (Activity Code 102)

Activity Levels

Average daily traffic(ADTs) from "Traffic on the Arizona Highway System", ADOT, 1984, for Interstate 19 were applied to the appropriate grids to generate grid specific VMTs.

Arterials - Exhaust, Brake, and Tire Wear (Activity Code 103)

Activity Levels

The ADOT,1984,publication provided ADTs for I-19 and Arizona 89. The main street in Nogales, AZ. is Arizona 89..

Local Paved Streets, Brake, Exhaust, and Tire Wear (Activity Code 105)

Activity Levels

VMTs for local streets were estimated by assuming areas of Nogales were similar to areas in Douglas, Arizona. Douglas had recent traffic count information available for some of the local streets. On an area basis it was assumed the traffic in Nogales, Sonora on the local streets was approximately one-half that of Nogales, Arizona. Almost all of the local streets in Nogales, Sonora are unpaved.

Emission Factors for Exhaust, Brake and Tire Wear for all Street Types (102, 103, 105)

Emissions were calculated using the following equations obtained from EPA Rg.IX, citing EPA 460/3-85-007 (Energy and Environmental Associates, Inc.) and MOBILE3 (See Maricopa/Pima report for additional emission factor information concerning these categories):

$TSP = PM_{10}/0.9$ (not given, est. from PM10)
PM_{10} = traffic speed(exp -0.19)
$PM_{2.5}$ = traffic speed(exp -0.17)
PM_1 = traffic speed(exp -0.16)

Traffic speed estimates were as follows:

Freeways	55 mph
Arterials	35 mph
Local Streets	25 mph

These calculated to the following emission factors:

Freeways	TSP	= 0.623 lbs/1000VMT
	PM_{10}	= 0.566 lbs/1000VMT
	$PM_{2.5}$	= 0.435 lbs/1000VMT
	PM_1	= 0.348 lbs/1000VMT
Arterials	TSP	= 0.678 lbs/1000VMT
	PM_{10}	= 0.617 lbs/1000VMT
	$PM_{2.5}$	= 0.469 lbs/1000VMT
	PM_1	= 0.374 lbs/1000VMT
Local Streets	TSP	= 0.756 lbs/1000VMT
	PM_{10}	= 0.687 lbs/1000VMT
	$PM_{2.5}$	= 0.516 lbs/1000VMT
	PM_1	= 0.409 lbs/1000VMT

Reliability of Estimates

Estimates were given a "C" rating.

Controls

Retirement of older vehicles and application of particulate controls to diesel vehicles was estimated to reduce PM_{10} emissions and additional 25%.

Freeways - Fugitive Dust (Activity Code 112)

Activity Levels

From ADOT, 1984, the same as Activity Code 102

Arterials - Fugitive Dust (Activity Code 113)

Activity Levels

From ADOT, 1984, the same as Activity Code 103

Local Paved Streets - Fugitive Dust (Activity Code 114)

Activity Levels

Same as Activity Code 104

Emission Factors for Fugitive Dust from all Paved Road Types (Activity Code 112, 113, and 114)

The factors used here were the same as for the Pima Planning Area, which were derived from the EPA AP-42 Section 11.2.-5 equations using results of the Pima Planning Area tests for silt loading on paved roads. These silt loading

averages were similar to those measured by EPA for average U. S. cities. The following shows the equation:

$$E = K \frac{(SL)^p}{0.7} \quad \text{(lbs/VMT)}$$

where E = particulate emission factor (lbs/VMT)
L = total road surface dust loading (grains/ft2)
S = surface silt content, fraction of particles < 75 um diameter. (American Association of State Highway Officials)
K = base emission factor (lbs/VMT)
p = exponent (dimensionless)
(Combined SL = silt loading in grains/ft^2)

For TSP	K = 0.0208,	p = 0.9
PM10	K = 0.0081,	p = 0.8
PM2.5	K = 0.0036,	p = 0.6

For freeways, EPA's emission factor was used. For arterials and local streets the measured silt loadings from the Pima Planning Area test sites were calculated into emission factors and the factors averaged to apply to all areas. This average factor was used for both arterial and local streets. Section 2 of the Maricopa/Pima report lists the silt loadings from which the factors were calculated. The average silt loading was 0.327 grains/square foot. The average silt loading value used in the equation calculates into approximately the same result as averaging individual emission factors. Following are the emission factors:

Freeways	TSP	= 1.2 lbs/1000VMT
	PM_{10}	= 0.74lbs/1000VMT
	$PM_{2.5}$	= 0.67lbs/1000VMT
Arterials and Local Streets	TSP	= 10 lbs/1000VMT
	PM_{10}	= 3.9 lbs/1000VMT
	$PM_{2.5}$	= 1.7 lbs/1000VMT

Reliability of Estimates

These estimates were given a "C" to "D" rating.

Controls

The Maricopa report describes street sweeping, washing, addition of curbing, and paving of approach areas as potential control measures. A 60% emission reduction was estimated with implementation of these controls.

Unpaved Roads, Streets, Alleys, Parking Lots - Fugitive Dust (Activity Code 120)

Activity Levels

Almost all of the unpaved roads in the Study Area are located in Nogales, Sonora. It was assumed on an area basis that Nogales, So. had one-half the traffic as Nogales, Az. This is based on the assumption that a very small portion of the Nogales, So. population has automobiles, and the Mexican city is much more densely populated. (The local street data for Nogales,Az. was derived from Douglas, Az. traffic count data.

Emissions Factors

The one unpaved road silt sample in the Nogales Planning Area showed a 3.14% silt content, which was considered low. Samples from two parking lots had silt contents of 7.38% and 10.62%. The average silt content is used in defining the emission factor for this category. Following is the unpaved road equation from AP-42 Section 11.2.1, with estimates for each parameter:

$$E = K\,(5.9)\,\frac{(s)}{12}\,\frac{(S)}{30}\,\frac{(W)^{0.7}}{3}\,\frac{(w)^{0.5}}{4}\,\frac{(365-20)}{365} \quad \text{(lbs/VMT)}$$

K = particle size multiplies = 0.8 for TSP
= 0.36 for PM10
= 0.095 for PM2.5
s = silt content = 7.05 percent
S = average speed = 25 mph
W = vehicle weight = 2 tons
w = number of wheels = 5
p = number of days exceeding 0.1" precipitation = 20

Emission factors using these values calculated as follows:

TSP = 1841 lbs/1000VMT
PM_{10} = 826 lbs/1000VMT
$PM_{2.5}$ = 218 lbs/1000VMT

Reliability of Estimates

Additional samples collected and analyzed would have improved estimate reliability for the Nogales Planning Area. The estimates used were judged a "D".

Controls

Paving of roads and parking areas were estimated to produce a 90% emission reduction; lesser reductions could be achieved through application of dust suppressants.

Cleared Areas - Wind Blown Dust (Activity Code 160)

Activity Level

Cleared area acreages were developed from observations of both cities. The unpaved, unvegetated, and disturbed areas varied from 30% in the more populous grid squares to zero in the rural areas.

Emission Factor

Wind speed and frequency data were taken from information compiled by Brazell, A. et el from the Tucson airport weather station. These data are listed in the Pima Planning Area report. Emissions per acre were calculated using results of wind tunnel testing conducted by Nickling and Gillies,1986. The annual dust emissions using the wind tunnel developed flux equation for construction calculated to 296 lbs per acre for the tucson area. Applying particle size estimates as a percentage of the total dust emission, using data compiled by Pedco in "Draft AP-42 Section, General Particle Size Distributions", Pedco Environmental, Inc., EPA Contract #68-02-3512, Work Assignment 67, June 1984, for Wiwd Erosion Sources, the emission factors calculate as follows"

TSP = 0..20(296) = 59.2 lb/acre
PM_{10} = 0.11(296) = 32.6 lb/acre
$PM_{2.5}$ = 0.02(296) = 5.9 lb/acre

Reliability of Estimates

These estimates were given a "D" rating.

Control

An estimated 50% emission reduction could be obtained through planted vegetation, paving, traffic restrictions, etc. (See Maricopa report for discussion)

Wood Burning (Activity Code 221)

Activity Level

The Plant Superintendent (Mr. Lino Vega, 602-281-0873) of the Nogales International Waste Treatment Plant had indicated that the households in Nogales, So. use kerosene and firewood for home heating. To estimate wood burning activity for this planning area, fuel was assumed to be distributed between kerosene and firewood equally. Heating requirements were based on the use of fuel oil at 0.18 gal per dwelling unit per degree day (Guidelines for Compiling a Comprehensive Emission Inventory, EPA, March 1973). The equivalent amount of wood was estimated by using a conversion factor to produce BTUs per dwelling unit per degree day and applying an average BTUs per cord of wood and tons of wood per cord. Distribution of use was based on estimates of population per unit area and assuming that a dwelling unit in Nogales, Mexico consists of six individuals.

Degree days per year for Phoenix, Arizona (Mark's Mechanical Engineer's Handbook, Sixth Ed., 1958) were used in estimating this activity level since there is no published estimate for Nogales.

Emission Factor

AP-42 Section 1.9.1 lists TSP emission factors for wood stoves at 42 lbs/ton. EPA's "Compilation of a Preliminary Particle-Size Emissions Factor Data Base", EPA-450/4-82-016, Nov. 1982, lists size distributions for wood fired boiler emissions. From this information the following factors were calculated:

TSP	42 lbs/T
PM10	30 lbs/T
PM2.5	20 lbs/T
PM1	5 lbs/T

Reliability of Estimates

The assumptions used to develop these estimates do not justify a rating better than "E".

Fuel Burning - Kerosene (Activity Code 242)

Activity Levels

As previously noted under Activity Code 221, half of the heating requirements for the population in Nogales, Mexico is assumed to be made up by the burning of kerosene. Consumption of kerosene is estimated by using the same basic assumptions for wood burning except a factor for BTUs per gallon of kerosene is applied.

Emission Factor

The AP-42 emission factor for distillate fuel oil combustion is used in this category. The size distribution is based on a study by PEDCo (Generalized Particle Size Distributions, Draft AP-42 Section, June 1984). These factors are:

TSP = 2.5 lb/1000 gal
PM_{10} = 2.3 lb/1000 gal (92% TSP)
$PM_{2.5}$ = 1.75 lb/1000 gal (70% TSP)
$PM_{1.0}$ = 1.25 lb/1000 gal (50% TSP, as extrapolated from Table A-4, PEDCo, June 1984)

Reliability of Estimates

The assumptions of fuel use quantities and the methods of combustion limit these estimates to an "E" rating.

Controls

Properly designed stoves and the use of catalytic systems could reduce emissions from this source an estimated 50%.

Locomotives - Exhaust (Activity Code 275)

Activity Level

Observations of the railroad and switchyards in Nogales, So. indicated continuous activity by one to three locomotives. It was estimated that an average of 2000 horsepower is constantly expended in powering locomotives, mostly in the yard area. At 30% efficiency and 150,000 BTUs per gallon of fuel oil, the locomotives consume an estimated 110 gallons per hour.

Emission factor

The locomotive emission factors were taken from AP-42, with size specific ratios from Heavy Duty Diesels

TSP	25.0	lbs/1000 gallons fuel
PM10	22.5	lbs/1000 gallons fuel
PM2.5	PM2.5	lbs/1000 gallons fuel

Reliability of Estimates

These estimates were given a "D" rating.

Controls

Engine maintenance geared toward emission reduction could reduce these emissions and estimated 50%.

APPENDIX

Silt Sample/Lab Results

Hard Copy of Emissions Inventory

by Grid Cell and Activity Level

E5 6

GRAIN SIZE ANALYSIS

ARIZONA SURFACE SAMPLES

SAMPLE: #6-Nogales - Rio Rico Area -truck Pk lot

DATE:

TOTAL SAMPLE WEIGHT: 214.22

SIEVE #	WEIGHT (g)	PERCENTAGE (%)	Cum Percent
3/8	0.00	0.00	0.00
4	0.00	0.00	0.00
10	3.56	1.66	1.66
20	51.39	23.99	25.65
40	61.35	28.64	54.29
100	64.50	30.11	84.40
140	10.93	5.10	89.50
200	6.69	3.12	92.62
Pan	15.80	7.38	100

% SILT $\left(\frac{\text{200 mesh}}{\text{total}} \times 100\right)$ = 7.38 %

mean = 0.0266 in. / 0.676 mm

standard deviation = 0.0235 in. / 0.596 mm

GRAIN SIZE ANALYSIS

ARIZONA SURFACE SAMPLES.

SAMPLE: #8 - Nogales - Pk lot - N side, Nr Burnard cc

DATE:

TOTAL SAMPLE WEIGHT: 239.64

SIEVE #	WEIGHT (g)	PERCENTAGE (%)	Cum Percent
3/8	3.34	1.39	1.39
4	20.09	8.38	9.77
10	55.84	23.30	33.07
20	45.77	19.10	52.17
40	29.68	12.39	64.56
100	35.75	14.92	79.48
140	12.82	5.35	84.83
200	10.91	4.55	89.38
Pan	25.44	10.62	100

% SILT $\left(\frac{\text{200 mesh}}{\text{total}} \times 100\right)$ = 10.62 %

mean = 0.0769 in. / 1.953 mm

standard deviation = 0.0915 in. / 2.32 mm

ES 10

GRAIN SIZE ANALYSIS

ARIZONA SURFACE SAMPLES

SAMPLE: #10, Nogales River Rd.

DATE:

TOTAL SAMPLE WEIGHT: 309.99

SIEVE #	WEIGHT (g)	PERCENTAGE (%)	Cum Percent
3/8	6.06	1.95	1.95
4	18.65	6.02	7.97
10	69.45	22.40	30.37
20	77.05	24.86	55.23
40	57.04	18.40	73.63
100	53.03	17.11	90.73
140	11.17	3.60	94.34
200	7.82	2.52	96.86
Pan	9.72	3.14	100

% SILT $\left(\frac{200 \text{ mesh}}{\text{total}} \times 100\right)$ = 3.14 %

mean = 0.0762 in. / 1.94 mm.

standard deviation = 0.0884 in. / 2.24 mm

SUMMARY REPORT - ACTIVITY LEVELS AND EMISSIONS

File directories: B: (Activity values)
B: (Emission factors)

DATE: 01/04/80 TIME: 18:51

Emissions in tons per year

Cell	Activity	Records	Total	Units	TSP	PM10	PM2.5	PM1	
1-01-25-0	102 FREEWAYS - EX B T		1,100	1000 VMT	0.3	0.3	0.2	0.2	0.0
-01-25-0	103 ARTERIALS - EX B T		2,800	1000 VMT	0.7	0.9	0.7	0.5	0.0
-01-25-0	112 FREEWAYS - FUG. DUST		1,100	1000 VMT	0.7	0.4	0.4	0.0	0.0
1-01-25-0	113 ARTERIALS - FUG DUST		2,800	1000 VMT	14.0	5.6	2.5	0.0	0.0
1-01-25-0	TOTAL	4			15.7	7.2	3.8	0.7	0.0
1-01-36-0	105 LOCAL STREETS - EX B T		300	1000 VMT	0.1	0.1	0.1	0.1	0.0
1-01-36-0	115 LOCAL STREETS - FUG DUST		300	1000 VMT	1.5	0.6	0.3	0.0	0.0
-01-36-0	160 CLEARED AREAS - WB DUST		60	ACRES	1.8	1.0	0.2	0.0	0.0
-01-36-0	TOTAL	3			3.4	1.7	0.6	0.1	0.0
-02-30-0	102 FREEWAYS - EX B T		1,100	1000 VMT	0.3	0.3	0.2	0.2	0.0
-02-30-0	103 ARTERIALS - EX B T		3,250	1000 VMT	0.8	1.0	0.5	0.6	0.0
1-02-30-0	112 FREEWAYS - FUG. DUST		1,100	1000 VMT	0.7	0.4	0.4	0.0	0.0
1-02-30-0	113 ARTERIALS - FUG DUST		3,250	1000 VMT	16.3	6.5	2.9	0.0	0.0
-02-30-0	TOTAL	4			18.1	8.2	4.3	0.8	0.0
1-02-31-0	102 FREEWAYS - EX B T		2,190	1000 VMT	0.7	0.6	0.5	0.4	0.0
-02-31-0	103 ARTERIALS - EX B T		5,840	1000 VMT	1.5	1.8	1.4	1.1	0.0
-02-31-0	105 LOCAL STREETS - EX B T		200	1000 VMT	0.1	0.1	0.1	0.0	0.0
1-02-31-0	112 FREEWAYS - FUG. DUST		2,190	1000 VMT	1.3	0.8	0.7	0.0	0.0
-02-31-0	113 ARTERIALS - FUG DUST		5,840	1000 VMT	29.2	11.7	5.3	0.0	0.0
-02-31-0	115 LOCAL STREETS - FUG DUST		200	1000 VMT	1.0	0.4	0.2	0.0	0.0
1-02-31-0	160 CLEARED AREAS - WB DUST		20	ACRES	0.6	0.3	0.1	0.0	0.0
-02-31-0	TOTAL	7			34.4	15.7	8.3	1.5	0.0
1-02-32-0	103 ARTERIALS - EX B T		1,600	1000 VMT	0.4	0.5	0.4	0.3	0.0
1-02-32-0	105 LOCAL STREETS - EX B T		100	1000 VMT	0.0	0.0	0.0	0.0	0.0
-02-32-0	113 ARTERIALS - FUG DUST		1,600	1000 VMT	8.0	3.2	1.4	0.0	0.0
-02-32-0	115 LOCAL STREETS - FUG DUST		100	1000 VMT	0.5	0.2	0.1	0.0	0.0
1-02-32-0	160 CLEARED AREAS - WB DUST		10	ACRES	0.3	0.2	0.0	0.0	0.0
-02-32-0	275 LOCOMOTIVES - EXHAUST		20	LBS/1000 GAL	0.0	0.2	0.2	0.2	0.0
-02-32-0	TOTAL	6			9.2	4.3	2.1	0.5	0.0
-02-33-0	105 LOCAL STREETS - EX B T		120	1000 VMT	0.0	0.0	0.0	0.0	0.0
-02-33-0	115 LOCAL STREETS - FUG DUST		120	1000 VMT	0.6	0.2	0.1	0.0	0.0
1-02-33-0	120 UNPAVED ROADS - FUG DUST		3	1000 VMT	2.8	1.2	0.3	0.0	0.0
1-02-33-0	160 CLEARED AREAS - WB DUST		10	ACRES	0.3	0.2	0.0	0.0	0.0
-02-33-0	TOTAL	4			3.7	1.6	0.4	0.0	0.0
2-01-01-0	105 LOCAL STREETS - EX B T		120	1000 VMT	0.0	0.0	0.0	0.0	0.0
-01-01-0	115 LOCAL STREETS - FUG DUST		120	1000 VMT	0.6	0.2	0.1	0.0	0.0
-01-01-0	120 UNPAVED ROADS - FUG DUST		4	1000 VMT	4.1	1.9	0.5	0.0	0.0
2-01-01-0	160 CLEARED AREAS - WB DUST		10	ACRES	0.3	0.2	0.0	0.0	0.0
-01-01-0	TOTAL	4			5.0	2.3	0.6	0.0	0.0
2-01-12-0	103 ARTERIALS - EX B T		900	1000 VMT	0.2	0.3	0.2	0.2	0.0
2-01-12-0	105 LOCAL STREETS - EX B T		200	1000 VMT	0.1	0.1	0.1	0.0	0.0

SUMMARY REPORT - ACTIVITY LEVELS AND EMISSIONS

File directories: B: (Activity values)
B: (Emission factors)

DATE: 01/04/80 TIME: 19:51

Emissions in tons per year

Cell	Activity	Records	Total	Units	TSP	PM10	PM2.5	PM1	
2-01-12-0	113 ARTERIALS - FUG DUST		900	1000 VMT	4.5	1.8	0.8	0.0	0.0
2-01-12-0	115 LOCAL STREETS - FUG DUST		200	1000 VMT	1.0	0.4	0.2	0.0	0.0
2-01-12-0	120 UNPAVED ROADS - FUG DUST		4	1000 VMT	4.1	1.9	0.5	0.0	0.0
2-01-12-0	160 CLEARED AREAS - WB DUST		40	ACRES	1.2	0.7	0.1	0.0	0.0
2-01-12-0	TOTAL	6			11.1	5.2	1.9	0.2	0.0
2-01-13-0	103 ARTERIALS - EX B T		1,825	1000 VMT	0.5	0.6	0.4	0.3	0.0
2-01-13-0	105 LOCAL STREETS - EX B T		500	1000 VMT	0.2	0.2	0.1	0.1	0.0
2-01-13-0	113 ARTERIALS - FUG DUST		1,825	1000 VMT	9.1	3.6	1.6	0.0	0.0
2-01-13-0	115 LOCAL STREETS - FUG DUST		500	1000 VMT	2.5	1.0	0.4	0.0	0.0
2-01-13-0	120 UNPAVED ROADS - FUG DUST		9	1000 VMT	8.3	3.7	1.0	0.0	0.0
2-01-13-0	160 CLEARED AREAS - WB DUST		90	ACRES	2.7	1.5	0.3	0.0	0.0
2-01-13-0	TOTAL	6			23.3	10.6	3.8	0.4	0.0
2-01-24-0	103 ARTERIALS - EX B T		1,168	1000 VMT	0.3	0.4	0.3	0.2	0.0
2-01-24-0	113 ARTERIALS - FUG DUST		1,168	1000 VMT	5.8	2.3	1.1	0.0	0.0
2-01-24-0	120 UNPAVED ROADS - FUG DUST		210	1000 VMT	193.3	86.7	22.9	0.0	0.0
2-01-24-0	160 CLEARED AREAS - WB DUST		100	ACRES	3.0	1.6	0.3	0.0	0.0
2-01-24-0	221 WOOD BURNING		3,907	TONS	82.0	58.6	39.1	9.8	0.0
2-01-24-0	242 FUEL USE (KEROSENE)		430	1000 GAL	0.5	0.5	0.4	0.3	0.0
2-01-24-0	TOTAL	6			284.9	150.1	64.1	10.3	0.0
2-01-25-0	103 ARTERIALS - EX B T		900	1000 VMT	0.2	0.3	0.2	0.2	0.0
2-01-25-0	113 ARTERIALS - FUG DUST		900	1000 VMT	4.5	1.8	0.8	0.0	0.0
2-01-25-0	120 UNPAVED ROADS - FUG DUST		150	1000 VMT	138.1	61.9	16.3	0.0	0.0
2-01-25-0	160 CLEARED AREAS - WB DUST		50	ACRES	1.5	0.8	0.1	0.0	0.0
2-01-25-0	221 WOOD BURNING		3,907	TONS	82.0	58.6	39.1	9.8	0.0
2-01-25-0	242 FUEL USE (KEROSENE)		430	1000 GAL	0.5	0.5	0.4	0.3	0.0
2-01-25-0	TOTAL	6			226.8	123.9	56.9	10.3	0.0
2-01-26-0	221 WOOD BURNING		2,345	TONS	49.2	35.2	23.4	5.9	0.0
2-01-26-0	242 FUEL USE (KEROSENE)		258	1000 GAL	0.3	0.3	0.2	0.2	0.0
2-01-26-0	TOTAL	2			49.5	35.5	23.6	6.1	0.0
2-01-36-0	120 UNPAVED ROADS - FUG DUST		150	1000 VMT	138.1	61.9	16.3	0.0	0.0
2-01-36-0	221 WOOD BURNING		3,907	TONS	82.0	58.6	39.1	9.8	0.0
2-01-36-0	242 FUEL USE (KEROSENE)		430	1000 GAL	0.5	0.5	0.4	0.3	0.0
2-01-36-0	TOTAL	3			220.6	121.0	55.8	10.1	0.0
2-02-02-0	103 ARTERIALS - EX B T		300	1000 VMT	0.1	0.1	0.1	0.1	0.0
2-02-02-0	105 LOCAL STREETS - EX B T		50	1000 VMT	0.0	0.0	0.0	0.0	0.0
2-02-02-0	113 ARTERIALS - FUG DUST		300	1000 VMT	1.5	0.6	0.3	0.0	0.0
2-02-02-0	115 LOCAL STREETS - FUG DUST		50	1000 VMT	0.3	0.1	0.0	0.0	0.0
2-02-02-0	TOTAL	4			1.9	0.8	0.4	0.1	0.0

MARY REPORT - ACTIVITY LEVELS AND EMISSIONS

File directories: B: (Activity values)
B: (Emission factors)

E: 01/04/90 TIME: 18:51

Emissions in tons per year

Cell	Activity	Records	Total	Units	TSP	PM10	PM2.5	PM1	
2-03-0	120 UNPAVED ROADS - FUG DUST		3	1000 VMT	2.8	1.2	0.3	0.0	0.0
2-03-0	160 CLEARED AREAS - WB DUST		20	ACRES	0.6	0.3	0.1	0.0	0.0
2-02-03-0	TOTAL	6			8.7	3.6	1.5	0.2	0.0
2-04-0	105 LOCAL STREETS - EX B T		200	1000 VMT	0.1	0.1	0.1	0.0	0.0
2-02-04-0	115 LOCAL STREETS - FUG DUST		200	1000 VMT	1.0	0.4	0.2	0.0	0.0
2-02-04-0	120 UNPAVED ROADS - FUG DUST		3	1000 VMT	2.8	1.2	0.3	0.0	0.0
2-04-0	160 CLEARED AREAS - WB DUST		30	ACRES	0.9	0.5	0.1	0.0	0.0
2-04-0	TOTAL	4			4.8	2.2	0.7	0.0	0.0
2-05-0	102 FREEWAYS - EX B T		2,670	1000 VMT	0.8	0.8	0.6	0.5	0.0
2-05-0	103 ARTERIALS - EX B T		8,000	1000 VMT	2.1	2.5	1.9	1.5	0.0
2-02-05-0	105 LOCAL STREETS - EX B T		300	1000 VMT	0.1	0.1	0.1	0.1	0.0
2-02-05-0	112 FREEWAYS - FUG. DUST		2,670	1000 VMT	1.6	1.0	0.9	0.0	0.0
2-05-0	113 ARTERIALS - FUG DUST		8,000	1000 VMT	40.0	16.0	7.2	0.0	0.0
2-02-05-0	115 LOCAL STREETS - FUG DUST		300	1000 VMT	1.5	0.6	0.3	0.0	0.0
2-02-05-0	160 CLEARED AREAS - WB DUST		20	ACRES	0.6	0.3	0.1	0.0	0.0
2-05-0	275 LOCOMOTIVES - EXHAUST		25	LBS/1000 GAL	0.0	0.3	0.3	0.2	0.0
2-05-0	TOTAL	8			46.7	21.6	11.4	2.3	0.0
2-06-0	102 FREEWAYS - EX B T		2,671	1000 VMT	0.8	0.8	0.6	0.5	0.0
2-06-0	103 ARTERIALS - EX B T		600	1000 VMT	0.2	0.2	0.1	0.1	0.0
2-02-06-0	112 FREEWAYS - FUG. DUST		2,671	1000 VMT	1.6	1.0	0.9	0.0	0.0
2-02-06-0	113 ARTERIALS - FUG DUST		600	1000 VMT	3.0	1.2	0.5	0.0	0.0
2-06-0	160 CLEARED AREAS - WB DUST		15	ACRES	0.4	0.2	0.0	0.0	0.0
2-02-06-0	TOTAL	5			6.0	3.4	2.1	0.6	0.0
2-07-0	102 FREEWAYS - EX B T		2,226	1000 VMT	0.7	0.6	0.5	0.4	0.0
2-02-07-0	103 ARTERIALS - EX B T		8,050	1000 VMT	2.1	2.5	1.9	1.5	0.0
2-02-07-0	112 FREEWAYS - FUG. DUST		2,226	1000 VMT	1.3	0.8	0.7	0.0	0.0
2-07-0	113 ARTERIALS - FUG DUST		8,050	1000 VMT	40.3	16.1	7.2	0.0	0.0
2-07-0	160 CLEARED AREAS - WB DUST		30	ACRES	0.9	0.5	0.1	0.0	0.0
2-02-07-0	TOTAL	5			45.3	20.5	10.4	1.9	0.0
2-08-0	103 ARTERIALS - EX B T		8,330	1000 VMT	2.1	2.6	2.0	1.6	0.0
2-02-08-0	105 LOCAL STREETS - EX B T		800	1000 VMT	0.3	0.3	0.2	0.2	0.0
2-02-08-0	113 ARTERIALS - FUG DUST		8,330	1000 VMT	41.6	16.7	7.5	0.0	0.0
2-08-0	115 LOCAL STREETS - FUG DUST		800	1000 VMT	4.0	1.6	0.7	0.0	0.0
2-02-08-0	160 CLEARED AREAS - WB DUST		90	ACRES	2.7	1.5	0.3	0.0	0.0
2-02-08-0	275 LOCOMOTIVES - EXHAUST		10	LBS/1000 GAL	0.0	0.1	0.1	0.1	0.0
2-08-0	TOTAL	6			50.7	22.8	10.8	1.9	0.0
2-02-09-0	103 ARTERIALS - EX B T		2,300	1000 VMT	0.6	0.7	0.5	0.4	0.0
2-02-09-0	113 ARTERIALS - FUG DUST		2,300	1000 VMT	11.5	4.6	2.1	0.0	0.0
2-09-0	160 CLEARED AREAS - WB DUST		60	ACRES	1.8	1.0	0.2	0.0	0.0
2-02-09-0	TOTAL	3			13.9	6.3	2.8	0.4	0.0
2-10-0	103 ARTERIALS - EX B T		230	1000 VMT	0.1	0.1	0.1	0.0	0.0
2-02-10-0	113 ARTERIALS - FUG DUST		230	1000 VMT	1.1	0.5	0.2	0.0	0.0

MARY REPORT - ACTIVITY LEVELS AND EMISSIONS

File directories: B: (Activity values)
B: (Emission factors)

E: 01/04/80 TIME: 18:51

Emissions in tons per year

Cell	Activity	Records	Total	Units	TSP	PM10	PM2.5	PM1	
F 2-10-0	160 CLEARED AREAS - WB DUST		15	ACRES	0.4	0.2	0.0	0.0	0.0
W 2-10-0	TOTAL	3			1.6	0.8	0.3	0.0	0.0
R 2-15-0	160 CLEARED AREAS - WB DUST		15	ACRES	0.4	0.2	0.0	0.0	0.0
H 2-15-0	TOTAL	1			0.4	0.2	0.0	0.0	0.0
Z-02-16-0	160 CLEARED AREAS - WB DUST		30	ACRES	0.9	0.5	0.1	0.0	0.0
2-16-0	TOTAL	1			0.9	0.5	0.1	0.0	0.0
E.									
Z-02-17-0	103 ARTERIALS - EX B T		10,494	1000 VMT	2.7	3.2	2.5	2.0	0.0
F 2-17-0	105 LOCAL STREETS - EX B T		1,500	1000 VMT	0.6	0.5	0.4	0.3	0.0
F 2-17-0	113 ARTERIALS - FUG DUST		10,494	1000 VMT	52.5	21.0	9.4	0.0	0.0
Z-02-17-0	115 LOCAL STREETS - FUG DUST		1,500	1000 VMT	7.5	3.0	1.3	0.0	0.0
Z-02-17-0	160 CLEARED AREAS - WB DUST		130	ACRES	3.8	2.1	0.4	0.0	0.0
EN 2-17-0	275 LOCOMOTIVES - EXHAUST		50	LBS/1000 GAL	0.0	0.6	0.5	0.5	0.0
Z-02-17-0	TOTAL	6			67.1	30.4	14.5	2.6	0.0
2-18-0	102 FREEWAYS - EX B T		2,190	1000 VMT	0.7	0.6	0.5	0.4	0.0
B 2-18-0	105 LOCAL STREETS - EX B T		500	1000 VMT	0.2	0.2	0.1	0.1	0.0
Z-02-18-0	112 FREEWAYS - FUG. DUST		2,190	1000 VMT	1.3	0.8	0.7	0.0	0.0
2-18-0	115 LOCAL STREETS - FUG DUST		500	1000 VMT	2.5	1.0	0.4	0.0	0.0
2-18-0	160 CLEARED AREAS - WB DUST		110	ACRES	3.3	1.8	0.3	0.0	0.0
Z-02-18-0	TOTAL	5			8.0	4.4	2.0	0.5	0.0
2-19-0	103 ARTERIALS - EX B T		10,494	1000 VMT	2.7	3.2	2.5	2.0	0.0
Z-02-19-0	105 LOCAL STREETS - EX B T		500	1000 VMT	0.2	0.2	0.1	0.1	0.0
Z-02-19-0	113 ARTERIALS - FUG DUST		10,494	1000 VMT	52.5	21.0	9.4	0.0	0.0
2-19-0	115 LOCAL STREETS - FUG DUST		500	1000 VMT	2.5	1.0	0.4	0.0	0.0
B 2-19-0	120 UNPAVED ROADS - FUG DUST		870	1000 VMT	800.8	359.3	94.8	0.0	0.0
2-02-19-0	160 CLEARED AREAS - WB DUST		190	ACRES	5.6	3.1	0.6	0.0	0.0
2-19-0	221 WOOD BURNING		19,542	TONS	410.4	293.1	195.4	48.9	0.0
2-19-0	242 FUEL USE (KEROSENE)		2,149	1000 GAL	2.7	2.5	1.9	1.3	0.0
2-02-19-0	275 LOCOMOTIVES - EXHAUST		100	LBS/1000 GAL	0.0	1.1	1.0	0.9	0.0
2-02-19-0	TOTAL	9			1,277.4	684.5	306.1	53.2	0.0
X									
Z-02-20-0	105 LOCAL STREETS - EX B T		150	1000 VMT	0.1	0.1	0.0	0.0	0.0
2-02-20-0	115 LOCAL STREETS - FUG DUST		150	1000 VMT	0.8	0.3	0.1	0.0	0.0
2-20-0	120 UNPAVED ROADS - FUG DUST		450	1000 VMT	414.2	185.8	49.0	0.0	0.0
2-20-0	160 CLEARED AREAS - WB DUST		120	ACRES	3.6	2.0	0.4	0.0	0.0
2-02-20-0	221 WOOD BURNING		7,817	TONS	164.2	117.3	78.2	19.5	0.0
2-20-0	242 FUEL USE (KEROSENE)		860	1000 GAL	1.1	1.0	0.8	0.5	0.0
2-20-0	TOTAL	6			584.0	306.5	128.5	20.0	0.0
2-02-21-0	160 CLEARED AREAS - WB DUST		50	ACRES	1.5	0.8	0.1	0.0	0.0
2-21-0	TOTAL	1			1.5	0.8	0.1	0.0	0.0
Z-02-29-0	103 ARTERIALS - EX B T		2,000	1000 VMT	0.5	0.6	0.5	0.4	0.0
E 2-29-0	105 LOCAL STREETS - EX B T		100	1000 VMT	0.0	0.0	0.0	0.0	0.0
2-29-0	113 ARTERIALS - FUG DUST		2,000	1000 VMT	10.0	4.0	1.8	0.0	0.0

MARY REPORT - ACTIVITY LEVELS AND EMISSIONS

File directories: B: (Activity values)
B: (Emission factors)

DATE: 01/04/80 TIME: 18:51

Emissions in tons per year

11	Activity	Records	Total	Units	TSP	PM10	PM2.5	PM1	
02-05-0	TOTAL	7			382.3	206.9	94.9	19.3	0.0
2-06-0	120 UNPAVED ROADS - FUG DUST		150	1000 VMT	138.1	61.9	16.3	0.0	0.0
2-06-0	160 CLEARED AREAS - WB DUST		60	ACRES	1.8	1.0	0.2	0.0	0.0
3-02-06-0	221 WOOD BURNING		3,907	TONS	82.0	58.6	39.1	9.8	0.0
2-06-0	242 FUEL USE (KEROSENE)		430	1000 GAL	0.5	0.5	0.4	0.3	0.0
2-06-0	TOTAL	4			222.4	122.0	56.0	10.1	0.0
	* TOTAL	180			5,895.2	3,102.4	1,361.9	233.3	0.0

APPENDIX D

NOGALES PM_{10} INTENSIVE MONITORING STUDY

Preliminary Investigation of the Causes and Extent of the Nogales, Arizona PM10 Problem.

by

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

OFFICE OF AIR QUALITY

September 1990

I. Summary and Conclusions

Ambient PM10 air concentrations in Nogales have violated the annual PM10 health standard since monitoring commenced in 1985. In addition the 24-hour standard has been exceeded seven times. The Arizona Department of Environmental Quality (ADEQ) is investigating further the relationship between emissions and airborne concentrations in the area.

A PM10 emission inventory of Nogales, Arizona and Nogales, Sonora, Mexico was reported by Engineering-Science Inc. on contract to the U.S. Environmental Protection Agency in October, 1987. The inventory indicates that about 94% of PM10 emissions in the area originate in Mexico. This tends to confirm common observations that PM10 emissions in Nogales, Sonora exceed emissions in Nogales, Arizona and therefore contribute significantly to the measured exceedances of the PM10 standards.

ADEQ's review of the inventory and our on-site survey of sources revealed serious deficiencies in the existing PM10 emission inventory. An intensive PM10 monitoring study conducted by ADEQ, including time lapse photographs of border flux in 1989, indicates that PM10 concentrations in Nogales, Arizona are primarily attributable to sources in Nogales, Sonora. The following course of action is considered necessary to develop a technically valid SIP and to implement sufficient PM10 controls to achieve compliance with PM10 NAAQS in the Nogales area:

1. a substantial revision to the emission inventory including accurate traffic estimates and area specific emission factors and activity levels;

2. an expanded permanent PM10 network including several sites in Nogales, Sonora and

3. an agreement between local officials (Mexican and U.S.), EPA, ADEQ, and others to conduct assessment studies and ultimately cooperate in the implementation of controls.

This report briefly reviews historical particulate data, the PM10 emission inventory, and ADEQ's recent monitoring activities.

II. Historical Background

Regulatory Background:

In accordance with the mandates of Sections 108 and 109 of the Clean Air Act, EPA promulgated revised NAAQS for particulate matter in July 1987. The new standards apply to particulates of 10 micrometers or less in diameter (PM-10) and supersede the previous standards for total suspended particulates which were originally established in 1969. The NAAQS for PM-10 are 50 ug/m^3 for the annual arithmetic average and 150 ug/m^3 for the 24-hour average.

Section 110 of the Clean Air Act requires states to develop or revise their state implementation plans (SIP's) to provide for the implementation, attainment and maintenance and enforcement of the PM-10 NAAQS.

PM-10 Area Groupings:

In 1977, Congress added section 107(d)(1) to the Clean Air Act which required EPA to designate areas as nonattainment, unclassifiable or attainment for the NAAQS existing at that time. In 40 CFR 81, EPA made such designations for TSP in 1983.

EPA categorizes PM-10 areas as Group I, II or III based on the probability of nonattainment of the PM10 NAAQS. If available PM-10 data for an area are adequate to demonstrate attainment, then the area will be designated as Group III. If PM-10 data alone are adequate to demonstrate that the area is nonattainment, it will be designated as Group I. If available PM-10 data alone are not adequate to demonstrate attainment or nonattainment, EPA's policy is to supplement available PM-10 data with inhalable particulate matter data (particles with an aerodynamic diameter less than 15 micrometers) and TSP data. These air quality data are used in a statistical methodology to estimate the probability that the PM-10 NAAQS will be violated in the area. Initially, areas will be grouped based on probabilities of nonattainment of 95 percent or greater (Group I), from 20 to 95 percent (Group II) and less than 20 percent (Group III). Nogales was reclassified by EPA from a Group II area to a Group I area in 1988, after violations of the PM-10 24-hour averaged standard were recorded.

Air Monitoring:

ADEQ has operated a PM10 sampler at the Nogales Post Office since 1985, and a TSP monitor in prior years (see Table 1). The monitoring results show exceedances of the PM10 national ambient air quality standards (NAAQS) of 50 ug/m^3 (annual) arithmetic mean and the 150 ug/m^3 (24-hour average), and also exceedances of the TSP annual geometric mean standard of 75 ug/m^3 and 24-hour average standard of 260 ug/m^3.

III. Emission Inventory

A PM10 emission inventory of Nogales, Arizona, and neighboring Nogales, Sonora, Mexico was reported by Engineering-Science, Inc., in October 1987 under contract to the U.S. Environmental Protection Agency (See Table 2). The inventory indicates that about 94 percent of PM10 emissions in the Nogales study area are attributable to sources located in Nogales, Sonora.

ADEQ's review of the inventory and on-site survey of sources revealed serious deficiencies in the existing PM10 emission inventory. An intensive PM10 monitoring study conducted by ADEQ in 1988 provided additional insight. Bulk sampling of both road and off-road areas was conducted to supplement emission inventory data. Individual samples were collected from pre-determined areas and analyzed as individual and/or composite samples.

Potentially significant PM10 sources are mainly mobile sources--i.e., vehicular traffic on local roads, in addition to heating devices that use wood, kerosene or other petroleum products as fuel. Emissions can be estimated using AP-42 emission factors or other factors. Estimates of vehicular emissions can be enhanced by local traffic count data. However it is first necessary to quantify the sources and activity levels.

IV. Intensive Field Sampling

An intensive PM10 sampling program during the fall of 1988 included the measurement of PM10 in two size ranges: fine (0-2.5 microns) and coarse (2.5-10.0 microns). Three Andersen GMW 241 dichotomous samplers were operated on an every third-day schedule at three Nogales, Arizona sites at varying distances from the international border. The locations of the sampler are shown on Fig. 1. Particulate samples were analyzed for mass and an array of elemental constituents. Also, wind speed and direction sensors were operated at the border entrance building. In addition a time lapse camera was used to visually document the air quality of the central business district of Nogales, Arizona, and the transport of particulates across the border.

A summary of PM10 data collected at Nogales during the intensive study is shown in Table 3. These data show the tendency for a decrease in PM10 concentrations with increased distance northward from the border. On days with relatively high PM10 concentrations, winds are typically out of southwest under drainage conditions (nighttime and early morning hours) with a flow reversal during mid-day. Time-lapse photography clearly shows a typical flux of visible air pollution northward across the border from around sunrise until mid to late morning when the wind reversal occurs with a consequent dispersion of the vast majority of the visible pollution.

X-ray fluorescense (XRF) was performed on valid particulate samples to determine the elemental constituents of the mass. The results of this analysis for a selected array of elements is shown in Table 4. The data imply that a large portion of PM10 was crustal in nature (i.e. silica, aluminum, calcium, iron, potassium). However, the contribution of the crustal elements to fine particulate mass was relatively slight. All of this implies that a large part of the total PM10 was attributable to traffic and fugitive dust, while fine particles presumably from combustion sources also plays a role.

One year subsequent to the intensive PM10 monitoring program in Nogales, a special short term study was conducted to determine the carbon contents of particulate matter in the study area. Samples were collected during six 24-hour periods at the permanent PM10 site at the Nogales Post Office during November, 1989. These data are summarized below:

	PM10 Samples with Carbon Analyses		
	Fine	Coarse	Total PM10
Mean Mass (ug/m^3)	23	69	92
Mean Organic Carbon (ug/m^3)	7	4	11
(Percent of mass)	(30)	(6)	(12)
Mean Elemental Carbon (ug/m^3)	6	<0.5	6
(Percent of mass)	(26)	(<1)	(7)
Total Carbon (ug/m^3)	13	4	17
(Percent of mass)	(56)	(6)	(19)

The data indicate that about 20 percent of PM10 mass is carbon. Fine particles contained the highest percent of carbon (56 percent), and organic carbon was more prevalent than elemental carbon in this particular data set, which is believed to be representative of average particulate samples. These results in combination with XRF data appear to be consistent with relative emission rates indicated in the emission inventory.

TABLE 1

Measured Air Quality at Nogales

ollutants, veraging Times, nd No. of Samples	1973[a]	1974	1975	1975[b]	1976	1977	1978	1979	1980	1981	1982[c]	1983	1984	1985	1986	1987	1988	1989
M10 (ug/m^3)																		
Annual Arithmetic Mean	-	-	-	-	-	-	-	-	-	-	-	-	-	56	76	72	69	63
Maximum 24-hour	-	-	-	-	-	-	-	-	-	-	-	-	-	110	209	232	155	244
2nd High 24-hour	-	-	-	-	-	-	-	-	-	-	-	-	-	88	162	170	147	168
No. of Samples	-	-	-	-	-	-	-	-	-	-	-	-	-	19	41	47	45	58
SP (ug/m^3)																		
Annual Geometric Mean	234	121	181	112	122	88	85	68	147	121	136	98	100	89	119	-	-	-
Maximum 24-hour	406	408	506	233	515	175	210	324	381	404	277	840	279	317	410	-	-	-
2nd High 24-hour	337	375	220	223	338	168	183	154	348	322	222	284	219	228	320	-	-	-
No. of Samples	10	44	6	5	34	21	24	10	26	38	24	43	55	49	59	-	-	-

Santa Cruz Health Department (1973-1975)

Nogales High School (1975-1981)

U.S. Post Office (1982-1987)

TABLE 2

PARTICULATE EMISSIONS INVENTORY[a]
NOGALES STUDY AREA

ACTIVITY	TOTAL	UNIT	Emissions in tons per year TSP	PM10	PM2.5	PM1
102 FREEWAYS - EX B T[b]	14,147	1000 VMT	4.3	4.0	3.1	2.6
103 ARTERIALS - EX B T	98,657	1000 VMT	25.4	30.7	23.5	18.6
105 LOCAL STREETS - EX B T	6,890	1000 VMT	2.6	2.4	1.7	1.2
112 FREEWAYS - FUG. DUST	14,147	1000 VMT	8.5	5.2	4.7	0.0
113 ARTERIALS - FUG. DUST	98,657	1000 VMT	493.3	197.3	88.6	0.0
115 LOCAL STREETS - FUG. DUST	6,890	1000 VMT	34.6	13.7	6.0	0.0
120 UNPAVED ROADS - FUG. DUST	3,927	1000 VMT	3,614.8	1,621.5	427.8	0.0
160 CLEARED AREAS - WB DUST	2,005	ACRES	59.7	32.8	6.0	0.0
221 WOOD BURNING	78,158	TONS	1,641.3	1,172.6	781.8	195.5
242 FUEL USE (KEROSENE)	8,599	1000 GAL	10.7	10.0	7.8	5.4
275 LOCOMOTIVES - EXHAUST	1,080	1000 GAL	0.0	12.2	10.9	10.0
			5,895.2	3,102.4	1,361.9	233.3

[a]Data from Engineering Science, 1987, "PM10 EMISSIONS INVENTORY DATA FOR THE NOGALES PLANNING AREA"

[b]Exhaust, brakes, tires

TABLE 3

24-Hour PM10 Average Concentrations (ug/m^3)
Nogales, Arizona
October - December, 1988

	BORDER	P.O.	COUNTY
10/3	110.2	--	51.7**
10/6	134.2	92.1	41.0
10/9	112.4	57.5	41.6
10/12	108.8	61.6	43.5
10/15	13.8	7.4	10.1
10/18	69.9	42.2	33.0
10/21	25.8	18.3	12.3
10/27	97.8	53.8	61.1*
10/30	131.6	101.5	42.2
11/2	96.7	83.7	64.5
11/5	201.4	130.8	74.7
11/8	65.3	54.2	59.6
11/11	107.6	82.1**	62.3
11/17	102.8	55.9	49.2
11/20	47.8	47.5	30.8
11/23	176.2*	146.7	84.0
11/26	13.7	12.1	7.9
11/29	71.7	--	64.0
12/2	168.9	--	61.6
12/8	22.6	--	18.9
12/11	80.4	--	47.2
12/14	84.4	--	61.2
12/17	174.8	155.4	73.2
12/20	146.3	119.6**	57.2
Average (of Valid Data)	95.2	70.0	47.3

* Fine filter damaged; data invalid

** Coarse filter damaged; data invalid

TABLE 4

Ranked by PM10 conc.

NOGALES PM10 STUDY
OCT. 3, 1988 - DEC. 20, 1988
Elemental Concentrations in ug/m3 in PM10

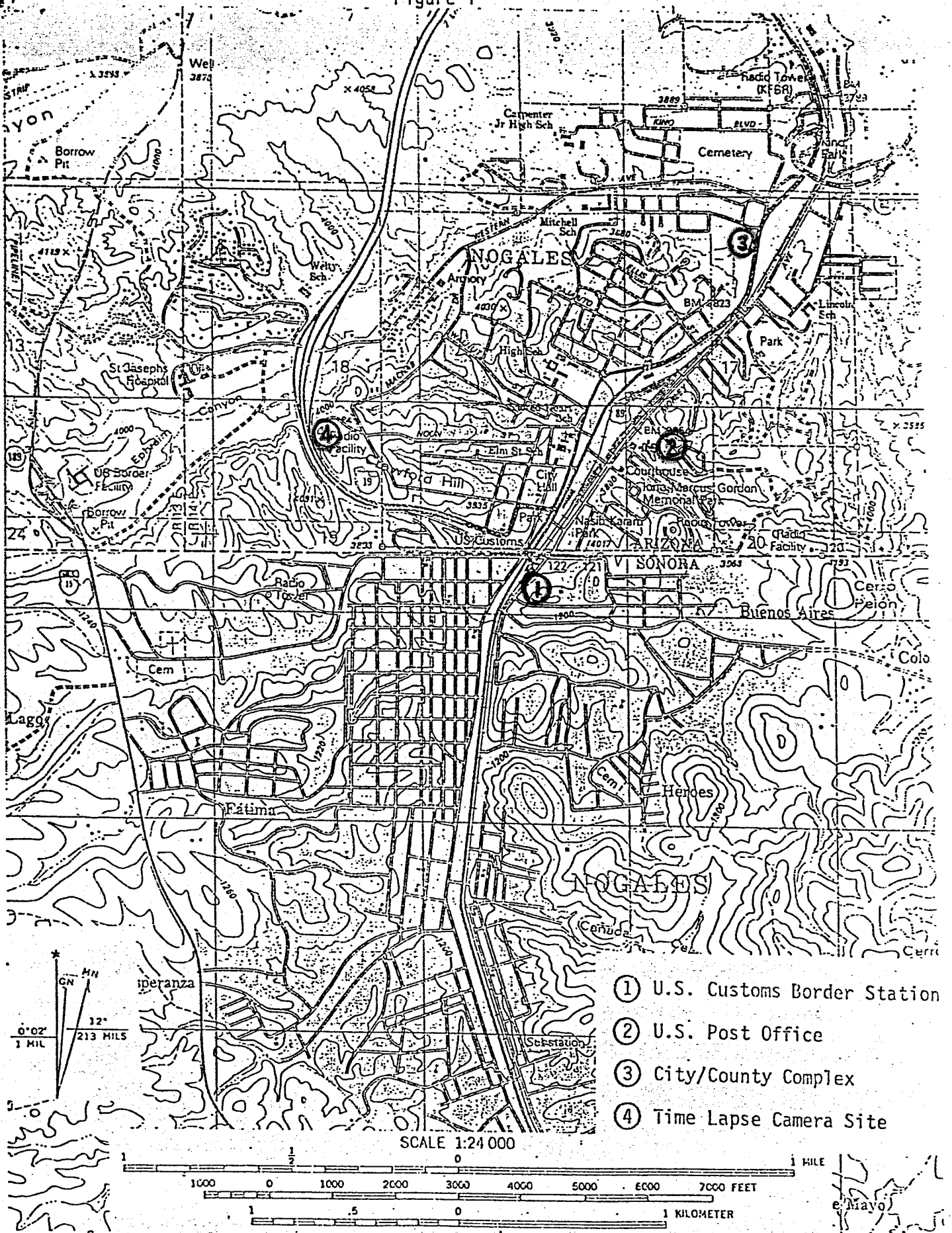
	PM10		Si		Al		Ca		Fe		S		K		Cl		Pb	
	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL
NOGALES-BORDER STATION	50	175	1.27	27.06	0.42	10.12	0.22	3.61	0.26	3.90	0.49	0.77	0.53	3.94	0.41	0.88	0.76	0.92
	43	201	2.34	35.23	0.81	13.21	0.37	4.82	0.48	5.55	0.64	0.92	0.55	4.90	0.13	0.61	0.51	0.64
	38	103	0.81	16.88	0.25	6.28	0.16	2.55	0.21	2.33	0.55	22.41	0.36	2.14	0.39	0.62	0.37	0.45
	34	132	1.40	22.57	0.46	8.28	0.25	2.82	0.27	3.00	0.38	0.57	0.36	2.85	0.14	0.50	0.45	0.53
	32	134	1.63	25.14	0.55	9.53	0.29	3.40	0.33	3.48	0.82	1.04	0.35	3.06	0.11	0.53	0.29	0.37
	27	112	1.46	21.59	0.50	8.09	0.24	3.15	0.28	3.08	1.16	1.32	0.28	2.63	0.03	0.23	0.23	0.29
	26	109	1.30	22.02	0.41	8.13	0.20	2.80	0.28	2.82	1.26	1.43	0.31	2.62	0.06	0.38	0.26	0.32
	25	97	1.35	18.25	0.47	6.81	0.22	2.28	0.28	2.32	0.71	0.87	0.32	2.17	0.09	0.30	0.27	0.32
	21	70	0.48	12.85	0.13	4.72	0.09	1.71	0.13	1.69	0.66	0.78	0.15	1.50	0.03	0.17	0.32	0.44
	19	48	0.37	7.65	0.11	2.74	0.08	1.18	0.07	0.90	0.50	0.60	0.19	0.92	0.06	0.16	0.14	0.18
	17	65	0.50	11.83	0.17	4.40	0.10	1.76	0.13	1.63	0.96	1.13	0.16	1.39	0.02	0.26	0.15	0.18
	12	26	0.14	3.38	0.03	1.24	0.03	0.59	0.04	0.49	0.52	0.61	0.05	0.37	0.02	0.07	0.10	0.12
	9	14	0.05	0.92	0.01	0.29	0.01	0.18	0.01	0.13	0.19	0.24	0.06	0.15	0.02	0.24	0.13	0.15
	5	14	0.07	2.03	0.02	0.71	0.02	0.34	0.02	0.26	0.13	0.17	0.03	0.21	0.02	0.06	0.06	0.08
AVERAGE	26	93	0.94	16.24	0.31	6.04	0.16	2.23	0.20	2.25	0.64	2.35	0.26	2.06	0.11	0.36	0.29	0.36
STD DEV	13	57	0.69	10.27	0.24	3.87	0.11	1.35	0.14	1.54	0.33	5.78	0.17	1.41	0.13	0.24	0.19	0.23
NOGALES-COUNTY BUILDING	21	73	0.60	12.80	0.43	7.27	0.10	1.41	0.12	1.45	0.29	0.49	0.30	1.61	0.10	0.28	0.27	0.32
	18	75	0.63	11.20	1.35	14.51	0.11	1.42	0.13	1.39	0.47	0.68	0.17	1.30	0.05	0.18	0.10	0.13
	16	49	0.39	7.58	0.63	8.05	0.07	0.98	0.09	0.95	0.30	0.42	0.18	0.92	0.08	0.19	0.10	0.13
	15	65	0.77	13.51	0.47	7.08	0.12	1.49	0.15	1.58	0.72	0.87	0.17	1.51	0.06	0.21	0.11	0.14
	15	60	0.37	8.05	0.56	12.12	0.06	1.01	0.08	1.00	0.96	1.11	0.12	0.90	0.04	0.23	0.07	0.10
	13	44	0.42	8.39	0.13	3.00	0.07	1.13	0.10	1.00	1.19	1.33	0.12	0.91	0.02	0.14	0.07	0.09
	13	42	0.41	8.01	0.13	2.91	0.08	1.10	0.08	0.90	1.06	1.20	0.15	0.89	0.02	0.12	0.04	0.06
	11	31	0.19	3.58	0.36	4.78	0.04	0.51	0.04	0.40	0.32	0.40	0.17	0.50	0.04	0.10	0.03	0.04
	11	41	0.49	8.97	0.17	3.33	0.08	0.99	0.10	1.03	0.75	0.88	0.11	0.94	0.02	0.10	0.06	0.08
	11	42	0.33	8.16	0.19	4.35	0.05	0.85	0.06	0.89	0.30	0.42	0.11	0.90	0.02	0.14	0.07	0.10
	9	33	0.23	5.66	0.06	1.93	0.04	0.77	0.05	0.71	0.57	0.67	0.06	0.66	0.02	0.11	0.09	0.12
	5	12	0.07	1.86	0.01	0.07	0.02	0.25	0.02	0.21	0.47	0.54	0.03	0.19	0.01	0.03	0.03	0.05
	4	8	0.07	0.52	0.04	0.71	0.01	0.10	0.01	0.07	0.14	0.18	0.06	0.11	0.03	0.27	0.02	0.03
	2	10	0.04	1.21	0.00	0.39	0.01	0.17	0.01	0.12	0.12	0.17	0.03	0.14	0.01	0.04	0.02	0.02
AVERAGE	12	42	0.36	7.11	0.32	5.04	0.06	0.87	0.08	0.84	0.55	0.67	0.13	0.82	0.04	0.15	0.08	0.10
STD. DEV.	5	22	0.22	4.10	0.36	4.34	0.03	0.46	0.04	0.48	0.34	0.36	0.07	0.47	0.03	0.08	0.06	0.07

Ranked by PM10 conc.

NOGALES PM10 STUDY
OCT. 3, 1988 - DEC. 20, 1988
Elemental Concentrations in ug/m3 in PM10

	PM10		Si		Al		Ca		Fe		S		K		Cl		Pb	
	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTAL	FINE	TOTA
NOGALES-POST	42	155	0.93	10.02	0.32	3.81	0.18	1.42	0.20	1.45	0.40	0.49	0.59	1.59	0.50	0.64	0.42	0.4
OFFICE	27	131	1.12	24.76	0.41	9.38	0.23	3.97	0.25	4.24	0.53	0.73	0.34	3.03	0.06	0.40	0.23	0.3
	26	102	0.58	19.33	0.19	7.29	0.13	2.99	0.13	3.13	0.22	0.38	0.18	2.07	1.25	1.59	0.19	0.2
	24	56	0.38	9.15	0.12	3.50	0.08	1.43	0.09	1.30	0.43	0.54	0.28	1.21	0.29	0.41	0.16	0.1
	22	92	1.15	18.18	0.39	6.92	0.24	2.98	0.28	3.00	0.81	0.94	0.26	2.01	0.07	0.33	0.16	0.1
	20	48	0.22	7.85	0.07	3.02	0.05	1.23	0.05	1.08	0.40	0.52	0.30	1.00	0.14	0.25	0.07	0.1
	18	62	0.61	12.48	0.20	4.67	0.10	1.69	0.13	1.65	1.24	1.33	0.18	1.36	0.03	0.16	0.08	0.1
	17	84	0.70	18.02	0.24	6.90	0.13	2.47	0.16	2.57	0.69	0.86	0.19	2.07	0.05	0.29	0.14	0.1
	14	58	0.82	10.64	0.27	4.09	0.16	1.61	0.18	1.50	1.04	1.12	0.14	1.03	0.01	0.09	0.06	0.0
	13	54	0.34	10.70	0.10	4.08	0.07	1.63	0.08	1.48	0.97	1.09	0.14	1.19	0.02	0.21	0.09	0.1
	13	42	0.29	8.36	0.10	3.07	0.06	1.21	0.07	1.07	0.59	0.70	0.10	0.93	0.02	0.13	0.13	0.1
	7	12	0.04	0.87	0.01	0.28	0.01	0.20	0.01	0.13	0.17	0.21	0.07	0.15	0.03	0.29	0.05	0.0
	7	18	0.10	2.63	0.03	0.94	0.03	0.46	0.03	0.31	0.53	0.60	0.04	0.28	0.01	0.05	0.06	0.0
	3	7	0.03	0.89	0.01	0.29	0.01	0.14	0.01	0.09	0.11	0.13	0.01	0.09	0.00	0.03	0.04	0.0
AVERAGE	18	66	0.52	10.99	0.17	4.16	0.11	1.67	0.12	1.64	0.58	0.69	0.20	1.29	0.18	0.35	0.13	0.1
STD. DEV .	10	43	0.38	7.12	0.14	2.72	0.08	1.11	0.09	1.21	0.34	0.35	0.15	0.83	0.34	0.39	0.10	0.1

Figure 1


NOGALES
ARIZONA
SONORA
Cemetery
Carpenter Jr High Sch
Mitchell Sch
Armory
High Sch
Elm St Sch
City Hall
Courthouse
Park
US Customs
Radio Tower
Radio Facility
Borrow Pit
St Josephs Hospital
US Border Facility
Buenos Aires
Cerro Pelón
Heroes
Fátima
Cem
Lago
Canada
Cerro
Colo
Mayo
Lincoln Sch
Welty Sch
Radio Tower (KFBR)
Nasib Karam Park
Thomas Marcus Gordon Memorial Park
Substation
Esperanza
1 U.S. Customs Border Station
2 U.S. Post Office
3 City/County Complex
4 Time Lapse Camera Site
SCALE 1:24 000
1 HILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
CONTOUR INTERVAL 40 FEET IN THE UNITED STATES
NATIONAL GEODETIC VERTICAL DATUM OF 1929
CONTOUR INTERVAL 20 METERS IN MEXICO
DATUM IS MEAN SEA LEVEL

APPENDIX E

COMPUTATIONS AND ASSUMPTIONS USED IN ESTIMATING EXISTING AND FUTURE EMISSIONS

COMPUTATIONS AND ASSUMPTIONS USED FOR EMISSIONS INVENTORY, NOGALES PM_{10} NONATTAINMENT AREA YEARS 1989 AND 1995

Resources Used

The emissions inventory for the Nogales nonattainment area generally relied upon reports and data resources listed below:

1. PM_{10} Emissions Inventory Data for the Nogales Planning Area **[Appendix A__]** prepared in October, 1987 for EPA by Engineering-Science of Pasadena, California;

2. Nogales Urban Area Transportation Study, Final Report, Final Report, September, 1991, prepared by Parsons Brinckerhoff Quade & Douglas, Inc., Tucson, Arizona for the City of Nogales;

3. Draft I-19 Corridor Study, Task 4: Future Conditions, September, 1992, prepared by JHK & Associates for the Arizona Department of Transportation;

4. Traffic counts compiled by the Arizona Department of Transportation [ADOT];

5. United States Geological Survey [USGS] 7.5 Series Topographic Maps;

6. General Highway Map, Santa Cruz County, Arizona, Revised 1992, Federal Highway Administration;

7. Aerial Photographs, August, 1991, Scale: 1=500, provided by ADOT.

Methodology

1989 Base-year PM_{10} emissions for the Nogales PM_{10} Nonattainment Area are calculated based, in part, upon information contained in the document, PM_{10} Emissions Inventory Data for the Nogales Planning Area **[Appendix A]** and updated to 1989 using specific growth factors. The 1987 Inventory focused upon urban areas of Nogales and did not cover the full boundaries of the PM_{10} nonattainment area. Therefore, emissions from rural Santa Cruz County were not evaluated at that time.

Both the 1989 base-year and 1995 attainment-year emissions inventory in the Plan disaggregate the Nogales Nonattainment Area into the same one-mile square Township sections for urban Nogales as was used in the 1987 Inventory. The rural areas of Santa Cruz County were likewise divided, except for the area [labeled **FS**] within the boundaries of the Coronado National Forest and the **Rio Rico Unit.** Urban Nogales areas taken from the 1987 Inventory are labeled as numbers and rural Santa Cruz County areas are labeled as letters **[Figure 2]**.

Once the area has been disaggregated into sections, activity levels for each source category contained in each section are estimated/updated using the above listed data resources. Emission factors used for areal and vehiclular-entrained sources in the 1987 Inventory are then multiplied by activity levels for each section to arrive at estimated PM_{10} emissions for source categories within each section. The section emissions are then aggregated to arrive at total areal vehicular-entrained PM_{10} emissions for the entire nonattainment area.

Emissions from wood burning, natural gas burning, construction and stationary source categories were able be estimated with disaggregating into sections.

Vehicular tailpipe emissions for 1989 and 1995 were both computed using EPA's Particulate Model. ADEQ's Air Quality Permits Unit in Phoenix provided emissions estimates from the nine minor and/or portable permitted stationary sources. Two additional stationary sources have applied for permits from ADEQ and are added to the 1995 projected stationary source category emissions.

In the projection of 1995 emissions, it has been assumed that RACM, as proposed, will yield no reduction in emissions because emissions reductions were not calculated.

Computations - Overview of Source Categories

Source Categories Used In This Emissions Inventory

BRAKES, TIRES, EXHAUST - FREEWAYS, ARTERIALS, LOCALS ROADS
1989 BASE YEAR

This source category includes yearly PM_{10} emissions generated directly from gasoline and diesel-powered vehicles on the above three types of roads. Total yearly VMT on freeways, arterials and local streets in the nonattainment area is multiplied by vehicular PM_{10} emission factors in grams/mile. Methods of estimating VMT may be different for each disaggregated section depending on VMT data available for the period 1988-1992 and obtained by three data resources: Nogales Urban Area Transportation Study, Final Report, Final Report, September, 1991 or Draft I-19 Corridor Study, Task 4:

Future Conditions, September, 1992 and traffic counts provided by Arizona Department of Transportation. Emission factors are obtained by the EPA Particulate Model for the 1989 base year and the 1995 attainment year.

The Particulate Model be modified to take into account the type vehicle fleet and mileage mix. For example, although light duty vehicles emit considerable less tailpipe particulates per vehicle, the weighted tailpipe emission factor for light duty vehicles approaches that of heavy duty diesel trucks which emit considerably more tailpipe particulates per vehicle.
The reason stems from the fact that light duty vehicle VMT is significantly higher than heavy duty diesel VMT.

The Particulate Model, obtained from ADEQ's Air Quality Assessment Section is presently adjusted for Maricopa County fleet assumptions. Due to the increased diesel activity in the urban portion of the Nogales PM_{10} Nonattainment Area, it is assumed that the heavy duty diesel VMT per cent multiplier would be 20% higher than the average of all of Maricopa County and the light duty vehicle VMT per cent multiplier adjusted downward accordingly in the following Sections:

C, P, O, 1, 3, 4, 18, 17, 8, 19, 20, 9, 26, and 25.

The Particulate Model also takes into account the changes in brakes, tires, and exhaust emissions as average vehicular speed varies. An additional assumption to be made regarding the Particulate Model is that VMT is linked to specific classes of roadway with differing average speeds on those classes of roadway. The following average speeds will be assumed for the following class of roadway:

Local Streets	25 M.P.H.
Arterials	35 M.P.H.
Freeways	55 M.P.H.

BRAKES, TIRES, EXHAUST - FREEWAYS, ARTERIALS, LOCAL STREETS 1995 ATTAINMENT YEAR

The above same assumptions will apply for BT & EX inputs to the Particulate Model in the attainment year, but methods of estimating VMT may be different for each disaggregated section depending on VMT data available for the period 1988-1992 and obtained by three data resources: Nogales Urban Area Transportation Study, Final Report, Final Report, September, 1991 or Draft I-19 Corridor Study, Task 4: Future Conditions, September, 1992 and traffic counts provided by Arizona Department of Transportation.

FREEWAYS - FUGITIVE DUST 1989

Yearly VMT was provided by ADOT traffic counts for 1989 in the numbered sections and in the lettered sections by using traffic growth data from the above three resources. The emissions factor of .74 lbs. PM_{10}/1000 VMT was taken from the 1987 Inventory.

FREEWAYS - FUGITIVE DUST 1995

Yearly VMT was provided by ADOT traffic counts for 1989 in the numbered sections. In the lettered sections yearly VMT was updated from 1989 by using the same VMT growth trends of the 1989-92 time period for each disaggregated section [if possible] taken from three data resources: Nogales Urban Area Transportation Study, Final Report, Final Report, September, 1991 or Draft I-19 Corridor Study, Task 4: Future Conditions, September, 1992 and traffic counts provided by Arizona Department of Transportation traffic counts. The emissions factor of .74 lbs. PM_{10}/1000 VMT was taken from the 1987 Inventory.

ARTERIALS - FUGITIVE DUST 1989

Yearly VMT was provided by updating the 1987 Inventory to year 1989 in the numbered sections and by using data from the above three resources in the lettered sections. The emissions factor of 3.9 lbs. PM_{10}/1000 VMT was taken from the 1987 Inventory.

ARTERIALS - FUGITIVE DUST 1995

Yearly VMT was updated from 1989 by using the same VMT growth trends of the 1989-92 time period for each disaggregated section [if possible] taken from three data resources: Nogales Urban Area Transportation Study, Final Report, Final Report, September, 1991 or Draft I-19 Corridor Study, Task 4: Future Conditions, September, 1992 and traffic counts provided by Arizona Department of Transportation traffic counts. The emissions factor of 3.9 lbs. PM_{10}/1000 VMT was taken from the 1987 Inventory.

LOCAL STREETS - FUGITIVE DUST 1989

Yearly VMT was provided by updating the 1987 Inventory to year 1989 in the numbered sections. In lettered sections VMT was obtained by estimating mileage and use of local streets by using 1991 aerial photographs and a map measurer. The emissions factor of 3.9 lbs. PM_{10}/1000 VMT was taken from the 1987 Inventory.

LOCAL STREETS - FUGITIVE DUST 1995

Yearly VMT was updated from 1989 by assuming no growth in street mileage from 1989 and by using the same arterial VMT growth

trends of the 1989-92 time period for each disaggregated section [if possible] taken from three data resources: Nogales Urban Area Transportation Study, Final Report, Final Report, September, 1991 or Draft I-19 Corridor Study, Task 4: Future Conditions, September, 1992 and traffic counts provided by Arizona Department of Transportation traffic counts. The emissions factor of 3.9 lbs. PM_{10}/1000 VMT was taken from the 1987 Inventory.

UNPAVED ROADS - FUGITIVE DUST 1989

Yearly VMT was provided by updating the 1987 Inventory to year 1989 in the numbered sections. In lettered sections VMT was obtained by estimating mileage and use of unpaved roads by using aerial photographs and a map measurer. The emissions factor of 826 lbs PM_{10}/1000 VMT was taken from the 1987 Inventory. and based upon an average silt content of 7.05% in the Nogales area.

UNPAVED ROADS - FUGITIVE DUST 1995

Yearly VMT was updated from 1995 by assuming no growth in street mileage from 1989 and by using the same arterial VMT growth trends of the 1989-92 time period for each disaggregated section [if possible] taken from three data resources: Nogales Urban Area Transportation Study, Final Report, Final Report, September, 1991 or Draft I-19 Corridor Study, Task 4: Future Conditions, September, 1992 and traffic counts provided by Arizona Department of Transportation.ADOT traffic counts. The emissions factor is the same as 1989.

CLEARED AREAS - WIND BLOWN DUST 1989 & 1995

In the numbered sections, acreage of cleared areas was taken from the 1987 Inventory and assumed to have no increase through year 1989. In the lettered sections, aerial photographs and a map measurer provided estimates of cleared areas using a 1 acre-sized template at 1=500 scale. The emissions factor of 32.6 lbs. PM_{10}/acre was taken from the 1987 Inventory. It is assumed that in both numbered and lettered sections, the acreage of cleared areas remains the same, 1989 - 1995. Also see the contruction fugitive dust source category.

Note: cleared areas in lettered sections may be overestimated because approximately 3/4 of total appears to be vegetated [grazing].

TRUCK TERMINALS & STAGING AREAS

It is assumed that truck staging and terminal areas are cleared areas that trucks use for overnight stopping, parking, loading and unloading. An emissions factor is not defined but is assumed to be a rate less than the rate for construction cleared areas. Assume a yearly rate of 100 lbs. PM_{10}/acre.

LOCOMOTIVES - EXHAUST 1989 & 1995

Yearly locomotive emissions were provided by updating the 1987 Inventory to year 1989 in the numbered sections assuming a yearly 1% growth rate. In lettered sections, locomotive use was obtained by estimating mileage with a map measurer and comparing to known use in numbered sections [numbered sections taken from 1987 Inventory]. For updating to 1995, a yearly assumed growth rate of 1% was maintained.

WOOD-BURNING FIREPLANCE/STOVES 1989 & 1995

The Nogales District Ranger [Jerry Lockwood, 281-2297] at Coronado National Forest stated that his District has a 300 cord limit per year. According to the Santa Cruz County Planning and Zoning Department, the largest private firewood dealer in Santa Cruz County sells an average of 30 cords per year. George Liniero of Citizens Utility, [281-1212] estimates that virtually no house within the nonattainment area is dependent upon wood for heat or cooking.

Assuming:

- that 1 cord burned every day would last an entire heating season;
- that twice as many cords are burned as inventoried [660 cords]; and
- that half of the 660 cords is burned in the Nogales Nonattainment Area;
- one cord weighs 1000 lbs.;

then: 330 cords or 165 tons of wood are burned within the nonattainment area per year. The emissions factor for wood burning taken from the 1987 Inventory is 30 lbs. PM_{10}/ton wood burned.

Therefore, 165 tons wood burned/year x 30 lbs. PM_{10}/ton wood burned or

4950 lbs PM_{10} or 2.48 tons PM_{10} /yr.

is emitted within the entire nonattainment area 1989 and 1995 assuming no increase.

NATURAL GAS FUEL USE 1989 & 1995

Virtually all homes in the Nogales Nonattainment Area use natural gas. It is assumed that natural gas use and population [18,000, 1992] is similar to the Pinal County Portion of the Phoenix PM_{10} Nonattainment Area. Natural Gas use for that area was estimated for 1991 to be 792 million cubic feet. The emission factor of 2 lbs./million cubic feet natural gas burned was taken from the 1986 Emssions Inventory [EI] for the Phoenix PM_{10} Nonattainment Area, also conducted by Engineering-Science.

Therefore, 2 lbs./million cubic feet x 792 million cubic feet =

1584 lbs. PM_{10} or .8 tons PM_{10}/yr
is emitted within the entire nonattainment area for 1989 and 1995.

CONSTRUCTION FUGITIVE DUST 1989

Estimates of construction acreage were taken from a list of building permits in Nogales and in the nonattainment area section of Santa Cruz County. The result will be conservative because it is assumed that excavation will disturb the entire acreage listed on the building permit. The County received building permit applications for a total of 32.5 acres in 1989. The City of Nogales received grading permit applications for an estimated acreage of 18.9 acres. Extent of 1989 total nonattainment area construction = 51.4 acres. The emission factor for construction taken from the 1986 Emssions Inventory [EI] for the Phoenix PM_{10} Nonattainment Area is 176 lbs. PM_{10}/acre/year. Therefore,

176 lbs. PM_{10}/acre x 51.4 acres = **9046 lbs or 4.5 tons PM_{10} /yr.** emitted in the entire nonattainment area.

CONSTRUCTION FUGITIVE DUST 1995

The City of Nogales received grading permit applications for an estimated 10 acres in 1992. The County's building permits - 18 acres. Extent of 1992 total nonattainment area construction = 28 acres. Assuming the higher 1989 construction rate of 51.4 acres, due to probable econonic recovery, the 1995 construction fugitive emissions would also be **9046 lbs or 4.5 tons PM_{10} /yr.**

STATIONARY SOURCES 1989 & 1995

There are currently and since year 1989 nine minor/portable sources permitted by the Arizona Department of Environmental Quality within the boundaries of the Nogales PM_{10} Nonattainment Area. They are listed below with the yearly permitted stack and fugitive PM_{10} emissions:

1.	Citizen's Utility	19.37 tons PM_{10}/yr.
2.	J.D's Sand & Gravel	3.35 tons PM_{10}/yr.
3.	Royal Sterilization	.01 tons PM_{10}/yr.
4.	Santa Cruz County	.005 tons PM_{10}/yr.
5.	Tanner - Southern Concrete Batch	.53 tons PM_{10}/yr.
6.	Tanner - Southern Concrete Batch	5.3 tons PM_{10}/yr.

7.	Tanner - Southern Crusher #164	7.43 tons PM_{10}/yr.
8.	USDA Douglas Incinerator	.01 tons PM_{10}/yr.
9.	USDA Nogales Incinerator	.04 tons PM_{10}/yr.
	1989 Total:	**36.00 tons PM_{10}/yr.**

NOTE: Two additional sources in the Nogales PM_{10} Nonattainment Area are applying or will be applying for Air Quality permits. Nogales Unified School District #1 and United Musical Instruments are not expected to change the 1995 by more than an additional 5 tons per year. Therefore,

1995 Total: 41.00 tons PM_{10} /yr.

Source Categories Not Used In This Emissions Inventory

COLLECTOR STREETS

Included as local and arterial.

FREEWAY CONSTRUCTION

Insignificant emissions

OFF-ROAD VEHICLES

With existing RACM of Permissive Use Agreement for Rio Rico Estates in the County area and virtually no open areas suitable for recreational vehicle use in the City, emissions are insignificant.

STORAGE PILES

Virtually no storage piles exist in the nonattainment area.

AGRICULTURAL

1991 aerial maps indicated no significant amount of tilled acreage. Grazing area was included in cleared area and therefore, emissions for cleared areas are overestimated.

Computations - Disaggregated Sections Inventory

UNIT #1 - 1989 & 1995

Yearly Freeway VMT = 10.5 x 1000 VMT/day provided by ADOT for 1989

x 365 days
3,832 x 1000 VMT Freeways/ year 1989

21.2 % yearly Freeway growth in Unit #1 from ADOT;
3,832 x 1000 VMT Freeways/ year 1989
x [21.2 x 6 yrs. or 127.44%] =
8,714 x 1000 VMT Freeways /year 1995

Yearly Arterial VMT = 2,800 x 1000 VMT per year from 1987 Inventory
5.34 yearly growth rate x 2 years from ADOT on closest arterial US 89;
1.107 x 2,800 x 1000 VMT/yr. 1987 =
3,100 x 1000 VMT arterials per year 1989

5.34 yearly growth rate x 6 yrs or 32%
x 3,100 x 1000 VMT arterials per year 1989 =
4,092 x 1000 VMT arterials per year 1995

FREEWAYS BT EX

3,832 x 1000 VMT/yr. x .1496 grams PM_{10}/mi =
573 x 1000 gr.PM_{10}/yr = 573 kg.PM_{10} x
2.2 lbs. PM_{10}/kg = 1261 lbs or
.6 ton PM_{10}/yr. 1989

8,714 x 1000 VMT Freeways/yr. 1995 x
.1433 grams PM_{10}/mi = 1248 x 1000 gr.PM_{10}/yr =
1248 kg PM_{10} x 2.2. lbs/kg = 2746 lbs or
1.3 tons PM_{10}/yr. 1995

ARTERIAL BT EX

3,100 x 1000 VMT/yr. x .1493 grams PM_{10}/mi =
463 x 1000 gr.PM_{10}/yr =
463 kg. PM_{10};
2.2 lbs. PM_{10} /kg = 1019 lbs or
.5 ton PM_{10}/yr. 1989

4,092 x 1000 VMT arterials per year 1995 x
.1441 gr.PM_{10}/mi. = 590 x 1000 gr. PM_{10}/yr x
2.2 lbs. /kg. = 1298 lbs or
.6 ton PM_{10}/yr. 1995

FREEWAYS - FUG.

3,832 x 1000 VMT Freeways/ year 1989 X
.74 lb. PM_{10}/1000 VMT = 2836 lbs. or
1.4 tons PM_{10}/yr 1989

8,714 x 1000 VMT Freeways per year 1995 x
.74 lb. PM_{10}/1000 VMT = 6448 lbs. or
3.2 tons PM_{10} /yr. 1995

ARTERIALS - FUG. 3,100 x 1000 VMT arterials per year 1989 x 3.9 lbs. PM_{10} /1000 VMT = 12,090 lbs. or **6.0 tons PM_{10}/yr. 1989**

4,092 x 1000 VMT arterials per year 1995 x 3.9 lbs. PM_{10}/1000 VMT = 15,959 lbs. or **8.0 tons PM_{10}/yr. 1995**

Unit #2 1989 & 1995

Yearly Local Streets VMT = 300 x 1000 VMT from 1987 Inventory.
Yearly growth factor = 2%

300 x 1000 VMT 1987 x 1.04 two-year growth factor = 312 x 1000 Local Streets VMT 1989

312 x 1000 Local Streets VMT 1989 x 1.12 6-yr. growth factor = 349 x 1000 Local Streets VMT 1995

LOCAL STREETS BT EX 312 x 1000 Local Streets VMT x .1381 gr./mi from Part. Model 1989 25 MPH = 43.1 x 1000 gr. or 43.1 kg. x 2.2 lbs./kg. = 95 bs. or **.05 ton PM_{10}/yr. 1989**

349 x 1000 Local Streets VMT 1995 x .1338 gr./mi from Part. Mod. 1995 25 MPH = 46.7 x 1000 gr. or 46.7 kg. x 2.2 lbs./kg. = 103 lbs. or **.05 ton PM_{10}/yr. 1995**

LOCAL STREET - FUG 312 x 1000 Local Streets VMT 1989 X 3.9 lbs./1000 VMT = 1217 lbs. PM_{10} or **.6 ton PM_{10}/yr. 1989**

349 x 1000 Local Streets VMT 1995 x 3.9 lbs./1000 VMT = 1361 lbs. PM_{10} or **.7 ton PM_{10}/yr. 1995**

CLEARED AREAS 60 acres from 1987 Inventory x growth factor of zero x 32.6 lbs./acre = 1956 lb or **1 ton PM_{10}/yr. both 1989 & 1995**

Unit #3 1989 & 1995

Yearly Freeway VMT from ADOT = 3.4 x 1000 VMT x 365 days =
1,241 x 1000 VMT Freeway 1989

Freeway VMT yearly growth factor from ADOT = 22.8%

1,241 x 1000 VMT 1989 x
6-yr. growth of 137% =
2941 x 1000 VMT Freeway 1995

Arterial VMT yearly growth factor from ADOT for nearby US 89/B19 = 5.43%;
3250 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 10.9% =
3604 x 1000 VMT Arterial 1989

3604 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 132.6% or 2.33 =
8397 x 1000 VMT Arterial 1995

FREEWAY BT EX

1,241 x 1000 VMT Freeway 1989 x
.1496 gr./mi from Part. Mod 1989 55 MPH =
186 x 1000 gr. or 186 kg x 2.2 lbs./kg. =
409 lbs or **.2 ton PM_{10}/yr 1989**

2941 x 1000 VMT Freeway 1995 x
.1433 gr./mi from 1995 55 MPH Part. Mod =
421 x 1000 gr. or 421 kg. x 2.2 lbs./kg. =
926 lbs or **.5 ton PM_{10}/yr 1995**

ARTERIAL BT EX

3604 x 1000 VMT Arterial 1989 x
.1493 gr./mi from Part. Mod. 1989 35 MPH. =
538 x 1000 gr. or 538 kg. x 2.2 lbs/kg =
1184 lbs. or **.6 ton PM_{10}/yr. 1989**

8397 x 1000 VMT Arterial 1995 x
.1441 gr./mi from Part. Mod. 1995 35 MPH
1210 x 1000 gr. or 1210 kg x 2.2 lbs./kg =
2662 lbs. or **1.3 tons PM_{10}/yr 1995**

FREEWAY FUG

1,241 x 1000 VMT Freeway 1989 X
.74 lb/1000 VMT = 918 lbs. or
.5 ton PM_{10}/yr. 1989

2941 x 1000 VMT Freeway 1995 x
.74 lb./1000 VMT = 2176 lbs or
1.1 ton PM_{10}/yr. 1995

ARTERIAL FUG

3604 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 14,056 lbs. or
7.0 tons PM_{10}/yr. 1989

8397 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 32,748 lbs. or
16.4 tons PM_{10}/yr. 1995

Unit #4 1989 & 1995

Yearly 1989 Freeway VMT from ADOT = 8.25 x 1000 VMT x 365 days =
3011 x 1000 VMT Freeway 1989

Freeway VMT yearly growth factor from ADOT = 26.5%

3011 x 1000 VMT Freeway 1989 x
6-yr. growth factor of 159% =
7798 x 1000 VMT Freeway 1995

Yearly 1989 Arterial VMT from from 1987 Inventory = 5840 x 1000 VMT

Arterial VMT yearly growth factor from ADOT for nearby US 89/B19 =
5.43%;
5840 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 10.9% =
6477 x 1000 VMT Arterial 1989

6477 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 132.6% or 2.33 =
15,091 x 1000 VMT Arterial 1995

Yearly 1989 Local Streets VMT from 1987 Inventory = 200 x 1000 VMT

Local Streets VMT yearly growth factor same as for arterial = 5.43%
200 x 1000 VMT x 2-yr growth rate of 10.9% =
222 x 1000 VMT Local Streets 1989

222 x 1000 local streets VMT x
6-yr growth rate of 132.6% or 2.33 =
517 x 1000 VMT Local Streets 1995

FREEWAY BT EX

3,011 x 1000 VMT Freeway 1989 x
.1496 gr./mi from Part. Mod 1989 55 MPH =
450 x 1000 gr. or 450 kg x 2.2 lbs./kg. =
990 lbs or **.5 ton PM_{10}/yr 1989**

7798 x 1000 VMT Freeway 1995 x
.1433 gr./mi from 1995 55 MPH Part. Mod =
1117 x 1000 gr. or 1117 kg. x 2.2 lbs./kg. =
2457 lbs or **1.2 ton PM_{10}/yr 1995**

ARTERIAL BT EX

6477 x 1000 VMT Arterial 1989 x
.1493 gr./mi from Part. Mod. 1989 35 MPH. =

967 x 1000 gr. or 967 kg. x 2.2 lbs/kg = 2127 lbs. or **1.1 ton PM_{10}/yr. 1989**

15,091 x 1000 VMT Arterial 1995 x .1441 gr./mi from Part. Mod. 1995 35 MPH 2175 x 1000 gr. or 2175 kg x 2.2 lbs./kg = 4784 lbs. or **2.4 tons PM_{10}/yr 1995**

LOC. STREETS BT EX

222 x 1000 VMT Local Street 1989 x .1502 gr./mi from Part. Mod. 1989 25 MPH. = 33.0 X 1000 gr. or 33.0 kg. x 2.2 lbs/kg = 73 lbs. or **.04 ton PM_{10}/yr. 1989**

517 x 1000 VMT Local Street 1995 x .1451 gr./mi from Part. Mod. 1995 25 MPH 75 x 1000 gr. or 75 kg x 2.2 lbs./kg = 165 lbs. or **.08 ton PM_{10}/yr 1995**

FREEWAY FUG

3,011 x 1000 VMT Freeway 1989 X .74 lb/1000 VMT = 2228 lbs. or **1.1 ton PM_{10}/yr. 1989**

7798 x 1000 VMT Freeway 1995 x .74 lb./1000 VMT = 5771 lbs or **2.89 tons PM_{10}/yr. 1995**

ARTERIAL FUG

6477 x 1000 VMT Arterial 1989 x 3.9 lbs/1000 VMT = 25,260 lbs. or **12.6 tons PM_{10}/yr. 1989**

15,091 x 1000 VMT Arterial 1995 x 3.9 lbs/1000 VMT = 58,855 lbs. or **29.4 tons PM_{10}/yr. 1995**

LOCAL ST. FUG

222 x 1000 VMT Arterial 1989 x 3.9 lbs/1000 VMT = 866 lbs. or **.4 ton PM_{10}/yr. 1989**

517 x 1000 VMT Arterial 1995 x 3.9 lbs/1000 VMT = 2016 lbs. or **1.0 ton PM_{10}/yr. 1995**

CLEARED AREAS

20 acres from 1987 <u>Inventory</u> x growth factor of zero x 32.6 lbs./acre = 652 lb or **.3 ton PM_{10}/yr. both 1989 & 1995**

TRUCK TERMINAL & STAGING AREAS

40 acres from field estimates x growth factor of zero x 100 lbs./acre = 4000 lb or **2 tons PM_{10}/yr. both 1989 & 1995**

<u>Unit #5 1989 & 1995</u>

Yearly 1989 Arterial VMT from from 1987 Inventory = 1600 x 1000 VMT

Arterial VMT yearly growth factor from ADOT for US 89/B19 = 5.43%
1600 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 10.9% =
1774 x 1000 VMT Arterial 1989

1774 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 132.6% or 2.33 =
4134 x 1000 VMT Arterial 1995

Yearly 1989 Local Streets VMT from 1987 Inventory = 200 x 1000 VMT

Local Streets VMT yearly growth factor same as for arterial = 5.43%
100 x 1000 VMT x 2-yr growth rate of 10.9% =
109 x 1000 VMT Local Streets 1989

109 x 1000 local streets VMT x
6-yr growth rate of 132.6% or 2.33 =
254 x 1000 VMT Local Streets 1995

ARTERIAL BT EX

1774 x 1000 VMT Arterial 1989 x
.1373 gr./mi from Part. Mod. 1989 35 MPH. =
243.6 x 1000 gr. or 243.6 kg. x 2.2 lbs/kg =
536.0 lbs. or **.3 ton PM_{10}/yr. 1989**

4134 x 1000 VMT Arterial 1995 x
.1327 gr./mi from Part. Mod. 1995 35 MPH
548.6 x 1000 gr. or 548.6 kg x 2.2 lbs./kg =
1207 lbs. or **.6 tons PM_{10}/yr 1995**

LOC. STREETS BT EX

109 x 1000 VMT Local Street 1989 x
.1381 gr./mi from Part. Mod. 1989 25 MPH. =
15.05 X 1000 gr. or 15.05 kg. x 2.2 lbs/kg =
65 lbs. or **.03 ton PM_{10}/yr. 1989**

254 x 1000 VMT Local Street 1995 x
.1338 gr./mi from Part. Mod. 1995 25 MPH
34 x 1000 gr. or 34 kg x 2.2 lbs./kg =
75 lbs. or **.04 ton PM_{10}/yr 1995**

ARTERIAL FUG

1774 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 6919 lbs. or
3.5 tons PM_{10}/yr. 1989

4134 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 16,123 lbs. or
8.1 tons PM_{10}/yr. 1995

LOCAL ST. FUG

109 x 1000 VMT Arterial 1989 x

3.9 lbs/1000 VMT = 425 lbs. or
.2 ton PM_{10}/yr. 1989

254 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 991 lbs. or
.5 ton PM_{10}/yr. 1995

CLEARED AREAS — 10 acres from 1987 Inventory x growth factor of zero x 32.6 lbs./acre = 326 lb or **.2 ton PM_{10}/yr. both 1989 & 1995**

LOCOMOTIVES EX — Assume 1% growth rate
.2 tons PM_{10}/yr. from 1987 Inventory x 2-yrs growth or 1.02 = **.2 ton PM_{10}/yr. 1989**

.2 ton PM_{10} /yr. x 6-yr growth or 1.06 =
.2 ton PM_{10} /yr. 1995

Unit #6 1989 & 1995

Yearly 1989 Local Streets VMT from 1987 Inventory = 120 x 1000 VMT

Local Streets VMT yearly growth factor estimated from aerial maps = 2%/yr.
120 x 1000 VMT x 2-yr growth rate of 1.04 =
125 x 1000 VMT Local Streets 1989

125 x 1000 local streets VMT x
6-yr growth rate of 1.12 =
140 x 1000 VMT Local Streets 1995

Yearly unpaved roads VMT from 1987 Inventory = 3 x 1000 VMT
Unpaved roads VMT yearly growth = 2%/yr.
3 x 1000 VMT x 2-yr. growth rate of 1.04 =
3.12 x 1000 VMT unpaved roads 1989

3.12 x 1000 VMT unpaved roads 1989 x
6-yr growth of 1.12 =
3.5 x 1000 VMT unpaved roads 1995

LOC. STREETS BT EX — 125 x 1000 VMT Local Street 1989 x .1381 gr./mi from Part. Mod. 1989 25 MPH. = 17.25 X 1000 gr. or 17.25 kg. x 2.2 lbs/kg = 38 lbs. or **.02 ton PM_{10}/yr. 1989**

140 x 1000 VMT Local Street 1995 x
.1338 gr./mi from Part. Mod. 1995 25 MPH
18.7 x 1000 gr. or 18.7 kg x 2.2 lbs./kg =
41 lbs. or **.02 ton PM_{10}/yr 1995**

LOCAL ST. FUG — 125 x 1000 VMT Arterial 1989 x

3.9 lbs/1000 VMT = 487.5 lbs. or
.2 ton PM_{10}/yr. 1989

140 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 546 lbs. or
.27 ton PM_{10}/yr. 1995

UNPAVED RDS FUG

3.12 x 1000 VMT 1989 x
826 lbs./1000 VMT =
2577 lbs or **1.3 ton PM_{10}/yr. 1989**

3.5 x 1000 VMT 1995 x
826 lbs./1000 VMT =
2891 lbs or **1.44 ton PM_{10}/yr. 1995**

CLEARED AREAS

10 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
326 lb or **.2 ton PM_{10}/yr. both 1989 & 1995**

Unit #7 1989 & 1995

Yearly 1989 Local Streets VMT from 1987 Inventory = 120 x 1000 VMT

Local Streets VMT yearly growth factor estimated from aerial maps = 2%/yr.
120 x 1000 VMT x 2-yr growth rate of 1.04 =
125 x 1000 VMT Local Streets 1989

125 x 1000 local streets VMT x
6-yr growth rate of 1.12 =
140 x 1000 VMT Local Streets 1995

Yearly unpaved roads VMT from 1987 Inventory = 4 x 1000 VMT
Unpaved roads VMT yearly growth = 2%/yr.
4 x 1000 VMT x 2-yr. growth rate of 1.04 =
4.16 x 1000 VMT unpaved roads 1989

4.16 x 1000 VMT unpaved roads 1989 x
6-yr growth of 1.12 =
4.7 x 1000 VMT unpaved roads 1995

LOC. STREETS BT EX

125 x 1000 VMT Local Street 1989 x
.1381 gr./mi from Part. Mod. 1989 25 MPH. =
17.25 X 1000 gr. or 17.25 kg. x 2.2 lbs/kg =
38 lbs. or **.02 ton PM_{10}/yr. 1989**

140 x 1000 VMT Local Street 1995 x
.1338 gr./mi from Part. Mod. 1995 25 MPH
18.7 x 1000 gr. or 18.7 kg x 2.2 lbs./kg =
41 lbs. or **.02 ton PM_{10}/yr 1995**

LOCAL ST. FUG

125 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 487.5 lbs. or
.2 ton PM_{10}/yr. 1989

140 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 546 lbs. or
.27 ton PM_{10}/yr. 1995

UNPAVED RDS FUG

4.16 x 1000 VMT 1989 x
826 lbs./1000 VMT =
3436 lbs or **1.7 ton PM_{10}/yr. 1989**

4.7 x 1000 VMT 1995 x
826 lbs./1000 VMT =
3882 lbs or **1.9 ton PM_{10}/yr. 1995**

CLEARED AREAS

10 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
326 lb or **.2 ton PM_{10}/yr. both 1989 & 1995**

Unit #8 1989 & 1995

Yearly 1989 Arterial VMT from from 1987 Inventory = 900 x 1000 VMT

Arterial VMT yearly growth factor from ADOT for US 189 = 17.8%
900 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 35.7% =
1221 x 1000 VMT Arterial 1989

1221 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 106.8% or 2.07 =
2527 x 1000 VMT Arterial 1995

Yearly 1989 Local Streets VMT from 1987 Inventory = 200 x 1000 VMT

Local Streets VMT yearly growth factor estimated from aerial maps
= 4%/yr.
200 x 1000 VMT x 2-yr growth rate of 1.08 =
216 x 1000 VMT Local Streets 1989

216 x 1000 local streets VMT x
6-yr growth rate of 1.24 =
268 x 1000 VMT Local Streets 1995

Yearly unpaved roads VMT from 1987 Inventory = 4 x 1000 VMT
Unpaved roads VMT yearly growth = 2%/yr.
4 x 1000 VMT x 2-yr. growth rate of 1.04 =
4.16 x 1000 VMT unpaved roads 1989

4.16 x 1000 VMT unpaved roads 1989 x

6-yr growth of 1.12 =
4.7 x 1000 VMT unpaved roads 1995

ARTERIAL BT EX

1221 x 1000 VMT Arterial 1989 x
.1493 gr./mi from Part. Mod. 1989 35 MPH. =
182.3 x 1000 gr. or 182.6 kg. x 2.2 lbs/kg =
401 lbs. or **.2 ton PM_{10}/yr. 1989**

2527 x 1000 VMT Arterial 1995 x
.1441 gr./mi from Part. Mod. 1995 35 MPH
364 x 1000 gr. or 364 kg x 2.2 lbs./kg =
800.1 lbs. or **.4 tons PM_{10}/yr 1995**

LOC. STREETS BT EX

216 x 1000 VMT Local Street 1989 x
.1502 gr./mi from Part. Mod. 1989 25 MPH. =
32.4 X 1000 gr. or 32.4 kg. x 2.2 lbs/kg =
71.4 lbs. or **.04 ton PM_{10}/yr. 1989**

268 x 1000 VMT Local Street 1995 x
.1451 gr./mi from Part. Mod. 1995 25 MPH
38.9 x 1000 gr. or 18.7 kg x 2.2 lbs./kg =
85.6 lbs. or **.04 ton PM_{10}/yr 1995**

ARTERIAL FUG

1221 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 4761 lbs. or
2.4 tons PM_{10}/yr. 1989

2527 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 9855 lbs. or
4.9 tons PM_{10}/yr. 1995

LOCAL ST. FUG

216 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 842 lbs. or
.42 ton PM_{10}/yr. 1989

268 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 1045 lbs. or
.52 ton PM_{10}/yr. 1995

UNPAVED RDS FUG

4.16 x 1000 VMT 1989 x
826 lbs./1000 VMT =
3436 lbs or **1.7 ton PM_{10}/yr. 1989**

4.7 x 1000 VMT 1995 x
826 lbs./1000 VMT =
3882 lbs or **1.9 ton PM_{10}/yr. 1995**

CLEARED AREAS

40 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
1304 lb or **.65 ton PM_{10}/yr. both 1989 & 1995**

Unit #9 1989 & 1995

Yearly 1989 Arterial VMT from from 1987 Inventory = 1825 x 1000 VMT

Arterial VMT yearly growth factor from ADOT for US 189 = 17.8%
1825 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 35.7% =
2477 x 1000 VMT Arterial 1989

2477 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 106.8% or 2.07 =
5126 x 1000 VMT Arterial 1995

Yearly 1989 Local Streets VMT from 1987 Inventory = 500 x 1000 VMT

Local Streets VMT yearly growth factor estimated from aerial maps
= 17.8 %/yr; same as for US 189
500 x 1000 VMT Local Streets 1989 x
2-yr growth rate of 35.7% =
678.5 x 1000 VMT Local Streets 1989

678.5 x 1000 Local Streets VMT 1989 x
6-yr. growth rate of 106.8% or 2.07 =
1403 x 1000 Local Streets 1995

Yearly unpaved roads VMT from 1987 Inventory = 9 x 1000 VMT
Unpaved roads VMT yearly growth = 6%/yr.
9 x 1000 VMT x 2-yr. growth rate of 1.12 =
10.1 x 1000 VMT unpaved roads 1989

10.1 x 1000 VMT unpaved roads 1989 x
6-yr growth of 1.36 =
13.7 VMT unpaved roads 1995

ARTERIAL BT EX

2477 x 1000 VMT Arterial 1989 x
.1493 gr./mi from Part. Mod. 1989 35 MPH. =
369.8 x 1000 gr. or 369.8 kg. x 2.2 lbs/kg =
814 lbs. or **.4 ton PM_{10}/yr. 1989**

5126 x 1000 VMT Arterial 1995 x
.1441 gr./mi from Part. Mod. 1995 35 MPH
739 x 1000 gr. or 739 kg x 2.2 lbs./kg =
1625 lbs. or **.8 ton PM_{10}/yr 1995**

LOC. STREETS BT EX

678.5 x 1000 VMT Local Street 1989 x
.1502 gr./mi from Part. Mod. 1989 25 MPH. =
102 X 1000 gr. or 102 kg. x 2.2 lbs/kg =
224 lbs. or **.1 ton PM_{10}/yr. 1989**

1403 x 1000 VMT Local Street 1995 x
.1451 gr./mi from Part. Mod. 1995 25 MPH
203.6 x 1000 gr. or 203.6 kg x 2.2 lbs./kg =
448 lbs. or **.22 ton PM_{10}/yr 1995**

ARTERIAL FUG

2477 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 9660 lbs. or
4.83 tons PM_{10}/yr. 1989

5126 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 19,991 lbs. or
10.0 tons PM_{10}/yr. 1995

LOCAL ST. FUG

678.5 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 2646 lbs. or
1.3 ton PM_{10}/yr. 1989

1403 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 5472 lbs. or
2.7 tons PM_{10}/yr. 1995

UNPAVED RDS FUG

10.1 x 1000 VMT 1989 x
826 lbs./1000 VMT =
8343 lbs or **1.7 ton PM_{10}/yr. 1989**

13.7 x 1000 VMT 1995 x
826 lbs./1000 VMT =
11,316 lbs or **5.7 tons PM_{10}/yr. 1995**

CLEARED AREAS

90 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
2934 lbs or **1.5 ton PM_{10}/yr. both 1989 & 1995**

TRUCK TERMINAL &
STAGING AREAS

20 acres from field estimates x
growth factor of zero x 100 lbs./acre =
2000 lb or **1 ton PM_{10}/yr. both 1989 & 1995**

Unit #14 1989 & 1995

Yearly 1989 Arterial VMT from from 1987 Inventory = 300 x 1000 VMT

Arterial VMT yearly growth factor from ADOT for US 82 = 7.4%
300 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 14.8% =
344 x 1000 VMT Arterial 1989

344 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 44.4% or 1.444 =
497 x 1000 VMT Arterial 1995

Yearly 1989 Local Streets VMT from 1987 Inventory = 50 x 1000 VMT

Local Streets VMT yearly growth factor estimated from aerial maps
= 7.4%/yr; same as for US 82
50 x 1000 VMT Local Streets 1989 x
2-yr growth rate of 1.148 =
57.4 x 1000 VMT Local Streets 1989

57.4 x 1000 Local Streets VMT 1989 x
6-yr. growth rate of 44.4% or 1.444 =
83 x 1000 Local Streets 1995

ARTERIAL BT EX

344 x 1000 VMT Arterial 1989 x
.1373 gr./mi from Part. Mod. 1989 35 MPH. =
47 x 1000 gr. or 47 kg. x 2.2 lbs/kg =
104 lbs. or **.05 ton PM_{10}/yr. 1989**

497 x 1000 VMT Arterial 1995 x
.1327 gr./mi from Part. Mod. 1995 35 MPH
66 x 1000 gr. or 66 kg x 2.2 lbs./kg =
145 lbs. or **.07 ton PM_{10}/yr 1995**

LOC. STREETS BT EX

57.4 x 1000 VMT Local Street 1989 x
.1381 gr./mi from Part. Mod. 1989 25 MPH. =
7.9 X 1000 gr. or 7.9 kg. x 2.2 lbs/kg =
17.4 lbs. or **.01 ton PM_{10}/yr. 1989**

83 x 1000 VMT Local Street 1995 x
.1338 gr./mi from Part. Mod. 1995 25 MPH
11.1 x 1000 gr. or 11.1 kg x 2.2 lbs./kg =
24.3 lbs. or **.01 ton PM_{10}/yr 1995**

ARTERIAL FUG

344 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 1342 lbs. or
.7 ton PM_{10}/yr. 1989

497 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 1938 lbs. or
1.0 ton PM_{10}/yr. 1995

LOCAL ST. FUG

57.4 x 1000 VMT Local Streets 1989 x
3.9 lbs/1000 VMT = 224 lbs. or
.01 ton PM_{10}/yr. 1989

83 x 1000 VMT Local Streets 1995 x
3.9 lbs/1000 VMT = 323.7 lbs. or
.16 ton PM_{10}/yr. 1995

Unit #15 1989 & 1995

Daily 1989 Arterial VMT from ADOT Traffic Counts = 3.2 x 1000 VMT x 365 days = 1168 x 1000 VMT/yr. 1989

Arterial VMT yearly growth factor from ADOT for US 82 = 7.4%
1168 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 44.4% or 1.444 =
1687 x 1000 VMT Arterial 1995

Yearly unpaved roads VMT from 1987 Inventory = 3 x 1000 VMT
Unpaved roads VMT yearly growth = 3%/yr.
3 x 1000 VMT x 2-yr. growth rate of 1.06 =
3.2 x 1000 VMT unpaved roads 1989

3.2 x 1000 VMT unpaved roads 1989 x
6-yr growth of 1.18 =
3.8 x 1000 VMT unpaved roads 1995

ARTERIAL BT EX

1168 x 1000 VMT Arterial 1989 x
.1373 gr./mi from Part. Mod. 1989 35 MPH. =
160 x 1000 gr. or 160 kg. x 2.2 lbs/kg =
353 lbs. or **.2 ton PM_{10}/yr. 1989**

1687 x 1000 VMT Arterial 1995 x
.1327 gr./mi from Part. Mod. 1995 35 MPH
224 x 1000 gr. or 224 kg x 2.2 lbs./kg =
493 lbs. or **.25 ton PM_{10}/yr 1995**

ARTERIAL FUG

1168 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 4555 lbs. or
2.3 tons PM_{10}/yr. 1989

1687 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 6579 lbs. or
3.3 ton PM_{10}/yr. 1995

UNPAVED RDS FUG

3.2 x 1000 VMT 1989 x
826 lbs./1000 VMT =
2643 lbs or **1.32 ton PM_{10}/yr. 1989**

3.8 x 1000 VMT 1995 x
826 lbs./1000 VMT =
3139 lbs or **1.6 tons PM_{10}/yr. 1995**

Unit #16 1989 & 1995

Yearly 1989 Local Streets VMT from 1987 Inventory = 200 x 1000 VMT

Local Streets VMT yearly growth factor from ADOT for SR 189 = 10.8%
200 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 21.6% =

243 x 1000 VMT Arterial 1989

243 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 64.8% or 1.648 =
400.5 x 1000 VMT Arterial 1995

LOC. STREETS BT EX 243 x 1000 VMT Local Street 1989 x
.1381 gr./mi from Part. Mod. 1989 25 MPH. =
33.6 X 1000 gr. or 33.6 kg. x 2.2 lbs/kg =
74 lbs. or **.04 ton PM_{10}/yr. 1989**

400.5 x 1000 VMT Local Street 1995 x
.1338 gr./mi from Part. Mod. 1995 25 MPH
54 x 1000 gr. or 11.1 kg x 2.2 lbs./kg =
118 lbs. or **.06 ton PM_{10}/yr 1995**

LOCAL ST. FUG 243 x 1000 VMT Local Streets 1989 x
3.9 lbs/1000 VMT = 948 lbs. or
.47 ton PM_{10}/yr. 1989

400.5 x 1000 VMT Local Streets 1995 x
3.9 lbs/1000 VMT = 1562 lbs. or
.78 ton PM_{10}/yr. 1995

UNPAVED RDS FUG 3.2 x 1000 VMT 1989 x
826 lbs./1000 VMT =
2478 lbs or **1.2 ton PM_{10}/yr. 1989**

3.8 x 1000 VMT 1995 x
826 lbs./1000 VMT =
3139 lbs or **1.6 tons PM_{10}/yr. 1995**

CLEARED AREAS 30 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
978 lbs or **.49 ton PM_{10}/yr. both 1989 & 1995**

Unit #17 1989 & 1995

Yearly 1989 Arterial VMT from 1987 Inventory = 8000 x 1000 VMT

Arterial VMT yearly growth factor from ADOT for SR 189 and SR 82
= 6%
8000 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 12% =
8960 x 1000 VMT Arterial 1989

8960 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 36% or 1.36 =
12,186 x 1000 VMT Arterial 1995

Yearly 1989 Local Streets VMT from 1987 Inventory = 300 x 1000 VMT

Local Streets VMT yearly growth factor from ADOT for SR 189 and 82 = 7%

300 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 14% =
342 x 1000 VMT Arterial 1989

342 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 42% or 1.42 =
486 x 1000 VMT Arterial 1995

ARTERIAL BT EX

8960 x 1000 VMT Arterial 1989 x
.1493 gr./mi from Part. Mod. 1989 35 MPH. =
1338 x 1000 gr. or 1338 kg. x 2.2 lbs/kg =
2943 lbs. or **1.47 ton PM_{10}/yr. 1989**

12,186 x 1000 VMT Arterial 1995 x
.1441 gr./mi from Part. Mod. 1995 35 MPH
1756 x 1000 gr. or 1756 kg x 2.2 lbs./kg =
3863 lbs. or **1.93 ton PM_{10}/yr 1995**

LOC. STREETS BT EX

342 x 1000 VMT Local Street 1989 x
.1502 gr./mi from Part. Mod. 1989 25 MPH. =
51.4 X 1000 gr. or 51.47 kg. x 2.2 lbs/kg =
113 lbs. or **.06 ton PM_{10}/yr. 1989**

486 x 1000 VMT Local Street 1995 x
.1451 gr./mi from Part. Mod. 1995 25 MPH
70.5 x 1000 gr. or 70.5 kg x 2.2 lbs./kg =
155 lbs. or **.08 ton PM_{10}/yr 1995**

ARTERIAL FUG

8960 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 34,944 lbs. or
17.5 tons PM_{10}/yr. 1989

12,186 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 47,525 lbs. or
23.8 tons PM_{10}/yr. 1995

LOCAL ST. FUG

342 x 1000 VMT Local Streets 1989 x
3.9 lbs/1000 VMT = 1334 lbs. or
.7 ton PM_{10}/yr. 1989

486 x 1000 VMT Local Streets 1995 x
3.9 lbs/1000 VMT = 1895 lbs. or
.95 ton PM_{10}/yr. 1995

CLEARED AREAS

20 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
652 lbs or **.33 ton PM_{10}/yr. both 1989 & 1995**

TRUCK TERMINAL & STAGING AREAS

30 acres from field estimates x growth factor of zero x 100 lbs./acre = 3000 lb or **3 tons PM_{10}/yr. both 1989 & 1995**

LOCOMOTIVES EX

Assume 1% growth rate
.3 tons PM_{10}/yr. from 1987 Inventory x 2-yrs growth or 1.02 = **.3 ton PM_{10}/yr. 1989**

.3 ton PM_{10} /yr. x 6-yr growth or 1.06 = **.3 ton PM_{10} /yr. 1995**

Unit #18 1989 & 1995

Yearly 1989 Freeway VMT from ADOT = 8.25 x 1000 VMT x 365 days = 3011 x 1000 VMT Freeway 1989

Freeway VMT yearly growth factor from ADOT = 26.5%

3011 x 1000 VMT Freeway 1989 x 6-yr. growth factor of 159% = 7798 x 1000 VMT Freeway 1995

Daily 1989 Arterial VMT from ADOT traffic counts on SR 189 = 2.6 x 1000 VMT x 365 = 949 x 1000 yearly Arterial 1989

Arterial VMT yearly growth factor from ADOT for SR 189 = 36%
949 x 1000 VMT from ADOT x 6-yr growth rate of 216% or 3.16 = 2999 x 1000 VMT Arterial 1995

FREEWAY BT EX

3,011 x 1000 VMT Freeway 1989 x .1496 gr./mi from Part. Mod 1989 55 MPH = 450 x 1000 gr. or 450 kg x 2.2 lbs./kg. = 990 lbs or **.5 ton PM_{10}/yr 1989**

7798 x 1000 VMT Freeway 1995 x .1433 gr./mi from 1995 55 MPH Part. Mod = 1117 x 1000 gr. or 1117 kg. x 2.2 lbs./kg. = 2457 lbs or **1.2 ton PM_{10}/yr 1995**

ARTERIAL BT EX

949 x 1000 VMT Arterial 1989 x .1493 gr./mi from Part. Mod. 1989 35 MPH. = 142 x 1000 gr. or 142 kg. x 2.2 lbs/kg = 312 lbs. or **.2 ton PM_{10}/yr. 1989**

2999 x 1000 VMT Arterial 1995 x .1441 gr./mi from Part. Mod. 1995 35 MPH 432 x 1000 gr. or 432 kg x 2.2 lbs./kg = 950.4 lbs. or **.5 ton PM_{10}/yr 1995**

FREEWAYS - FUG. 3,011 x 1000 VMT Freeways/ year 1989 X
.74 lb. PM_{10}/1000 VMT = 2228 lbs. or
1.1 ton PM_{10}/yr 1989

7798 x 1000 VMT Freeways per year 1995 x
.74 lb. PM_{10}/1000 VMT = 5771 lbs. or
2.9 tons PM_{10} /yr. 1995

ARTERIAL FUG 949 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 3701 lbs. or
1.85 ton PM_{10}/yr. 1989

2999 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 11,696 lbs. or
5.8 tons PM_{10}/yr. 1995

CLEARED AREAS 15 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
489 lbs or **.24 ton PM_{10}/yr. both 1989 & 1995**

Unit #19 1989 & 1995

Yearly 1989 Freeway VMT from ADOT = 10.3 x 1000 VMT x 365 days =
3760 x 1000 VMT Freeway 1989

Freeway VMT yearly growth factor from ADOT = 18.1%

3011 x 1000 VMT Freeway 1989 x
6-yr. growth factor of 108.6% =
7843 x 1000 VMT Freeway 1995

Daily 1989 Arterial VMT from ADOT traffic counts on SR 189 =
4.5 x 1000 VMT x 365 =
1642 x 1000 yearly Arterial 1989

Arterial VMT yearly growth factor from ADOT for SR 189 = 17.8%
1642 x 1000 VMT from ADOT x
6-yr growth rate of 216% or 3.16 =
5189 x 1000 VMT Arterial 1995

FREEWAY BT EX 3,760 x 1000 VMT Freeway 1989 x
.1496 gr./mi from Part. Mod 1989 55 MPH =
562 x 1000 gr. or 562 kg x 2.2 lbs./kg. =
1237 lbs or **.6 ton PM_{10}/yr 1989**

7843 x 1000 VMT Freeway 1995 x
.1433 gr./mi from 1995 55 MPH Part. Mod =
1124 x 1000 gr. or 1124 kg. x 2.2 lbs./kg. =
2473 lbs or **1.3 ton PM_{10}/yr 1995**

ARTERIAL BT EX

1642 x 1000 VMT Arterial 1989 x
.1493 gr./mi from Part. Mod. 1989 35 MPH. =
245 x 1000 gr. or 245 kg. x 2.2 lbs/kg =
539 lbs. or **.27 ton PM_{10}/yr. 1989**

5189 x 1000 VMT Arterial 1995 x
.1441 gr./mi from Part. Mod. 1995 35 MPH
748 x 1000 gr. or 748 kg x 2.2 lbs./kg =
1645 lbs. or **.8 ton PM_{10}/yr 1995**

FREEWAYS - FUG.

3760 x 1000 VMT Freeways/ year 1989 X
.74 lb. PM_{10}/1000 VMT = 2782 lbs. or
1.4 ton PM_{10}/yr 1989

7843 x 1000 VMT Freeways per year 1995 x
.74 lb. PM_{10}/1000 VMT = 5804 lbs. or
2.9 tons PM_{10} /yr. 1995

ARTERIAL FUG

1642 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 6404 lbs. or
3.2 ton PM_{10}/yr. 1989

5189 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 2024 lbs. or
10.1 tons PM_{10}/yr. 1995

CLEARED AREAS

30 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
978 lbs or **.5 ton PM_{10}/yr. both 1989 & 1995**

Unit #20 1989 & 1995

Daily 1989 Arterial VMT from ADOT traffic counts on SR 82 =
1.9 x 1000 and for US 89/B19 = 37.6 x 1000 to
= 39.5 x 1000 daily VMT x 365 =
14,417 x 1000 yearly Arterial 1989

Arterial VMT yearly growth factor from ADOT for SR 189 and SR 82
= .5%
14,417 x 1000 VMT from ADOT x
6-yr growth rate of 3% =
14,850 x 1000 VMT Arterial 1995

Yearly 1989 Local Streets VMT from 1987 Inventory = 800 x 1000 VMT

Loc. Streets VMT yearly growth factor from ADOT for SR 189 and 82
= 3%
300 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 6% =
318 x 1000 VMT Arterial 1989

318 x 1000 VMT Arterial 1989 x

	6-yr. growth rate of 18% or 1.18 = 375 x 1000 VMT Arterial 1995
ARTERIAL BT EX	14,415 x 1000 VMT Arterial 1989 x .1493 gr./mi from Part. Mod. 1989 35 MPH. = 2152 x 1000 gr. or 2152 kg. x 2.2 lbs/kg = 4735 lbs. or **2.4 tons PM_{10}/yr. 1989**
	14,850 x 1000 VMT Arterial 1995 x .1441 gr./mi from Part. Mod. 1995 35 MPH 2140 x 1000 gr. or 2140 kg x 2.2 lbs./kg = 4708 lbs. or **2.4 tons PM_{10}/yr 1995**
LOC. STREETS BT EX	318 x 1000 VMT Local Street 1989 x .1502 gr./mi from Part. Mod. 1989 25 MPH. = 47.8 X 1000 gr. or 47.8 kg. x 2.2 lbs/kg = 105 lbs. or **.05 ton PM_{10}/yr. 1989**
	375 x 1000 VMT Local Street 1995 x .1451 gr./mi from Part. Mod. 1995 25 MPH 54.4 x 1000 gr. or 54.4 kg x 2.2 lbs./kg = 119.7 lbs. or **.06 ton PM_{10}/yr 1995**
ARTERIAL FUG	14,415 x 1000 VMT Arterial 1989 x 3.9 lbs/1000 VMT = 56,3218 lbs. or **28.1 tons PM_{10}/yr. 1989**
	14,850 x 1000 VMT Arterial 1995 x 3.9 lbs/1000 VMT = 57,915 lbs. or **29.0 tons PM_{10}/yr. 1995**
LOCAL ST. FUG	318 x 1000 VMT Local Streets 1989 x 3.9 lbs/1000 VMT = 1240 lbs. or **.6 ton PM_{10}/yr. 1989**
	375 x 1000 VMT Local Streets 1995 x 3.9 lbs/1000 VMT = 1462.5 lbs. or **.7 ton PM_{10}/yr. 1995**
CLEARED AREAS	90 acres from 1987 Inventory x growth factor of zero x 32.6 lbs./acre = 2934 lbs or **1.5 ton PM_{10}/yr. both 1989 & 1995**
LOCOMOTIVES EX	Assume 1% growth rate .1 tons PM_{10}/yr. from 1987 Inventory x 2-yrs growth or 1.02 = **.1 ton PM_{10}/yr. 1989**
	.1 ton PM_{10} /yr. x 6-yr growth or 1.06 = **.1 ton PM_{10} /yr. 1995**

Unit #21 1989 & 1995

Yearly 1989 Arterial VMT from ADOT traffic counts on SR 82 =
8.0 x 1000 VMT per day x 365 =
2920 x 1000 yearly Arterial 1989

Arterial VMT yearly growth factor from ADOT for SR 82 = 2.6%
2920 x 1000 VMT from ADOT x
6-yr growth rate of 15.6% =
3376 x 1000 VMT Arterial 1995

ARTERIAL BT EX

2920 x 1000 VMT Arterial 1989 x
.1373 gr./mi from Part. Mod. 1989 35 MPH. =
401 x 1000 gr. or 401 kg. x 2.2 lbs/kg =
882 lbs. or **.44 ton PM_{10}/yr. 1989**

3376 x 1000 VMT Arterial 1995 x
.1327 gr./mi from Part. Mod. 1995 35 MPH
448 x 1000 gr. or 448 kg x 2.2 lbs./kg =
985 lbs. or **.5 ton PM_{10}/yr 1995**

ARTERIAL FUG

2920 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 11,388 lbs. or
5.7 tons PM_{10}/yr. 1989

3376 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 13,166 lbs. or
6.6 tons PM_{10}/yr. 1995

CLEARED AREAS

60 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
1956 lbs or **1.0 ton PM_{10}/yr. both 1989 & 1995**

Unit #22 1989 & 1995

Yearly 1989 Arterial VMT from ADOT traffic counts on SR 82 =
.63 x 1000 VMT per day x 365 =
230 x 1000 yearly Arterial 1989

Arterial VMT yearly growth factor from ADOT for SR 82 = 4.4%
240 x 1000 VMT from ADOT x
6-yr growth rate of 26.4% =
291 x 1000 VMT Arterial 1995

ARTERIAL BT EX

230 x 1000 VMT Arterial 1989 x
.1373 gr./mi from Part. Mod. 1989 35 MPH. =
32 x 1000 gr. or 32 kg. x 2.2 lbs/kg =
704 lbs. or **.04 ton PM_{10}/yr. 1989**

291 x 1000 VMT Arterial 1995 x
.1327 gr./mi from Part. Mod. 1995 35 MPH
39 x 1000 gr. or 39 kg x 2.2 lbs./kg =
86 lbs. or **.04 ton PM_{10}/yr 1995**

ARTERIAL FUG 230 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 897 lbs. or
.44 ton PM_{10}/yr. 1989

291 x 1000 VMT Arterial 1995 x
3.9 lbs/1000 VMT = 1135 lbs. or
.57
ton PM_{10}/yr. 1995

CLEARED AREAS 15 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
489 lbs or **.24 ton PM_{10}/yr. both 1989 & 1995**

Unit #23 1989 & 1995

CLEARED AREAS 15 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
489 lbs or **.24 ton PM_{10}/yr. both 1989 & 1995**

Unit #24 1989 & 1995

CLEARED AREAS 30 acres from 1987 Inventory x
growth factor of zero x 32.6 lbs./acre =
978 lbs or **.5 ton PM_{10}/yr. both 1989 & 1995**

Unit #25 1989 & 1995

Yearly 1989 Arterial VMT from ADOT traffic counts on US89/B19 =
43.5 x 1000 daily VMT x 365 =
15,878 x 1000 yearly Arterial 1989

Arterial VMT yearly growth factor from ADOT for SR 189 and SR 82
= 3.8%
15,878 x 1000 VMT from ADOT x
6-yr growth rate of 22.8 =
19,498 x 1000 VMT Arterial 1995

Yearly 1989 Loc. Streets VMT from 1987 Inventory =
1,500 x 1000 Local Streets VMT

Loc. Streets VMT yearly growth factor from ADOT for SR 189 = 3.8%
1,500 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 7.6% =
1614 x 1000 VMT Arterial 1989

318 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 22.8% or 1.228 =
1982 x 1000 VMT Arterial 1995

ARTERIAL BT EX 15,878 x 1000 VMT Arterial 1989 x
.1493 gr./mi from Part. Mod. 1989 35 MPH. =

2371 x 1000 gr. or 2371 kg. x 2.2 lbs/kg = 5216 lbs. or **2.6 tons PM_{10}/yr. 1989**

19,498 x 1000 VMT Arterial 1995 x .1441 gr./mi from Part. Mod. 1995 35 MPH 2810 x 1000 gr. or 2810 kg x 2.2 lbs./kg = 6181 lbs. or **3.1 tons PM_{10}/yr 1995**

LOC. STREETS BT EX

1614 x 1000 VMT Local Street 1989 x .1502 gr./mi from Part. Mod. 1989 25 MPH. = 242 X 1000 gr. or 242 kg. x 2.2 lbs/kg = 533 lbs. or **.27 ton PM_{10}/yr. 1989**

1982 x 1000 VMT Local Street 1995 x .1451 gr./mi from Part. Mod. 1995 25 MPH 288 x 1000 gr. or 288 kg x 2.2 lbs./kg = 634 lbs. or **.3 ton PM_{10}/yr 1995**

ARTERIAL FUG

15,878 x 1000 VMT Arterial 1989 x 3.9 lbs/1000 VMT = 61,924 lbs. or **30.9 tons PM_{10}/yr. 1989**

19,498 x 1000 VMT Arterial 1995 x 3.9 lbs/1000 VMT = 76,042 lbs. or **38 tons PM_{10}/yr. 1995**

LOCAL ST. FUG

1614 x 1000 VMT Local Streets 1989 x 3.9 lbs/1000 VMT = 148 lbs. or **.07 ton PM_{10}/yr. 1989**

1982 x 1000 VMT Local Streets 1995 x 3.9 lbs/1000 VMT = 7730 lbs. or **3.9 tons PM_{10}/yr. 1995**

CLEARED AREAS

130 acres from 1987 Inventory x growth factor of zero x 32.6 lbs./acre = 4238 lbs or **2.1 tons PM_{10}/yr. both 1989 & 1995**

LOCOMOTIVES EX

Assume 1% growth rate .6 tons PM_{10}/yr. from 1987 Inventory x 2-yrs growth or 1.02 = **.6 ton PM_{10}/yr. 1989**

.6 ton PM_{10} /yr. x 6-yr growth or 1.06 = **.6 ton PM_{10} /yr. 1995**

Unit #26 1989 & 1995

Yearly 1989 Freeway VMT from ADOT = 12.4 x 1000 VMT x 365 days = 4526 x 1000 VMT Freeway 1989

Freeway VMT yearly growth factor from ADOT = 18.7%

4526 x 1000 VMT Freeway 1989 x
6-yr. growth factor of 112.2% =
9604 x 1000 VMT Freeway 1995

Yearly 1989 Loc. Streets VMT from 1987 Inventory =
500 x 1000 Local Streets VMT

Loc. Streets VMT yearly growth factor from ADOT for SR 189 = 3.8%
500 x 1000 VMT from 1987 Inventory x
2-yr growth rate of 7.6% =
538 x 1000 VMT Arterial 1989

538 x 1000 VMT Arterial 1989 x
6-yr. growth rate of 22.8% or 1.228 =
661 x 1000 VMT Arterial 1995

FREEWAY BT EX

4526 x 1000 VMT Freeway 1989 x
.1496 gr./mi from Part. Mod 1989 55 MPH =
677 x 1000 gr. or 677 kg x 2.2 lbs./kg. =
1490 lbs or **.7 ton PM_{10}/yr 1989**

9604 x 1000 VMT Freeway 1995 x
.1433 gr./mi from 1995 55 MPH Part. Mod =
1376 x 1000 gr. or 1376 kg. x 2.2 lbs./kg. =
3028 lbs or **1.5 ton PM_{10}/yr 1995**

LOC. STREETS BT EX

538 x 1000 VMT Local Street 1989 x
.1502 gr./mi from Part. Mod. 1989 25 MPH. =
80.8 X 1000 gr. or 80.8 kg. x 2.2 lbs/kg =
178 lbs. or **.09 ton PM_{10}/yr. 1989**

661 x 1000 VMT Local Street 1995 x
.1451 gr./mi from Part. Mod. 1995 25 MPH
96 x 1000 gr. or 96 kg x 2.2 lbs./kg =
211 lbs. or **.1 ton PM_{10}/yr 1995**

FREEWAYS - FUG.

4526 x 1000 VMT Freeways/ year 1989 X
.74 lb. PM_{10}/1000 VMT = 3349 lbs. or
1.7 ton PM_{10}/yr 1989

9604 x 1000 VMT Freeways per year 1995 x
.74 lb. PM_{10}/1000 VMT = 5109 lbs. or
2.6 tons PM_{10} /yr. 1995

LOCAL ST. FUG

538 x 1000 VMT Local Streets 1989 x
3.9 lbs/1000 VMT = 2098 lbs. or
1.0 ton PM_{10}/yr. 1989

661 x 1000 VMT Local Streets 1995 x
3.9 lbs/1000 VMT = 2578 lbs. or
1.3 ton PM_{10}/yr. 1995

CLEARED AREAS 110 acres from 1987 Inventory x growth factor of zero x 32.6 lbs./acre = 3586 lbs or **1.8 ton PM_{10}/yr. both 1989 & 1995**

Unit A 1989 and 1995

NOTE: Traffic Volume in lettered areas used counts, if available from Nogales Urban Area Transportation Study, Final Report, Final Report, September, 1991 [NUATS] or Draft I-19 Corridor Study, Task 4: Future Conditions, September, 1992

LOCAL STREETS FUG
2125' or .4 mi of paved Old Ruby Rd. x 1992 est. 50 vehicles/day = 20 daily VMT x 365 = 7.4 x 1000 yearly VMT

7.4 x 1000 yearly VMT x 3.9 lbs./1000 VMT =

Insignificant PM_{10} 1989 & 1995

Unit B 1989 & 1995

6000' of Paved Old Ruby Rd. x 1992 est. 50 cars per day

Insignificant PM_{10} 1989 & 1995

Unit C 1989 & 1995

Yearly growth rate on I-19 from ADOT = 21.2%

.7 mi. of freeway x ADOT 1989 I-19 vol. of 11 x 1000 ADT = 7.7 x 1000 daily freeway VMT x 365 = 2810 x 1000 yearly freeway 1989

For 1995, with 6-yr growth of 127.2%

2810 x 1000 1989 Freeway VMT x 2.272 = 6384 x 1000 Freeway VMT 1995

.7 mi of Freeway Access Rd x 2739 ADT from I-19 Study = 1.92 x 1000 daily arterial VMT x 365 = 700 x 1000 yearly arterial VMT 1989
Assume 6% yearly growth, then 6 yr. growth = 36% or 1.36 x 700 x 1000 1989 arterial VMT = 952 x 1000 arterial VMT 1995

.2 mi Old Tuc. Rd x 4,400 Average Daily Traffic [ADT] from NUATS =
880 daily Local Streets VMT x 365 =
321 x 1000 yearly VMT
+
.9 mi. Old Ruby Rd x 65 ADT = 58.5 VMT x 365 =
21.4 x 1000 yearly VMT or
336.6 x 1000 Total yrly Local Streets VMT 1989

Assume yearly growth of 6%, then
6-yr. growth = 36% or 1.36 x
336.6 x 1000 local street VMT 1989=
458 x 1000 yearly local street VMT 1995

FREEWAY BT EX

2810 x 1000 VMT Freeway 1989 x
.1496 gr./mi from Part. Mod 1989 55 MPH =
420.4 x 1000 gr. or 420.4 kg x 2.2 lbs./kg. =
925 lbs or **.5 ton PM_{10}/yr 1989**

6384 x 1000 VMT Freeway 1995 x
.1433 gr./mi from 1995 55 MPH Part. Mod =
915 x 1000 gr. or 915 kg. x 2.2 lbs./kg. =
2013 lbs or **1.5 ton PM_{10}/yr 1995**

ARTERIAL BT EX

700 x 1000 VMT Arterial 1989 x
.1493 gr./mi from Part. Mod. 1989 35 MPH. =
104.5 x 1000 gr. or 104.5 kg. x 2.2 lbs/kg =
230 lbs. or **.1 ton PM_{10}/yr. 1989**

952 x 1000 VMT Arterial 1995 x
.1441 gr./mi from Part. Mod. 1995 35 MPH
137 x 1000 gr. or 137 kg x 2.2 lbs./kg =
302 lbs. or **.2 ton PM_{10}/yr 1995**

LOC. STREETS BT EX

336.6 x 1000 VMT Local Street 1989 x
.1502 gr./mi from Part. Mod. 1989 25 MPH. =
50.6 X 1000 gr. or 50.6 kg. x 2.2 lbs/kg =
111 lbs. or **.06 ton PM_{10}/yr. 1989**

458 x 1000 VMT Local Street 1995 x
.1451 gr./mi from Part. Mod. 1995 25 MPH
66 x 1000 gr. or 66 kg x 2.2 lbs./kg =
145 lbs. or **.07 ton PM_{10}/yr 1995**

FREEWAY FUG.

2810 x 1000 yearly freeway 1989 x
.74 lb./1000 VMT = 2079 lbs. =
1.0 ton PM_{10} 1989

6384 x 1000 1995 freeway VMT
x .74 lb./1000 VMT = 4724 lbs =
2.4 tons PM_{10} 1995

ARTERIAL FUG

700 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 2730 lbs. or
1.4 ton PM_{10}/yr. 1989

952 x 1000 VMT arterial VMT x
3.9 lbs./1000 VMT = 3713 lbs. or
1.9 ton PM_{10} 1995

LOCAL ST. FUG

336.6 x 1000 VMT Local Streets 1989 x
3.9 lbs/1000 VMT = 1313 lbs. or
.66 ton PM_{10}/yr. 1989

458 x 1000 VMT Local Streets 1995 x
3.9 lbs/1000 VMT = 1786 lbs. or
.9 ton PM_{10}/yr. 1995

Unit D 1989 & 1995

.35 mi of paved South River Rd. x 1990 NUATS ADT of 300 ADT =
105 daily VMT x 365 days =
38.3 x 1000 Local Street VMT +
.30 mi of paved Old Tucson Rd. x 1990 NUATS ADT of 4400 =
1.3 x 1000 Local Street VMT/day x 365 =
475 x 1000 yearly Local Street VMT 1990

Assume yearly growth of 6%, then
5-yr. growth = 30% or 1.30 x
475 x 1000 local street VMT 1990 =
618 x 1000 yearly local street VMT 1995

LOC. STREETS BT EX

475 x 1000 VMT Local Street 1990 x
.1381 gr./mi from Part. Mod. 1989 25 MPH. =
65.6 X 1000 gr. or 65.6 kg. x 2.2 lbs/kg =
144 lbs. or **.07 ton PM_{10}/yr. 1989**

618 x 1000 VMT Local Street 1995 x
.1338 gr./mi from Part. Mod. 1995 25 MPH
82.7 x 1000 gr. or 82.7 kg x 2.2 lbs./kg =
182 lbs. or **.09 ton PM_{10}/yr 1995**

LOCAL ST. FUG

475 x 1000 VMT Local Streets 1989 x
3.9 lbs/1000 VMT = 1852 lbs. or
.9 ton PM_{10}/yr. 1989

618 x 1000 VMT Local Streets 1995 x
3.9 lbs/1000 VMT = 2410 lbs. or
1.2 ton PM_{10}/yr. 1995

LOCOMOTIVE EX

.1 ton PM_{10} 1989 & 1995

Unit E 1989 & 1995

1.1 mi. of paved South River Rd. x 1990 NUATS ADT of 300 ADT =
341 daily VMT x 365 days =
124.4 x 1000 Local Street VMT 1990

Assume yearly growth of 6%, then
5-yr. growth = 30% or 1.30 x
124.4 x 1000 local street VMT 1990 =
161.7 yearly local street VMT 1995

LOC. STREETS BT EX 124.4 x 1000 VMT Local Street 1990 x
.1381 gr./mi from Part. Mod. 1989 25 MPH. =
17.2 X 1000 gr. or 17.2 kg. x 2.2 lbs/kg =
37.8 lbs. or **.02 ton PM_{10}/yr. 1989**

161.7 x 1000 VMT Local Street 1995 x
.1338 gr./mi from Part. Mod. 1995 25 MPH
21.6 x 1000 gr. or 21.6 kg x 2.2 lbs./kg =
48 lbs. or **.02 ton PM_{10}/yr 1995**

LOCAL ST. FUG 124.4 x 1000 VMT Local Streets 1989 x
3.9 lbs/1000 VMT = 485 lbs. or
.2 ton PM_{10}/yr. 1989

161.7 x 1000 VMT Local Streets 1995 x
3.9 lbs/1000 VMT = 631 lbs. or
.3 ton PM_{10}/yr. 1995

Unit F 1989 & 1995

1 mi unpaved S. River Rd. x estimated from NUATS @ 300 ADT =
300 daily unpaved VMT x 365
109.5 x 1000 yearly unpaved VMT 1989

Assume 6% yearly growth
for 6-yr growth of 1.36 x
149 x 1000 yearly unpaved VMT 1995

UNPAVED RDS FUG 109.5 x 1000 VMT 1989 x
826 lbs./1000 VMT =
90,447 lbs or **45.2 tons PM_{10}/yr. 1989**

149 x 1000 VMT 1995 x
826 lbs./1000 VMT =
123,074 lbs or **61.5 tons PM_{10}/yr. 1995**

CLEARED AREAS 10,781,250 sq. ft from aerial photos x
43,560 sq.ft/acre = 247.5 cleared acres of
which 40% looks to be for grazing or vegetated
= 148.5 acres x growth factor of zero x 32.6

lbs./acre = 48,411 lbs or **24.2 tons PM_{10}/yr. both 1989 & 1995**

Unit G 1989 & 1995

CLEARED AREAS

1,687,500 sq. ft + 750,000 sq. ft
= 2,437500 sq. ft = 56 acres
x growth factor of zero x 32.6 lbs./acre =
1824 lbs or **.9 tons PM_{10}/yr. both 1989 & 1995**

Unit H 1989 & 1995

Insignificant emissions

Unit I 1989 & 1995

Insignificant emissions

Unit J 1989 & 1995

1.1 mi of SR 82 x 2800 ADT from ADOT counts 1990 =
3.080 daily VMT x 365 =
1124 x 1000 yearly arterial VMT 1990

ADOT SR 82 yearly growth = 7.3% growth, then
6 yr. growth = 43.8% or 1.438 x
1124 x 1000 1989 arterial VMT =
1616 x 1000 arterial VMT 1995

ARTERIAL BT EX

1124 x 1000 VMT Arterial 1989 x
.1373 gr./mi from Part. Mod. 1989 35 MPH. =
154 x 1000 gr. or 154 kg. x 2.2 lbs/kg =
339 lbs. or **.2 ton PM_{10}/yr. 1989**

1616 x 1000 VMT Arterial 1995 x
.1327 gr./mi from Part. Mod. 1995 35 MPH
214 x 1000 gr. or 214 kg x 2.2 lbs./kg =
472 lbs. or **.2 ton PM_{10}/yr 1995**

ARTERIAL FUG

1124 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 4384 lbs. or
2.2 tons PM_{10}/yr. 1989

1616 x 1000 VMT arterial VMT x
3.9 lbs./1000 VMT = 6303 lbs. or
3.2 ton PM_{10} 1995

CLEARED AREA

937,500 sq. ft. cleared river bed x
43,560 sq.ft./acre = 21.5 acres

x growth factor of zero x 32.6 lbs./acre =
702 lbs or **.35 ton PM_{10}/yr. both 1989 & 1995**

Unit K 1989 & 1995

Ag cleared Areas: 4 acres [using acre template]

Insignificant emissions

Unit L 1989 & 1995

.76 mi unpaved S. River Rd. x estimated from NUATS @ 500 ADT =
380 daily unpaved VMT x 365
138.7 x 1000 yearly unpaved VMT 1989

Assume 6% yearly growth
for 6-yr growth of 1.36 x
188.6 x 1000 yearly unpaved VMT 1995

UNPAVED RDS FUG 138.7 x 1000 VMT 1989 x
826 lbs./1000 VMT =
114,566 lbs or **57.3 tons PM_{10}/yr. 1989**

188.6 x 1000 VMT 1995 x
826 lbs./1000 VMT =
155,784 lbs or **77.9 tons PM_{10}/yr. 1995**

CLEARED AREA 12 acres using 1-acre template and aerial photos
x growth factor of zero x 32.6 lbs./acre =
391.2 or **.2 ton PM_{10}/yr. both 1989 & 1995**

Unit M 1989 & 1995

.38 mi unpaved S. River Rd. x estimated from NUATS @ 400 ADT =
152 daily unpaved VMT x 365
55.5 x 1000 yearly unpaved VMT 1989

Assume 6% yearly growth
for 6-yr growth of 1.36 x
75.5 x 1000 yearly unpaved VMT 1995

UNPAVED RDS FUG 55.5 x 1000 VMT 1989 x
826 lbs./1000 VMT =
45,843 lbs or **22.9 tons PM_{10}/yr. 1989**

75.5 x 1000 VMT 1995 x
826 lbs./1000 VMT =
62,363 lbs or **31.2 tons PM_{10}/yr. 1995**

CLEARED AREA 2 acres using 1-acre template and aerial photos
Insignificant Emissions

Unit N 1898 & 1995

1.0 mi unpaved S. River Rd. x estimated 5 ADT =
5 daily unpaved VMT x 365
1.85 x 1000 yearly unpaved VMT 1989

Assume 6% yearly growth
for 6-yr growth of 1.36 x
2.5 x 1000 yearly unpaved VMT 1995

UNPAVED RDS FUG 1.85 x 1000 VMT 1989 x
826 lbs./1000 VMT =
1528 lbs or **.76 tons PM_{10}/yr. 1989**

2.5 x 1000 VMT 1995 x
826 lbs./1000 VMT =
2065 lbs or **1.0 ton PM_{10}/yr. 1995**

Unit O 1989 & 1995

5.2 mi. of paved South River Rd. x 1990 NUATS ADT of 300 ADT =
1562 daily VMT x 365 days =
570.3 x 1000 S. River Rd. VMT 1990
+
.6 mi. of paved Old Tucson Rd. x 1990 NUATS ADT of 4100 ADT =
2460 daily VMT x 365 =
898 x 1000 Old Tucson Rd. VMT 1990 =

1468 x 1000 Total Local Street yearly VMT

Assume yearly growth of 6%, then
5-yr. growth = 30% or 1.30 x
570.3 x 1000 local street VMT 1990 =
1909 x 1000 yearly local street VMT 1995

LOC. STREETS BT EX 1468 x 1000 VMT Local Street 1990 x
.1502 gr./mi from Part. Mod. 1989 25 MPH. =
220 X 1000 gr. or 220 kg. x 2.2 lbs/kg =
485 lbs. or **.24 ton PM_{10}/yr. 1989**

1909 x 1000 VMT Local Street 1995 x
.1451 gr./mi from Part. Mod. 1995 25 MPH
277 x 1000 gr. or 277 kg x 2.2 lbs./kg =
609 lbs. or **.3 ton PM_{10}/yr 1995**

LOCAL ST. FUG 1468 x 1000 VMT Local Streets 1989 x
3.9 lbs/1000 VMT = 5725 lbs. or
2.9 tons PM_{10}/yr. 1989

1909 x 1000 VMT Local Streets 1995 x
3.9 lbs/1000 VMT = 7445 lbs. or
3.7 tons PM_{10}/yr. 1995

CLEARED AREA — 14 acres using 1-acre template and aerial photos
x growth factor of zero x 32.6 lbs./acre =
456 or **.2 ton PM_{10}/yr. both 1989 & 1995**

LOCOMOTIVE — **Insignificant Emissions**

Unit P 1989 & 1995

Yearly growth rate on I-19 from ADOT = 21.2%

1.0 mi. of freeway x ADOT 1989 I-19 vol. of 11 x 1000 ADT =
11 x 1000 daily freeway VMT
x 365 = 4015 x 1000 yearly freeway 1989

For 1995, with 6-yr growth of 127.2%

4015 x 1000 1989 Freeway VMT x 2.272 =
9122 x 1000 Freeway VMT 1995

.28 mi unpaved x estimated 5 ADT = 1.4 daily unpaved VMT x 365
.5 x 1000 yearly unpaved VMT 1989

Assume 6% yearly growth
for 6-yr growth of 1.36 x
.68 x 1000 yearly unpaved VMT 1995

FREEWAY BT EX — 4015 x 1000 VMT Freeway 1989 x
.1496 gr./mi from Part. Mod 1989 55 MPH =
601 x 1000 gr. or 601 kg x 2.2 lbs./kg. =
1321 lbs or **.7 ton PM_{10}/yr 1989**

9122 x 1000 VMT Freeway 1995 x
.1433 gr./mi from 1995 55 MPH Part. Mod =
1307 x 1000 gr. or 1307 kg. x 2.2 lbs./kg. =
2876 lbs or **1.4 ton PM_{10}/yr 1995**

FREEWAY FUG. — 4015 x 1000 yearly freeway 1989 x
.74 lb./1000 VMT = 2971 lbs. =
1.5 ton PM_{10} 1989

9122 x 1000 1995 freeway VMT
x .74 lb./1000 VMT = 6750 lbs =
3.4 tons PM_{10} 1995

UNPAVED RDS FUG — .5 x 1000 VMT 1989 x
826 lbs./1000 VMT =

413 lbs or **.2 tons PM_{10}/yr. 1989**

.68 x 1000 VMT 1995 x
826 lbs./1000 VMT =
562 lbs or **.3 ton PM_{10}/yr. 1995**

Unit Q 1989 & 1995

Insignificant Emssions

Unit S 1989 & 1996

CLEARED AREA 2 acres using 1-acre template and aerial photos
x growth factor of zero x 32.6 lbs./acre =
65.2 or **.03 ton PM_{10}/yr. both 1989 & 1995**

Unit T 1989 & 1995

.70 mi unpaved S. River Rd. x 1989 NUATS vol. est. @ 700 ADT =
490 daily unpaved VMT x 365
178.9 x 1000 yearly unpaved VMT 1989
+
.90 mi unpaved N. River Rd. x est. 20 ADT =
18.0 daily unpaved VMT x 365 =
6.6 x 1000 yearly unpaved VMT
+
.5 mi unpaved jeep trail x est. 1 ADT = .5 daily VMT x 365 =
.18 x 1000 yearly unpaved VMT =

185.7 x 1000 total yearly unpaved VMT

Assume 6% yearly growth
for 6-yr growth of 1.36 x
252.6 x 1000 yearly unpaved VMT 1995

UNPAVED RDS FUG 185.7 x 1000 VMT 1989 x
826 lbs./1000 VMT =
153,388 lbs or **76.7 tons PM_{10}/yr. 1989**

252.6 x 1000 VMT 1995 x
826 lbs./1000 VMT =
208,648 lbs or **104.3 tons PM_{10}/yr. 1995**

CLEARED AREA 40 acres using 1-acre template and aerial photos
x growth factor of zero x 32.6 lbs./acre =
1304 or **.65 ton PM_{10}/yr. both 1989 & 1995**

Unit U 1989 & 1995

.69 mi of SR 82 x 1600 ADT from ADOT counts 1989 =
1104 daily VMT x 365 =
403 x 1000 yearly arterial VMT 1989

ADOT SR 82 yearly growth = 7.3% growth, then
6 yr. growth = 43.8% or 1.438 x
403 x 1000 1989 arterial VMT =
579.5 x 1000 arterial VMT 1995

.45 mi unpaved N. River Rd. x vol. est. @ 40 ADT =
18 daily unpaved VMT x 365
6.57 x 1000 yearly unpaved VMT 1989

Assume 7.3% yearly growth
for 6-yr growth of 1.438 x
9.4 x 1000 yearly unpaved VMT 1995

ARTERIAL BT EX

403 x 1000 VMT Arterial 1989 x
.1373 gr./mi from Part. Mod. 1989 35 MPH. =
55.3 x 1000 gr. or 55.3 kg. x 2.2 lbs/kg =
121.7 lbs. or **.06 ton PM_{10}/yr. 1989**

579.5 x 1000 VMT Arterial 1995 x
.1327 gr./mi from Part. Mod. 1995 35 MPH
76.9 x 1000 gr. or 76.9 kg x 2.2 lbs./kg =
169.2 lbs. or **.08 ton PM_{10}/yr 1995**

ARTERIAL FUG

403 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 1572 lbs. or
.79 tons PM_{10}/yr. 1989

579.5 x 1000 VMT arterial VMT x
3.9 lbs./1000 VMT = 2260 lbs. or
1.1 ton PM_{10} 1995

UNPAVED RDS FUG

6.57 x 1000 VMT 1989 x
826 lbs./1000 VMT =
5427 lbs or **2.7 tons PM_{10}/yr. 1989**

9.4 x 1000 VMT 1995 x
826 lbs./1000 VMT =
7764 lbs or **3.9 tons PM_{10}/yr. 1995**

CLEARED AREA

3 acres using 1-acre template and aerial photos
x growth factor of zero x 32.6 lbs./acre =
97.8 lbs. or **.05 ton PM_{10}/yr. both 1989 & 1995**

Unit W 1989 & 1995

.83 mi unpaved S. River Rd. x 1989 NUATS vol. est. @ 1300 ADT =
1079 daily unpaved VMT x 365
393.8 x 1000 yearly unpaved VMT 1989
+
.59 mi unpaved Lobo Loma Rd. x est. 30 ADT =
18.0 daily unpaved VMT x 365 =
6.6 x 1000 yearly unpaved VMT
+
1.3 mi unpaved Amura Rd. x est. 15 ADT = 19.5 daily VMT x 365 =
7.1 x 1000 yearly unpaved VMT =

407.5 x 1000 total yearly unpaved VMT

Assume 6% yearly growth
for 6-yr growth of 1.36 x
554 x 1000 yearly unpaved VMT 1995

UNPAVED RDS FUG

407.5 x 1000 VMT 1989 x
826 lbs./1000 VMT =
336,595 lbs or **168.3 tons PM_{10}/yr. 1989**

554 x 1000 VMT 1995 x
826 lbs./1000 VMT =
457,604 lbs or **228.8 tons PM_{10}/yr. 1995**

CLEARED AREA

5 acres using 1-acre template and aerial photos
x growth factor of zero x 32.6 lbs./acre =
163 or **.08 ton PM_{10}/yr. both 1989 & 1995**

Unit X 1989 & 1995

.66 mi of SR 82 x 1600 ADT from ADOT counts 1989 =
1056 daily VMT x 365 =
385 x 1000 yearly arterial VMT 1989

ADOT SR 82 yearly growth = 7.3% growth, then
6 yr. growth = 43.8% or 1.438 x
385 x 1000 1989 arterial VMT =
554 x 1000 arterial VMT 1995

.95 mi. of paved Duquesne Rd. to golf course x est. 10 ADT =
9.5 daily VMT x 365 days =
3.4 x 1000 Duquesne Rd. VMT 1990
+
.88 mi. of paved road to Kino Spring x est. 20 ADT =
18 daily VMT x 365 =
6.5 x 1000 1989 =

9.9 x 1000 Total Local Street yearly VMT 1989

Assume yearly growth of 6%, then
6-yr. growth = 36% or 1.36 x
9.9 x 1000 local street VMT 1989 =
13.5 x 1000 yearly local street VMT 1995

ARTERIAL BT EX

385 x 1000 VMT Arterial 1989 x
.1373 gr./mi from Part. Mod. 1989 35 MPH. =
52.9 x 1000 gr. or 52.9 kg. x 2.2 lbs/kg =
116.3 lbs. or **.06 ton PM_{10}/yr. 1989**

554 x 1000 VMT Arterial 1995 x
.1327 gr./mi from Part. Mod. 1995 35 MPH
73.5 x 1000 gr. or 73.5 kg x 2.2 lbs./kg =
161.7 lbs. or **.08 ton PM_{10}/yr 1995**

LOC. STREETS BT EX

9.9 x 1000 VMT Local Street 1990 x
.1381 gr./mi from Part. Mod. 1989 25 MPH. =
1.4 X 1000 gr. or 1.4 kg. x 2.2 lbs/kg =
3.1 lb. or **Insignificant Emissions**

13.5 x 1000 VMT Local Street 1995 x
.1338 gr./mi from Part. Mod. 1995 25 MPH
1.8 x 1000 gr. or 1.8 kg x 2.2 lbs./kg =
4.0 lbs. or **Insignificant Emissions**

ARTERIAL FUG

385 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 1501 lbs. or
.75 ton PM_{10}/yr. 1989

554 x 1000 VMT arterial VMT x
3.9 lbs./1000 VMT = 2161 lbs. or
1.1 ton PM_{10} 1995

LOCAL ST. FUG

9.9 x 1000 VMT Local Streets 1989 x
3.9 lbs/1000 VMT = 38.6 lbs. or
.02 ton PM_{10}/yr. 1989

13.5 x 1000 VMT Local Streets 1995 x
3.9 lbs/1000 VMT = 52.7 lbs. or
.03 ton PM_{10}/yr. 1995

CLEARED AREA

25 acres using 1-acre template and aerial photos
x growth factor of zero x 32.6 lbs./acre =
815 or **.4 ton PM_{10}/yr. both 1989 & 1995**

Unit Y 1989 & 1995

.5 mi. of paved Rd. to golf course x est. 20 ADT =

10 daily VMT x 365 days =
3.65 x 1000 Duquesne Rd. VMT 1989

Assume yearly growth of 6%, then
6-yr. growth = 36% or 1.36 x
3.65 x 1000 local street VMT 1989 =
5.0 x 1000 yearly local street VMT 1995

LOC. STREETS BT EX

9.9 x 1000 VMT Local Street 1990 x
.1381 gr./mi from Part. Mod. 1989 25 MPH. =
1.4 X 1000 gr. or 1.4 kg. x 2.2 lbs/kg =
3.1 lb. or **Insignificant Emissions**

13.5 x 1000 VMT Local Street 1995 x
.1338 gr./mi from Part. Mod. 1995 25 MPH
1.8 x 1000 gr. or 1.8 kg x 2.2 lbs./kg =
4.0 lbs. or **Insignificant Emissions**

LOCAL ST. FUG

3.65 x 1000 VMT Local Streets 1989 x
3.9 lbs/1000 VMT = 14.2 lbs. or
.01 ton PM_{10}/yr. 1989

5.0 x 1000 VMT Local Streets 1995 x
3.9 lbs/1000 VMT = 19.5 lbs. or
.01 ton PM_{10}/yr. 1995

Unit Z 1989 & 1995

Insignificant Emissions

Unit AA 1989 & 1995

Insignificant Emissions

Unit BB 1989 & 1995

Insignificant Emissions

Unit CC

Insignificant Emissions

Rio Rico Unit

- Aerial Photos are 1" = 500";
- 916.25 inches [86.8 miles] of roads are in Rio Rico, Inc. Includes everything. 195.25 inches are on State Trust Land.

Therefore, 721.0 inches or 68.3 miles of road exist on Rio Rico. Half of the roads in Rio Rico Unit are unpaved = 39.2 miles but have no homesites. All homesites, according to Bill Lichtenwalter of Rio Rico, Inc. or Rio Rico adjoin paved roads.

- There appear to be approximately 250 homes in this unit;
- Assuming that a person would travel 5 miles to get to I-19 from Rio Rico and that each home site has approximately 2 potential commuters with only one using a car every day the house is occupied and every house is occupied 2/3 the time, over the course of the year, therefore:
- 250 homes x 1 driver in each home/day
  x 10 miles [to and from] =
  2500 daily VMT x 2/3 year or 245 days =
  612.5 x 1000 VMT/year on local streets of Rio Rico Estate

+

1.6 mi of paved local through truck terminals x est. daily vol of 50 ADT x 365 = 18.3 x 1000 yearly total local VMT =

<u>630.8 x 1000 total yearly local streets VMT 1989</u>

Assume yearly growth rate of 7% or
6-yr growth of 42% or 1.42 x
630.8 x 1000 local streets 1989 VMT =
<u>896 x 1000 yearly local streets VMT 1995</u>

Yearly growth rate on I-19 from ADOT = 13.7%

3.3 mi. of freeway x ADOT 1989 I-19 vol. of 13 x 1000 ADT =
42.9 x 1000 daily freeway VMT
x 365 = <u>15,658 x 1000 yearly freeway 1989</u>

For 1995, with 6-yr growth of 82.2%

15,658 x 1000 1989 Freeway VMT x 1.82 =
<u>28,530 x 1000 Freeway VMT 1995</u>

3.3 mi of I-19 Frontage Rd. x Traffic counts using east side north of Ruby Rd. interchange area frontage road I-19 1990 volumes of 5474 and an 1989 estimated 150 ADT. [total 5624 ADT] =
18.6 x 1000 daily VMT x 365 =
<u>6774 x 1000 yearly arterial VMT 1989</u>

Assume estimated yearly growth = 7.3%, then
6 yr. growth = 43.8% or 1.438 x
6774 x 1000 1989 yearly arterial VMT =
<u>9741 x 1000 arterial VMT 1995</u>

1.9 mi of unpaved road leading to sewage treatment plant x
est. 3 ADT = 5.7 daily VMT x 365 =
2.1 x 1000 yearly unpaved Sewage T.P VMT 1989

+

1.56 mi of unpaved road serving some ranches x est. 2 ADT =
3.1 daily VMT x 365 =
1.1 x 1000 yearly unpaved ranch VMT 1989 =
3.2 x 1000 total yearly unpaved road VMT 1989

Assume 0% growth, then 3.2 x 1000 total yearly unpaved road VMT 1995

FREEWAY BT EX

15,658 x 1000 VMT Freeway 1989 x
.1375 gr./mi from Part. Mod 1989 55 MPH =
2153 x 1000 gr. or 2153 kg x 2.2 lbs./kg. =
4737 lbs or **2.4 tons PM_{10}/yr 1989**

28,530 x 1000 VMT Freeway 1995 x
.1318 gr./mi from 1995 55 MPH Part. Mod =
3760 x 1000 gr. or 3760 kg. x 2.2 lbs./kg. =
8273 lbs or **4.1 tons PM_{10}/yr 1995**

ARTERIAL BT EX

6774 x 1000 VMT Arterial 1989 x
.1373 gr./mi from Part. Mod. 1989 35 MPH. =
930 x 1000 gr. or 930 kg. x 2.2 lbs/kg =
2046 lbs. or **1.0 ton PM_{10}/yr. 1989**

9741 x 1000 VMT Arterial 1995 x
.1327 gr./mi from Part. Mod. 1995 35 MPH
1293 x 1000 gr. or 1293 kg x 2.2 lbs./kg =
2844 lbs. or **1.4 ton PM_{10}/yr 1995**

LOC. STREETS BT EX

630.8 x 1000 VMT Local Street 1989 x
.1381 gr./mi from Part. Mod. 1989 25 MPH. =
87 X 1000 gr. or 87 kg. x 2.2 lbs/kg =
192 lbs. or **.1 ton PM_{10} 1989**

896 x 1000 VMT Local Street 1995 x
.1338 gr./mi from Part. Mod. 1995 25 MPH
120 x 1000 gr. or 120 kg x 2.2 lbs./kg =
264 lbs. or **.13 ton PM_{10} 1995**

FREEWAY FUG.

15,658 x 1000 yearly freeway 1989 x
.74 lb./1000 VMT = 11,587 lbs. =
5.8 tons PM_{10} 1989

28,530 x 1000 1995 freeway VMT
x .74 lb./1000 VMT = 21,112 lbs =
10.6 tons PM_{10} 1995

ARTERIAL FUG

6774 x 1000 VMT Arterial 1989 x
3.9 lbs/1000 VMT = 26,419 lbs. or
13.2 tons PM_{10}/yr. 1989

9741 x 1000 VMT arterial VMT x
3.9 lbs./1000 VMT = 37,990 lbs. or
19.0 tons PM_{10} 1995

LOCAL ST. FUG

630.8 x 1000 VMT Local Streets 1989 x
3.9 lbs/1000 VMT = 2460 lbs. or
1.23 ton PM_{10}/yr. 1989

896 x 1000 VMT Local Streets 1995 x
3.9 lbs/1000 VMT = 3494 lbs. or
1.75 ton PM_{10}/yr. 1995

UNPAVED RDS FUG

3.2 x 1000 VMT 1989 x
826 lbs./1000 VMT =
2643 lbs or **1.3 tons PM_{10}/yr. 1989 & 1995**

CLEARED AREA

2898 acres of open river bed using map measurer and aerial photos
+
268 acres of agricultural open land =
3166 total acres
x growth factor of zero x 32.6 lbs./acre =
103,212 lbs. or **51.6 tons PM_{10}/yr. cleared area for 1989 % 1995**

LOCOMOTIVE EX

Insignificant emissions

TRUCK TERMINAL & STAGING AREAS

20 acres from field estimates x
growth factor of zero x 100 lbs./acre =
2000 lb or **1 ton PM_{10}/yr. both 1989 & 1995**

FS

- 9 miles unpaved in Coronado National Forest; At peak of hunting season, the use is approximately 5-10 people x 4.5 miles of road. This according to Ann Fischer, Road Maintenance Engineer of Coronado National Forest, 670-5865. Jerry Lockwood says that a sand and gravel operation on private land within the National Forest Boundary generates approximately 15 trucks per day.

Therefore: 10 ADT x 4.5 mi = 45 daily VMT x 100 days =
450 yearly VMT for recreation +
15 ADT x 2 miles = 30 daily VMT x 365 =
11 x1000 yearly sand & gravel VMT =
<u>11.4 x 1000 total yearly VMT 1989 & 1995,</u>
assuming 0% growth rate.

UNPAVED RDS FUG

11.4 x 1000 VMT 1989 x
826 lbs./1000 VMT =
9416 lbs or **4.7 tons PM_{10}/yr. 1989 & 1995**

Notes: In numbered sections, a new source category or refinement of a numbered E-S activity level is listed in bold.
Also: cleared areas with lettered units may be overestimated because approximately 3/4 of total appears to be vegetated [yearly grazing]

APPENDIX F

RACM DESCRIPTIONS AS CONTAINED IN THE PM_{10} MODERATE AREA SIP GUIDANCE: FINAL STAFF WORK PRODUCT, ISSUED BY EPA, APRIL 2, 1991

ATTACHMENT 1

AVAILABLE FUGITIVE DUST CONTROL MEASURES

Background

The available control measures listed below apply to all fugitive dust sources except those to which reasonably available control technology (RACT) is applicable (i.e., fugitive dust associated with stationary sources). Fugitive dust is particulate matter suspended in the air either by mechanical disturbance of the surface material or by wind action blowing across the surface. Mechanical disturbance includes resuspension of particles from vehicles traveling over roadways, parking lots, and other open areas. Wind action includes dust blown off inadequately stabilized open areas. The quantity of fugitive dust emissions is dependent upon several factors such as the size of the source, emission rate, and control efficiency. The Environmental Protection Agency's (EPA) policy is to reduce fugitive dust emissions, with an emphasis on preventing, rather than mitigating, them. For example, past efforts to control emissions from paved roads have usually relied on street cleaning to reduce silt loading. The new approach would put a higher priority on measures to prevent silt from getting on the road surface. Mitigative measures should be reserved for those areas/situations where prevention is not feasible. Technical guidance on fugitive dust control measures is found in Control of Open Fugitive Dust Sources (EPA-450/3-88-008 September, 1988).

List of Available Control Measures

1. Pave, vegetate, or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.

2. Require dust control plans for construction or land clearing projects.

3. Require haul trucks to be covered.

4. Provide for traffic rerouting or rapid clean up of temporary (and not readily preventable) sources of dust on paved roads (water erosion runoff, mud/dirt carryout areas, material spills, skid control sand). Delineate who is responsible for cleanup.

5. Prohibit permanent unpaved haul roads, and parking or staging areas at commercial, municipal, or industrial facilities.

6. Develop traffic reduction plans for unpaved roads. Use of speed bumps, low speed limits, etc., to encourage use of other (paved) roads.

7. Limit use of recreational vehicles on open land (e.g., confine operations to specific areas, require use permits, outright ban).

8. Require improved material specification for and reduction of usage of skid control sand or salt (e.g., require use of coarse, nonfriable material during snow and ice season).

9. Require curbing and pave or stabilize (chemically or with vegetation) shoulders of paved roads.

10. Pave or chemically stabilize unpaved roads.

11. Pave, vegetate, or chemically stabilize unpaved parking areas.

12. Require dust control measures for material storage piles.

13. Provide for storm water drainage to prevent water erosion onto paved roads.

14. Require revegetation, chemical stabilization, or other abatement of wind erodible soil, including lands subjected to water mining, abandoned farms, and abandoned construction sites.

15. Rely upon the soil conservation requirements (e.g., conservation plans, conservation reserve) of the Food Security Act to reduce emissions from agricultural operations.

ATTACHMENT 2

AVAILABLE RESIDENTIAL WOOD COMBUSTION CONTROL MEASURES

Background

Wood smoke from residential wood stoves and fireplaces is a significant source of PM-10 pollution in areas in the western United States that do not attain the PM-10 ambient air quality standards. In some mountain communities, atmospheric inversions can trap wood smoke particulates in valleys and cause PM-10 concentrations to reach levels well in excess of the standards.

The U.S. EPA's new source performance standard (53 FR 5860, February 26, 1988) is a long-term strategy designed to improve the performance of wood burning devices nationwide. Alone, though, it will not result in attainment of the PM-10 air quality standards in areas affected by wood smoke. Additional available control measures are listed below. They are intended to (1) reduce emissions from current stoves through inspections, education, and shifting to cleaner stoves or fuel; (2) curtail the use of wood stoves or fireplaces during adverse meteorological conditions; and (3) limit future growth in emissions. Additional guidance on these measures is contained in EPA-450/2-89-015 (September 1989), Guidance Document for Residential Wood Combustion Control Measures. Nothing in this document prevents a State implementation plan (SIP) in a moderate PM-10 nonattainment area from containing control measures more stringent than RACM.

List of Available Control Measures

1. Establish an episode curtailment program, including: a curtailment plan; a communication strategy to implement the plan; a surveillance plan (e.g., "windshield" survey, opacity trigger); and enforcement provisions including procedures, penalties, and exemptions). A voluntary program will be deemed reasonable if the area demonstrates attainment.

2. Establish a public information program to inform and educate citizens about stove sizing, installation, proper operation and maintenance, general health risks of wood smoke, new technology stoves, and alternatives to wood heating.

3. Encourage improved performance of woodburning devices by:

   - Establishing a program to identify, through opacity observation, deficiencies in stove operation and maintenance. (Under such a program, advice and assistance should be provided to the identified households to help reduce visible emissions from their devices.)

   - Providing voluntary dryness certification programs for dealers and/or making free or inexpensive wood moisture checks available to burners.

   - Evaluating and encouraging, as appropriate, the accelerated changeover of existing devices to new source performance standard or other new technology stoves (e.g., hybrid designs, pellet stoves) by such approaches as subsidized stove purchases tax credits or other incentives.

4. Provide inducements that would lead to reductions in the stove and fireplace population (or use) by:

   - Slowing the growth of woodburning devices in new housing units by taxes, installation permit fees, or other disincentives.

   - Encouraging a reduction in the number of woodburning devices (i.e., removing or disabling the devices) through tax credits or other incentives.

   - Discouraging the resale of used stoves through taxes, fees, or other disincentives.

   - Discouraging the availability of free (or very inexpensive) firewood by increasing cutting fees or limiting the cutting season.

ATTACHMENT 3

PRESCRIBED BURNING CONTROL MEASURES

BACKGROUND

Prescribed burning, including silvicultural and agricultural burning, is a contributor to PM-10 nonattainment in some Regions. In many cases, well established smoke management approaches are not being followed, resulting in avoidable air quality problems. The EPA has been working closely with the National Wildfire Coordinating Group (NWCG) to develop appropriate guidance. The objective is to establish smoke management (SM) programs in these areas which constitute reasonably available control measures (RACM), and reduce population exposure to smoke from open burning, while assuring that resource management goals are met.

States should address emissions from open burning in a manner that balances natural resource, agricultural, and other burning objectives with air quality goals and objectives, by utilizing a smoke management program as described in the NWCG's Prescribed Fire Smoke Management Guide (NFES No. 1279, February 1985) and the Prescribed Fire Plan Guide (NFES No. 1939, August 1986), publications of the Boise (Idaho) Interagency Fire Center.

The scope of a SM program should reflect the specific conditions and requirements of a local area. Existing programs may be adequate in many cases and in other cases may provide a basis for developing a refined program. Smoke management should encourage the cooperative efforts of local, State, Federal, and private land managers. Emphasis should be on conducting burns under an established planning process.

For the purpose of PM-10 SIP development, the term prescribed burning includes all open burning of vegetative matter. This includes both planned ignition and prescribed natural fire. Nothing in an SM program constituting RACM is intended to influence vegetation management or fire suppression practices so as to increase the potential for wildfire to the point that natural resources or public safety are compromised.

The RACM should apply in those moderate PM-10 nonattainment areas where it has been shown, through monitoring, modeling, or other analysis that prescribed burning can or does contribute to exceedances of the PM-10 national ambient air quality standards (NAAQS). The SM program should also apply to areas outside of the nonattainment area if it is shown that prescribed burning outside of the nonattainment area can or does contribute to the exceedances. The prescribed burning RACM may be limited only to the season(s) when PM-10 exceedances occur, if it can be shown that the annual PM-10 NAAQS is not violated.

Source categories (e.g., burning of fencelines, ditch banks, small brush piles, small prescribed natural burns, garden plots) may be exempted from RACM requirements based on consideration of their collective influence on PM-10 emissions, their duration, season, and proximity to potentially affected populations.

An SM program to constitute RACM should consist of at least the following components:

SMOKE DISPERSION EVALUATION

As a minimum, the program should use National Weather Service forecasts or other meteorological analyses to determine when meteorological conditions are favorable or unfavorable for dispersion and transport of smoke (i.e., "burn days," "no burn days").

BURN PLANNING, AUTHORIZATION, AND ADMINISTRATION

The smoke management program should provide a process (e.g., telephone call-in) for receiving burn requests, evaluating requests and granting approval for burns. Approval of a burn should be based on an evaluation of the airshed's capacity/capability to disperse emissions on allowable burn days so that the cumulative emissions from all burns and other sources in the airshed will not cause or contribute to exceedances of the PM-10 NAAQS. The approval to burn on a burn day should be equitably divided among all categories of burners requesting approval to burn while accommodating the "incentives" specified elsewhere in this policy.

REQUIREMENTS FOR ENSURING BURNER QUALIFICATIONS

Voluntary training in smoke management techniques should be reasonably available for all burners. The program should include incentives for burners who complete the voluntary training (e.g., priority for approval to burn on "burn days").

PUBLIC EDUCATION AND AWARENESS

Information programs on the nature of and reasons for smoke management should be periodically presented to the public (e.g., public service announcements, newspaper articles).

SURVEILLANCE AND ENFORCEMENT

The SM program should rely on routine PM-10 monitoring, and/or modeling supplemented by periodic visual assessments of the effectiveness of the dispersion evaluation program. The existing PM-10 monitoring network should be evaluated for its ability to provide information on the effectiveness of RACM as applied to burning conducted in and near the nonattainment area.

The network should be modified as appropriate. The program should also provide a process for documenting and following up on public complaints and should provide for and levy fines against burners who violate any of its mandatory requirements.

EMISSION INVENTORIES AND EMISSION REDUCTION EFFORTS

States should develop and maintain an emission inventory for prescribed burning and all burns should be categorized as to their purpose. Documentation of the size, date, purpose, and emission reduction measures used should be submitted following each large burn. Emission reduction techniques (e.g., mass ignition, rapid mop-up) should be encouraged and incentives (e.g., priority for approval to burn on "burn days") should be offered for demonstrated emission reduction efforts, including the use of alternatives to burning, provided that such incentives can be utilized without compromising resource management objectives.

STATE OVERSIGHT

The relationship of the State air pollution agency with other State agencies to which management of the SM program may have been delegated will need to be determined on a State-by-State basis. Nevertheless, State rules and regulations should be enacted in such a manner that all provisions of the SM program are enforceable by the State through its State implementation plan. Generally, memorandums of understanding should be utilized to clearly specify working relationships among agencies.

ATTACHMENT 4

RACT DETERMINATIONS FOR STATIONARY SOURCES

BACKGROUND

Congress has for the second time in amending the Clean Air Act (Act) specifically required that reasonable available control technology (RACT) be applied to existing stationary sources in nonattainment areas. In section 172(b)(3) of the Act, as amended in 1977, Congress specified that nonattainment area plans were to "require, . . . , reasonable further progress. . . including such reduction in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology." Thus, RACT was required in SIP's developed for areas that were designated nonattainment for total suspended particulate matter. Now, in section 172(c)(1) of the Clean Air Act, as amended by the Clean Air Act Amendments of 1990 (Nonattainment Plan Provisions - In General), Congress again requires that nonattainment area plans provide for ". . . such reductions in emissions from existing sources in the [nonattainment] area as may be obtained through the adoption, at a minimum, of reasonably available control technology." Thus, RACT is now required for PM-10 nonattainment area SIP's.

The RACT for a particular source has always been determined on a case-by-case basis considering the technological and economic feasibility of reducing emissions from that source (through process changes or add-on control technology). The following technological and economic parameters should be considered in determining RACT for a particular source.

TECHNOLOGICAL FEASIBILITY

The technological feasibility of applying an emission reduction method to a particular source should consider the sources's process and operating procedures, raw materials, physical plant layout, and any other environmental impacts such as water pollution, waste disposal, and energy requirements. The process, operating procedures, and raw materials used by a source can affect the feasibility of implementing process changes that reduce emissions and the selection of add-on emission control equipment. The operation of and longevity of control equipment can be significantly influenced by the raw materials used and the process to which it is applied. The feasibility of modifying processes or applying control equipment is also influenced by the physical layout of the particular plant. The space available in which to implement such changes may limit the choices and will also affect the costs of control.

Reducing air emissions may not justify adversely affecting other resources by increasing pollution of bodies of water, creating additional solid waste disposal problems or creating excessive energy demands. [A PM-10 control technology may not be reasonable if these other environmental impacts cannot reasonably be mitigated.] For analytic purposes, a State may consider a PM-10 control measure technologically infeasible if, considering the availability (and cost) of mitigative adverse impacts of that control on other pollution media, the control would not, in the State's reasoned judgment, provide a net environmental benefit. In many instances, however, PM-10 control technologies have known energy penalties and adverse effects on other media, but such effects and the cost of their mitigation are also known and have been borne by owners of existing sources in numerous cases. Such well-established adverse effects and their costs are normal and assumed to be reasonable and should not, in most cases, justify nonuse of the PM-10 control technology. The costs of preventing adverse water, solid waste and energy impacts will also influence the economic feasibility of the PM-10 control technology.

Alternative approaches to reducing emissions of particulate matter including PM-10 are discussed in Control Techniques for Particulate Emissions from Stationary Sources - Volume I (EPA-450/3-81-005a) and Volume II (EPA-450/3-81-005b), September 1982. The design, operation and maintenance of general particulate matter control systems such as mechanical collectors, electrostatic precipitators, fabric filters, and wet scrubbers are discussed in Volume I. The collection efficiency of each system is discussed as a function of particle size. Information is also presented regarding energy and environmental considerations and procedures for estimating costs of particulate matter control equipment. The emission characteristics and control technologies applicable to specific source categories are discussed in Volume II. Secondary environmental impacts are also discussed.

Additional sources of information on control technology are background information documents for new source performance standards and Identification, Assessment, and Control of Fugitive Particulate Emissions, EPA-600/8-86-023, August 1986.

ECONOMIC FEASIBILITY

Economic feasibility considers the cost of reducing emissions and the difference in costs between the particular source and other similar sources that have implemented emission reductions. As discussed above, EPA presumes that it is reasonable for similar sources to bear similar costs of emission reduction. Economic feasibility rests very little on the ability of a particular source to "afford" to reduce emissions to the level of similar sources. Less efficient sources would be rewarded by having to bear lower emission reduction costs if

affordability were given high consideration. Rather, economic feasibility for RACT purposes is largely determined by evidence that other sources in a source category have in fact applied the control technology in question.

The capital costs, annualized costs, and cost effectiveness of an emission reduction technology should be considered in determining its economic feasibility. The OAQPS Control Cost Manual, Fourth Edition, EPA-450/3-90-006, January 1990, describes procedures for determining these costs. The above costs should be determined for all technologically feasible emission reduction options.

States may give substantial weight to cost effectiveness in evaluating the economic feasibility of an emission reduction technology. The cost effectiveness of a technology is its annualized cost ($/year) divided by the amount of PM-10 emission reduction (i.e., tons/year) which yields a cost per amount of emission reduction ($/ton). Cost effectiveness provides a value for each emission reduction option that is comparable with other options and other facilities.

If a company contends that it cannot afford the technology that appears to be RACT for that source or group of sources, the claim should be supported with such information as the impact on:

1. fixed and variable production costs ($/unit),
2. product supply and demand elasticity,
3. product prices (cost absorption vs. cost pass-through),
4. expected costs incurred by competitors,
5. company profits, and
6. employment.

If a company contends that RACT is not affordable and would lead to closing the facility, the costs of closure should be considered. Closure may incur costs for demolition, relocation, severance pay, etc.

APPENDIX G

RACM AS IMPLEMENTED IN THE NOGALES PM_{10} NON-ATTAINMENT AREA BY THE ARIZONA DEPARTMENT OF TRANSPORTATION

4/19/93

4/19/93

4/20/93

NOGALES SIP ADMINISTRATIVE AND TECHNICAL
RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

NUMBER: NOG #1

CONTROL MEASURE: Pave, vegetate or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.

TARGET SOURCE: Fugitive dust from trackout onto paved surfaces.

RESPONSIBLE AGENCY: Arizona Department of Transportation (ADOT) is responsible for facilities on the State Highway System. It has been and will continue to be ADOT policy to pave to ADOT's right-of-way line when an unpaved road adjoins a paved road that is on the State Highway System.

ORDINANCE/POLICY/
PROCEDURE/OPERATIONS: Pursuant to Arizona Revised Statute 28-108, ADOT adopted "Encroachments in Highway Rights-of-Way" (Rule 17-3-712) on July 6, 1981. The rules and regulations established initial encroachment placement, adjustment, relocation, reconstruction and replacement for use of State highway rights-of-way. Access is permitted in accordance with Driveway & Turnout Layouts standards. Permits are issued only for the construction of new turnouts and driveways or changing the location of an existing driveway. They are not issued for the purpose of providing a parking area on highway right-of-way.

Parenthetically, when a State highway is being reconstructed or resurfaced, ADOT standard operating procedures allow for turnout paving for an entire legal and permitted encroachment from the highway pavement edge to the right-of-way line.

In addition to the above, R17-3-712 sets a Landscaping regulation. This identifies the highway roadside as an integral unit of a total highway facility and the term "roadside" to generally refer to the area between the outer edge of the roadway and the right-of-way boundary, including all unpaved areas within the right-of-way. Roadside Development Landscaping Permit Guidelines are available to applicants upon request.

The regulation, Maintenance Responsibility (Section "J." of R17-3-712), requires the adjacent property owners having access to a State highway to be fully responsible and liable for costs for the maintenance of their driveway including the portion from the highway right-of-way line to the outside edge of the highway shoulder or curbline, keeping that portion in a safe condition for the general public.

The City of Nogales entered into a Maintenance Agreement with ADOT, effective since February 9, 1982, to sweep and clean the roadway surfaces, sidewalks and curbs of I-19 from Grand Avenue

NOGALES SIP ADMINISTRATIVE AND TECHNICAL
RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

NUMBER: NOG #1

CONTROL MEASURE: Pave, vegetate or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.

TARGET SOURCE: Fugitive dust from trackout onto paved surfaces.

RESPONSIBLE AGENCY: Arizona Department of Transportation (ADOT) is responsible for facilities on the State Highway System. It has been and will continue to be ADOT policy to pave to ADOT's right-of-way line when an unpaved road adjoins a paved road that is on the State Highway System.

ORDINANCE/POLICY/
PROCEDURE/OPERATIONS: Pursuant to Arizona Revised Statute 28- 108, ADOT adopted "Encroachments in Highway Rights-of-Way" (Rule 17-3-712) on July 6, 1981. The rules and regulations established initial encroachment placement, adjustment, relocation, reconstruction and replacement for use of State highway rights-of-way. Access is permitted in accordance with Driveway & Turnout Layouts standards. Permits are issued only for the construction of new turnouts and driveways or changing the location of an existing driveway. They are not issued for the purpose of providing a parking area on highway right-of-way.

Parenthetically, when a State highway is being reconstructed or resurfaced, ADOT standard operating procedures allow for turnout paving for an entire legal and permitted encroachment from the highway pavement edge to the right-of-way line.

In addition to the above, R17-3-712 sets a Landscaping regulation. This identifies the highway roadside as an integral unit of a total highway facility and the term "roadside" to generally refer to the area between the outer edge of the roadway and the right-of-way boundary, including all unpaved areas within the right-of-way. Roadside Development Landscaping Permit Guidelines are available to applicants upon request.

The regulation, Maintenance Responsibility (Section "J." of R17-3-712), requires the adjacent property owners having access to a State highway to be fully responsible and liable for costs for the maintenance of their driveway including the portion from the highway right-of-way line to the outside edge of the highway shoulder or curbline, keeping that portion in a safe condition for the general public.

The City of Nogales entered into a Maintenance Agreement with ADOT, effective since February 9, 1982, to sweep and clean the roadway

surfaces, sidewalks and curbs of I-19 from Grand Avenue to West Street and Business-19 (Grand Avenue and Arroyo Boulevard) from the International Boundary to the north city limits boundary.

IMPLEMENTATION
SCHEDULE/OPERATION: Paving unpaved surfaces that adjoin facilities on the State Highway System is an ongoing effort of ADOT in conjunction with all pavement preservation and reconstruction projects. The schedule for future construction projects in the Nogales Non-Attainment Area is set forth in the Five-Year Transportation Facilities Construction Program.
The City of Nogales is expected to sweep and clean according to the aforementioned Maintenance Agreement. Tracking out of mud and dirt is most prevalent during the heavy trucking season of October through April when vegetable crops are being harvested in Mexico.

AUTHORITY CITATION: The legal responsibilities of ADOT are established in Title 28 of the Arizona Revised Statutes. It is within the framework of these statutes that the Department plans, constructs, and maintains a safe, efficient and modern transportation system which is responsive to the transportation needs of Arizona. The exclusive control and jurisdiction over State highways and all State-owned transportation facilities is vested in ADOT.

FINANCING AND MAN-
POWER RESOURCES: Paving unpaved traffic surfaces that adjoin paved roads is a routine construction expense paid from the appropriate Federal, State, and local funds. Routine maintenance budgets include street sweeping.

Technical Documentation

COMMITTED LEVEL OF EFFORT: ADOT will review its existing policy relative to the above Control Measure and adapt accordingly within reasonable budgetary limitations. ADOT will assist in the City's monitoring and reporting to the Arizona Department of Environmental Quality.
METHODS OF MONITORING
IMPLEMENTATION AND
EFFECTIVENESS: ADOT construction inspectors determine contractor compliance with contract specifications.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL
RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

NUMBER: NOG #2

CONTROL MEASURE: Require dust control plans for construction or land clearing.

TARGET SOURCE: Construction dust.

RESPONSIBLE AGENCY: The Arizona Department of Transportation (ADOT) includes dust control as a part of roadway construction projects whenever such control is appropriate. ADOT Standard Specifications for Road and Bridge Construction, Section 207 Dust Palliative, describe what measures must be applied, the circumstances when they should be applied and the objectives of the application of these measures.

ORDINANCE/POLICY/
PROCEDURE/OPERATIONS: ADOT, as constituted under the laws of the State of Arizona, enforces through its Highways Division the Standard Specifications for Road and Bridge Construction, Edition of 1990. Section 107 Legal Relations and Responsibility to Public includes guidance for an environmental analysis to be acceptable, specifically addressing procedures to minimize dust in pits and on haul roads to mitigate the effects of such dust.
Section 207 Dust Palliative requires control of dust by contractors as considered necessary for (1) the safety and convenience of the traveling public, (2) the reduction of the dust nuisance to adjacent property, (3) the allaying of dust in crusher and pit operations and on roads used to haul materials, and (4) other purposes as directed by the Engineer.

IMPLEMENTATION
SCHEDULE/OPERATION: Dust control activities related to roadway construction on the State Highway System is an ongoing requirement of the Department. It is "codified" in ADOT's Standard Specifications for Road and Bridge Construction by which contractors develop plans and estimates. For example, Subsection 207-3 requires the use of pressure pumps and spray bars on all sprinkling equipment used for the application of dust palliative. Also, chemical additives are referred to in mixing with water to suppress dust.

AUTHORITY CITATION: See NOG #1.

FINANCING AND MAN-
POWER RESOURCES: Dust control is paid for as a routine construction expense using applicable Federal, State, and local funds.

Technical Documentation

COMMITTED LEVEL OF EFFORT: ADOT requires dust control plans for construction or land clearing. Inspectors are on construction sites daily with focus on the end product.

METHODS OF MONITORING IMPLEMENTATION AND EFFECTIVENESS: ADOT construction inspectors determine compliance with contract specifications.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL
RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

NUMBER: NOG #3

CONTROL MEASURE: Require haul trucks to be covered.

TARGET SOURCE: Dust generated from waste and construction materials in haul trucks during transit.

RESPONSIBLE AGENCY: Arizona Department of Transportation (ADOT).

ORDINANCE/POLICY/
PROCEDURE/OPERATIONS: ADOT compiled provisions and requirements for performance of prescribed contractual work into the Standard Specifications for Road and Bridge Construction. Subsection 107.01 "Laws to be Observed" specifies that the contractor shall keep fully informed of all Federal and State laws, all local laws, ordinances and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any way affect the conduct of the work. In addition, the observance and compliance by contractors with all laws, ordinances, regulations, orders and decrees is required.

IMPLEMENTATION
SCHEDULE/OPERATION: ADOT policy is consistent with sound policy in respect to the safety and convenience of the traveling public. Similarly, contractors are required to control dust, as noted in Standard Specs 207-1.

AUTHORITY CITATION: See NOG #1.

FINANCING AND MAN-
POWER RESOURCES: As needed to comply with above.

Technical Documentation

COMMITTED LEVEL OF EFFORT: As noted above.

METHODS OF MONITORING
IMPLEMENTATION AND
EFFECTIVENESS: Inspectors enforce regulations daily.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL
RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

NUMBER: NOG #4

CONTROL MEASURE: Provide for traffic rerouting or rapid cleanup of temporary (and not readily preventable) sources of dust on paved roads (water erosion, mud/dirt carryout areas, material spills, skid control sand). Delineate who is responsible for cleanup.

TARGET SOURCE: Trackout of mud and dirt onto paved high-volume traffic areas from construction or heavy rainfall.

RESPONSIBLE AGENCY: The Arizona Department of Transportation has the responsibility for the maintenance of the State Highway System.

ORDINANCE/POLICY/
PROCEDURE/OPERATIONS: Standard Specifications Section 104.03 (C) reflects ADOT's commitment to ensure the safety of the traveling public through a project site. As judged by the Engineer, work includes sweeping, roadway repair, and debris removal. Section 701 requires maintenance and protection of traffic in accordance with ADOT's Traffic Control Manual for Highway Construction and Maintenance. The requirements of the Traffic Control Manual shall be considered as the minimum standards for the protection of workmen and the traveling public. Furthermore, this Section states that "the traffic control and safety plan of the contractor, along with his work schedule and actual operations, shall be such that no condition that is considered to be unsafe shall exist."

The City of Nogales entered into a Maintenance Agreement with ADOT, effective since February 9, 1982, to sweep and clean the roadway surfaces, sidewalks, and curbs of I-19 from Grand Avenue to West Street and Business-19 (Grand Avenue and Arroyo Boulevard) from the International Boundary to the north city limits boundary.

IMPLEMENTATION
SCHEDULE/OPERATION: Specifications Section 701-3.01 requires that contractors promptly remove any material or debris that is spilled or tracked onto the traveled roadway as a result of the prosecution of the work. Revised Specs Section 107.15 states that the contractor shall implement the requirements of the National Pollutant Discharge Elimination System for erosion control due to storm water runoff during construction, as specified under the Environmental Protection Agency General Permit for Arizona. District II maintenance crews provide rapid clean-up of significant temporary sources of dust on State Highways upon identification. The City of Nogales is under agreement with ADOT to keep mud and dirt off of certain lengths of State highways, as aforementioned.

AUTHORITY CITATION: See NOG #1.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL
RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

NUMBER: NOG #5: Refer to NOG #11...

CONTROL MEASURE: Prohibit permanent unpaved haul roads, and parking or staging areas at commercial, municipal, or industrial facilities.

TARGET SOURCE: Trackout from unpaved areas onto paved roadways and prevention of dust entrained into the air from heavy vehicular traffic over unpaved surfaces.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL
RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

NUMBER: NOG #9

CONTROL MEASURE: Require curbing and pave or stabilize (chemically or with vegetation) shoulders of paved roads.

TARGET SOURCE: Prevents loading of dirt and mud onto paved surfaces with high traffic volumes.

RESPONSIBLE AGENCY: The Arizona Department of Transportation (ADOT) promotes the stabilizing of shoulders through naturally vegetated grasses. Vegetation on roadsides is beneficial in controlling erosion, dust and sedimentation.

ORDINANCE/POLICY/
PROCEDURE/OPERATIONS: ADOT Standard Specs Section 101.50 "Roadside Development" requires the rehabilitation and protection against erosion of all areas disturbed by construction through seeding, sodding, mulching and the placing of other ground covers. As stated in the Overview of ADOT's Roadside Vegetation Management Program, ADOT shall "provide for the prevention and control of soil erosion within the right-of-way and adjacent lands that may be affected by the operation or maintenance of the highway."

IMPLEMENTATION
SCHEDULE/OPERATION: An objective of ADOT is to have vegetation growing on all roadside areas where its presence is appropriate. The Roadside Vegetation Maintenance Program coordinates activities in such a manner that the safety, appearance, stability and resource benefits of ADOT's roadways are improved.

AUTHORITY CITATION: See NOG #1.

FINANCING AND MAN-
POWER RESOURCES: A major component of highway maintenance is Roadside Vegetation Management, which is carried out by ADOT Maintenance Section and District II in the Nogales Non-Attainment Area.

Technical Documentation

COMMITTED LEVEL OF EFFORT: ADOT meets highway safety standards, which includes stabilization of shoulders.

METHODS OF MONITORING
IMPLEMENTATION AND
EFFECTIVENESS: ADOT construction inspectors ascertain contractor compliance with contract specifications. Also, maintenance of the

state highway system is conducted through a uniform policy for managing ADOT roadsides.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL
RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

NUMBER: NOG #11

CONTROL MEASURE: Pave, vegetate, or chemically stabilize unpaved parking areas.

TARGET SOURCE: Entrained dust from vehicular traffic over unpaved parking surfaces.

RESPONSIBLE AGENCY: The Arizona Department of Transportation (ADOT) will have one unpaved parking area in the new maintenance yard under development.

ORDINANCE/POLICY/
PROCEDURE/OPERATIONS: ADOT stabilizes unpaved parking areas.

IMPLEMENTATION
SCHEDULE/OPERATION: ADOT's Land, Buildings & Improvement (LBI) budgetary process operates through a five-year cycle.

Technical Documentation

COMMITTED LEVEL OF EFFORT: ADOT will all-weather surface, within the LBI timeframe, the parking area to be in the new Nogales Area maintenance yard under development. Intermediate dust abatement measures will be taken.

METHODS OF MONITORING
IMPLEMENTATION AND
EFFECTIVENESS: The planned all-weathering project will be accomplished through the LBI budgetary process.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL
RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

NUMBER: NOG #12

CONTROL MEASURE: Require dust control measures for material storage piles.

TARGET SOURCE: Wind blown dust emanating from piles of dirt and fill material.

RESPONSIBLE AGENCY: Arizona Department of Transportation (ADOT).

ORDINANCE/POLICY/
PROCEDURE/OPERATIONS: A good neighbor policy as well as a legal obligation dictates that ADOT storage piles should not create a dust nuisance to adjacent property (note Standard Specs 207-1). Under construction conditions, materials shall be so stored as to insure the preservation of their quality and fitness for the work (Specs 106.09).

IMPLEMENTATION
SCHEDULE/OPERATION: Whenever ADOT has storage piles, it will control dust.

Technical Documentation

COMMITTED LEVEL OF EFFORT: See above.

METHODS OF MONITORING
IMPLEMENTATION AND
EFFECTIVENESS: The measures will be monitored through normal ADOT managing/reporting processes.

NOGALES SIP ADMINISTRATIVE AND TECHNICAL
RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

NUMBER: NOG #13

CONTROL MEASURE: Provide for storm water drainage to prevent water erosion onto paved roads.

TARGET SOURCE: Loading of dirt and mud onto heavy vehicular traffic areas.

RESPONSIBLE AGENCY: The Arizona Department of Transportation (ADOT) includes storm water drainage as a part of roadway construction projects whenever such storm water drainage is required. Maintenance forces are alert to clean up or recommend ways to prevent erosion onto paved roads. In addition, access permit applications are reviewed for consideration of the factors which can affect the safe and efficient operation of the highway facility.

ORDINANCE/POLICY/
PROCEDURE/OPERATIONS: ADOT revised Standard Specs Section 107, entitled "Legal Relations and Responsibility to the Public," documents contractors' responsibility to implement the requirements of the National Pollutant Discharge Elimination System for erosion control due to storm water runoff during construction, as specified under the Environmental Protection Agency General Permit for Arizona. The contractor shall take such precautions as may be necessary to provide for normal drainage. In addition, contractors must prepare a comprehensive Storm Water Pollution Prevention Plan to include a schedule for accomplishing and maintaining erosion control elements, the sweeping of roadways related to hauling activities, and other features.

Encroachments in Highway Rights-Of-Way, Rule Number R 17-3-712, identifies responsibility of State Highway access permittees to include maintenance of ditches, pipes, catch basins and grates placed in connection with encroachment permits. This Rule further states that if an emergency exists wherein there is an immediate hazard to the highway, ADOT may perform the required remedial maintenance, and the permit owner shall be liable for all such costs incurred.

IMPLEMENTATION
SCHEDULE/OPERATION: Storm water drainage related to roadway construction on the State Highway System is an ongoing requirement of ADOT. As common practice, ADOT takes care of its own storm water, controlling into catch basins. Storm water drainage is paid for as a routine construction expense using applicable Federal, State, and local funds.

Technical Documentation

COMMITTED LEVEL OF EFFORT: During the last three years when a mile of State Highway 189 (Business-19 to Interstate-19) was widened at a cost of $3.5 million, ADOT built a complete system to control storm water. Also, the scheduled $10 million widening project of the remaining nearly three miles of SR 189, from the International Border to I-19, will include storm water control during and after construction.

METHODS OF MONITORING
IMPLEMENTATION AND
EFFECTIVENESS: ADOT construction inspectors determine compliance with contract specifications.

INTERGOVERNMENT MAINTENANCE AGREEMENT
CITY OF NOGALES AND ARIZONA DEPARTMENT OF TRANSPORTATION

File
Maint
Agree

ARIZONA DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION
206 South Seventeenth Avenue Phoenix, Arizona 85007

BRUCE BABBITT
Governor
WILLIAM A. OROWAY
Director

February 23, 1982

THOMAS R. LAMMERS
Assistant Director
and State Engineer

RECEIVED
MAR 03 1982
DISTRICT 2

The Honorable F. D. Fontes
Mayor, City of Nogales
1018 Grand Avenue
Nogales, Arizona 85621

Dear Mayor Fontes:

Enclosed for your records are two-fully executed copies of an Intergovernmental Maintenance Agreement between the City of Nogales and the Arizona Department of Transportation, Highways Division.

Very truly yours,

E. F. SANDLIN
Deputy State Engineer

EFS/aa
Enclosures (2)
cc - J. B. Mertz w/o enclosure
John V. Kulinovich w/enclosure
Carlie Bowmer w/enclosure

HIGHWAYS • AERONAUTICS • MOTOR VEHICLE • PUBLIC TRANSIT • ADMINISTRATIVE SERVICES • TRANSPORTATION PLANNING

ADOT-PRIORITY PROGRMNG TEL:602-255-6917 Mar 08 93 14:14 No.003 P.02

A.G. CONTRACT NO. 81-67

INTERGOVERNMENTAL AGREEMENT
BETWEEN
THE STATE OF ARIZONA
AND
THE CITY OF NOGALES

MAINTENANCE AGREEMENT

THIS AGREEMENT, entered into pursuant to A.R.S. 11-951 through 11-954, by and between the STATE OF ARIZONA, acting by and through the ARIZONA DEPARTMENT OF TRANSPORTATION, hereinafter called "STATE," and the CITY OF NOGALES a municipal corporation, hereinafter called "CITY."

WHEREAS, the Director, Arizona Department of Transportation is empowered by A.R.S. 28-108 to enter into this Agreement, and has duly authorized the Assistant Director, Highways Division, to execute the same, said authorization being attached hereto and incorporated herein as Exhibit A;

WHEREAS, the CITY, acting by and through its duly elected governing body, has, pursuant to A.R.S. 9-672, by that certain resolution attached hereto and incorporated herein as Exhibit B, resolved to enter into this Agreement and has authorized the undersigned as its representative to execute the same on behalf of said CITY;

WHEREAS, it is to the mutual benefit of the STATE and the CITY to enter into an agreement specifying their respective construction and maintenance responsibilities concerning certain State highway routes which are encompassed within the CITY'S system of streets and which form necessary and convenient links in the State Highway System, which streets and highways are more particularly set forth and delineated upon the map attached hereto and incorporated herein as Exhibit C.

Portions of the State Highway System covered by this Agreement shall be

I-19, Nogales - Tucson Freeway
(Begins at West Street north to Tucson)

I-19, Nogales - I-19 connection
(Begins at Grand Ave., west on Crawford St., south on Sonoita Ave. to the old Truck Compound, west to West Street.

US-89, Nogales - Tucson Highway
(Grand Ave. and Arroyo Blvd.)

SR-82, Nogales - Lowell Highway

NO. 7641
FILED WITH SECRETARY OF STATE
Date Filed 2-17-82
Secretary of State

ADOT-PRIORITY PROGRMNG TEL:602-255-6917 Mar 08 93 14:15 No.003 P.03

SR-189, Nogales Truck Compound Road
(Truck Compound to I-19)

SR-189, Mariposa Road
(I-19 to HWY US-89)

NOW, THEREFORE, the parties hereto mutually agree to the following:

1. Except as otherwise expressly provided in this Agreement, the STATE shall be responsible for the following maintenance and construction of betterments on those highways and streets delineated on Exhibit C.

a. Construction of betterments, reconstruction or major maintenance of roadway, curbs, sidewalks, medians and channelization; and

b. Bridges and drainage; and

c. Guardrails and fences; and

d. Transportation permits, such as overweight, overwidths and overheight as prescribed by law; and

e. Permits for highway right-of-way encroachments and use; and

f. Resurfacing, resealing, construction and replacement of roadways; and

g. Furnish and maintain all traffic control signs (except street name and parking signs), and lane, crosswalk and initial parking striping. Electrical devices, including but not limited to traffic signals and intersection lighting, will be covered by separate agreement and will be governed by that agreement.

2. Except as otherwise expressly provided in this Agreement, the City, for routes

I-19, Nogales - I-19 Connection
(Begins at Grand Ave, west on Crawford St., South on Sonoita Ave. to the old Truck Compound, west to West St.)

US-89, Nogales - Tucson Highway
(Grand Ave. and Arroyo Blvd.)
From International Boundary to Old North

City Limits Boundary (MP 1.69)

shall have responsibility for and provide:

a. Routine maintenance (including sweeping, cleaning) of roadway surfaces, sidewalks, curbs; and

b. Maintenance of landscaping (including water); provided that landscape maintenance covered by separate agreement will be by that agreement; and

c. Street lighting and street lighting maintenance. Street or boulevard lighting may be installed only after approval of Permit Form 22-5101. Street lighting will be installed consistent with good engineering practice so as not to interfere with or obstruct any signal or other traffic device. Maintenance consists of all repairs and replacement of equipment and includes energy charges; and

d. Parking striping (after initial installation); and

e. Street name and parking signs.

and for routes

SR-92, Nogales - Lowell Highway

SR-189, Mariposa Road

shall have responsibility for and provide:

f. Routine maintenance of sidewalk area and cleaning of sidewalks.

3. Upon the annexation of any area by the CITY which is traversed by any STATE highway, that length of such highway which is within the annexation boundaries shall become subject to the terms of this Agreement, and the CITY shall furnish the STATE a revised map indicating the portion or portions of STATE's highway affected, which map shall be incorporated herein as an amendment to this Agreement.

4. Those certain regulations captioned "Authorized Position of Advertising Signs Along State Highway Right-of-Way" attached hereto and incorporated herein as Exhibit "D" shall be adhered to by the CITY except, however, that the CITY may enforce more restrictive regulations if authorized by law.

5. The CITY shall, by appropriate policies of insurance or through self-insurance programs, provide full liability and property damage coverage on all employees engaged in performing those duties herein agreed to be performed by the CITY. Any such coverage shall include misfeasance, nonfeasance and malfeasance. The CITY will maintain the insurance for the period of this Agreement.

6. The CITY shall set aside sufficient funds to cover cost of fulfilling its responsibilities set forth in this Agreement.

7. As required by A.R.S. 28-641, the CITY shall comply with the Manual on Uniform Traffic Control Devices for Streets and Highways during all maintenance operations conducted by the CITY on State Highway Right-of-Way.

8. The terms, conditions and provisions of this Agreement shall remain in full force and effect for a period of five (5) years from the effective date unless terminated earlier by mutual consent of the parties hereto or unless this Agreement violates any Arizona law rule or regulation, either now enacted or which may be enacted in the future. This Agreement will be automatically renewed for successive periods of five (5) years unless either party shall give notice in writing to the other not less than one (1) month nor more than three (3) months prior to the initial or renewed expiration date.

9. That this Agreement shall supersede all previous street maintenance agreements, except those agreements for traffic control devices, safety illumination and roadside development.

10. That all work performed under the provisions of this Agreement shall be performed in a manner satisfactory to the STATE.

11. That this Agreement shall be filed with the Secretary of the State and shall become effective on the date of such filing.

12. Attached here to are resolutions of the Department of Transportation (Exhibit A) and the CITY of NOGALES (Exhibit B) authorizing both entities to enter into this Agreement; and a written determination by the CITY Attorney of NOGALES (Exhibit B) that this Agreement is in proper form and within the powers and authority granted to the CITY of NOGALES under the laws of this State.

13. All parties are hereby put on notice that this contract (Agreement) is subject to cancellation by the Governor pursuant to Arizona Revised Statutes, Section 38-511.

IN WITNESS WHEREOF, the parties have executed this Agreement that date and year first written above.

STATE OF ARIZONA
ARIZONA DEPARTMENT OF TRANSPORTATION

By: _____

Title: Chief Deputy State Engineer

CITY OF NOGALES

By: _____

Title: MAYOR

ATTEST:

_____

CITY CLERK

ADOT-PRIORITY PROGRMNG TEL:602-255-6912 Mar 08 93 14:17 No.003 P.07

RESOLUTION

Be it resolved on this date, February 9, 1982 I, W. A. ORDWAY, the below undersigned Director, Department of Transportation, have determined that it is to be to the advantage of the State of Arizona that the Department of Transportation, acting by and through the Highways Division, and the CITY OF NOGALES, enter into the Intergovernmental Agreement for the purpose of maintaining certain State Highway Routes which are encompassed within the CITY'S system of streets and which form necessary and convenient links in the State Highway System. I hereby authorize the Assistant Director, Highways Division, to execute said Agreement.

WILLIAM A. ORDWAY, Director
Arizona Dept. of Trans.

EXHIBIT "A"

RESOLUTION NO. B-42

A RESOLUTION OF THE MAYOR AND COMMON COUNCIL OF THE CITY OF NOGALES, ARIZONA DECLARING AS A PUBLIC RECORD THAT CERTAIN DOCUMENT FILED WITH THE CITY CLERK AND ENTITLED "INTERGOVERNMENTAL AGREEMENT" BETWEEN THE STATE OF ARIZONA AND THE CITY OF NOGALES, TO PROVIDE MAINTENANCE TO THOSE STATE HIGHWAY ROUTES WHICH ARE ENCOMPASSED WITHIN THE CITY'S SYSTEM OF STREETS AND WHICH FORM NECESSARY AND CONVENIENT LINKS IN THE STATE HIGHWAY SYSTEM, AND DECLARING AN EMERGENCY.

WHEREAS, the CITY OF NOGALES, acting by and through its duly elected governing body, has pursuant to A.R.S. 9-672, resolved to enter into an agreement with the Arizona Department of Transportation; and

WHEREAS, it is to the mutual benefit of the City of Nogales and the Arizona Department of Transportation to enter into this agreement specifying their respective construction and maintenance responsibilities concerning certain State Highway routes which form necessary and convenient links in the State Highway System, which streets and highways are more particularly set forth and delineated upon the map attached; and

WHEREAS, the terms, conditions and provisions of this agreement are set forth in the attached agreement and shall remain in full force and effect for a period of five (5) years from the effective date unless terminated earlier by mutual consent of the parties hereto or unless this agreement violates any Arizona law rule or regulation, either now enacted or which may be enacted in the future; and

WHEREAS, all parties are hereby put on notice that this contract (agreement) is subject to cancellation by the Governor pursuant to A.R.S., Section 38-511.

WHEREAS, the immediate operation of the provisions of this Resolution is necessary for the preservation of the public peace, health and safety of the City of Nogales, an emergency is hereby declared to exist, and this Resolution shall be in full force and effect from and after its passage and approval by the Mayor and the Council of the City of Nogales and it is hereby exempt from the referendum provisions of the Constitution and laws of the State of Arizona.

PASSED, by the Nogales, Arizona, City Council, this 20th day of NOVEMBER 1981.

APPROVED by the Mayor this 20th day of NOVEMBER 1981.

MAYOR

ATTEST:

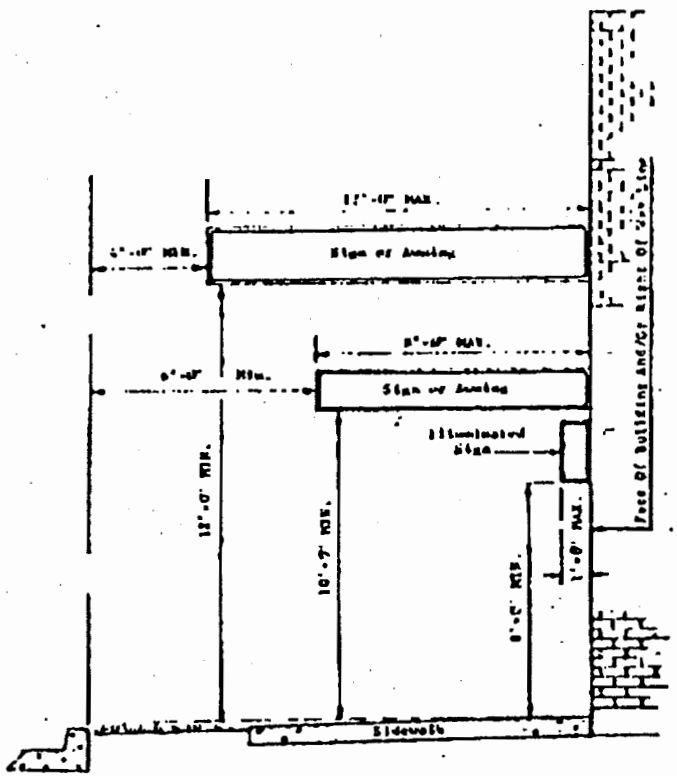
CITY CLERK

APPROVED AS TO FORM:

CITY ATTORNEY

EXHIBIT "B"

ADOT-PRIORITY PROGRMNG TEL:602-255-6917 Mar 08 93 14:18 No.003 P.11



TYPICAL DETAIL

GENERAL NOTES

1. A permit is required for all overhanging overhanging signs and awnings. These signs and awnings are permitted in zoned urban areas for on premise advertising.

2. No advertising signs are allowed on any Interstate or Rural Highway rights of way. Signs on frontage roads within Highway R/W in urban areas are permitted by this standard.

3. Signs with words "Stop", "Slowdown", etc. or signs similar in shape or color to official traffic signs are not permitted.

4. Lengths of signs and awnings may vary as shown except where City or County ordinances provide smaller maximums.

5. Illuminated signs attached to a building facing the R/W are permitted as shown.

6. An outdoor advertising permit is required for off premise signs.

7. Ground supported or portable signs shall not be placed within any right of way areas.

ARIZONA
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD PLANS
PERMIT REGULATIONS
FOR SIGNS AND AWNINGS

Exhibit D

APPENDIX H

SUPPORTING DOCUMENTATION FOR RACM AS IMPLEMENTED BY LOCAL JURISDICTIONS

RIO RICO PERMISSIVE RECREATIONAL USE AGREEMENT

Post-it™ brand Fax Transmittal Memo 7672

To Joe Gibbs
Company AZ Dept. of Environmental Quality
Location
Fax # 207-2366 Telephone #
Comments

No. of Pages 4 Today's Date 4/6 Time
From Bill Lichtenwalter
Company Rio Rico Properties
Location Dept. Charge
Fax # 281-8444 Telephone # 281-8451
Original Disposition: ☐ Destroy ☐ Return ☐ Call for pickup

PERMISSIVE RECREATIONAL USE AGREEMENT

THIS AGREEMENT made and entered into this _____ day of _____, 19_____, by and between RIO RICO PROPERTIES, INC., an Arizona Corporation, having its principal office at 1410 Rio Rico Drive, Rio Rico, Arizona 85621, hereinafter called "LESSOR" and _____, hereinafter called "LESSEE";
Name and Address

WHEREAS, LESSOR is the owner of certain lands in Santa Cruz County, Arizona, more particularly described in Exhibit "A", attached hereto and made a part hereof; and,

WHEREAS, LESSEE is desirous of obtaining non-exclusive permissive recreational use rights and privileges for itself and others, as hereinafter provided, upon the lands of the LESSOR described in Exhibit "A", containing Five Hundred Twenty and Nineteen One Hundreds (520.19) acres.

NOW, THEREFORE, in consideration of the covenants to be kept and performed by each of the parties hereto, and the sum of $1.00 cash in hand paid by the LESSEE to the LESSOR, receipt of which is hereby acknowledged, and further consideration as herein provided, it is agreed as follows:

(1) LESSOR does hereby grant unto LESSEE, for a one (1) year term from date hereof, the non-exclusive privilege of permissive recreational use of the Sonoita Creek area (as shown in Exhibit "A") in accordance with the laws of the State of Arizona and the United States of America. The term "recreational use" is further defined and meant to be a quiet refreshment for the mind or body in a natural raparian type setting to be respected by all granted the privilege to enter this area. The term of this agreement commences on June 18, 1991 and ends on June 18, 1992.

LESSEE shall pay an annual rental of EIGHTEEN DOLLARS & 06/100 ($ 18.06), plus State Tax, currently at FIVE & TWO HUNDRED TWENTY-FIVE THOUSANDTHS (5.225 %) percent, a total annual amount of NINETEEN DOLLARS & NO/100 ($ 19.00), payable on or before June 18, 1991, for said privilege.

(2) The permissive recreational use privilege granted LESSEE under this Agreement shall be exercised only on the property of LESSOR and upon no other property.

(3) The above permissive recreational use privilege is also subject to the following reservations and conditions:

A. LESSEE covenants and agrees to set no fire to the woods or pastures of the LESSOR. Only campfires are permitted

the following reservations and conditions:

A. LESSEE covenants and agrees to set no fire to the woods or pastures of the LESSOR. Only campfires are permitted.

B. LESSEE covenants for itself and its guests, and each of them, that they will at all times, when they pass through gates or gaps in fences located upon said premises thereupon to insure that said gates or gaps will be left closed and padlocked upon each occasion or passage through same, and will cut no new gaps or fences and the parties hereto mutually understand the importance of a strict compliance with this provision.

C. LESSEE shall have the right to extend this privilege to additional parties totalling two (2) additional vehicles. LESSOR will issue to such parties vehicle identification tags to be affixed in a visible manner on their vehicle while exercising this privilege, and all such parties shall be fully informed by LESSEE as to the covenants and provisions of this Agreement, and LESSEE shall obtain proper agreement from said parties binding them to its terms and conditions. The agents or employees of LESSOR shall have a right to eject from this property any person not having identification or proper tag on his vehicle.

D. Should any person, in the exercise of permissive recreational use privilege herein granted, be guilty of any willful violation of laws or regulations of the State of Arizona, said privilege shall, as to such violator, be immediately cancelled and terminated.

E. LESSEE agrees to patrol the lands named herein against trespassing and poaching, and to cooperate and assist the proper authorities in such prosecution.

F. No cattle, wildlife or other livestock shall be hunted, molested, trapped, killed or taken from the premises.

G. LESSEE agrees not to erect, construct, park or establish any building, trailer, cage or other structure except for a tent or temporary shade and shelter which shall be removed after use.

H. LESSEE agrees not to implement game feeding programs.

(4) LESSEE understands and agrees that the lands it leases under this Agreement may be leased by LESSOR, to others, for purposes other than permissive recreational use.

(5) LESSEE agrees not to harvest firewood except for down and dead wood for campfires within the Sonoita Creek area only.

(6) LESSEE further agrees to the following restrictions:

A. No ATV's (all terrain vehicles), sandrails, dune buggies or motorcycles.

B. No discharging of fireworks, firearms, or weapons of any kind whatsoever.

C. No littering or dumping whatsoever (pack it in and pack it out).

D. No one under the age of 21 is allowed unless accompanied by a member over the age of 21.

E. No loaning of keys or duplicating of keys.

F. No double padlocking (Exception: Rio Rico Properties, Inc. will be double padlocking with area rancher).

G. No plant harvesting (native or otherwise).

H. No artifact excavations or removal.

I. No quarrying, soil removal, mineral extraction or rock mining.

J. Horseback riding, bicycles, hiking, camping and walking are permitted.

K. Household pets (dogs, cats, fish, turtles and birds) are allowed and prudent care should be exercised when others are close by or present.

L. 2-wheel and 4-wheel drive vehicles are allowed, but only on existing roadways (no trail blazing) within the Sonoita Creek floodplain. The intention of allowing vehicles in the area is for transportation purposes only, not racing, hill climbing or mud bogging. Said allowed vehicles may not exceed 15 mph.

M. SHOULD ANY LESSEE OR GUEST, IN THE EXERCISE OF THIS PERMISSIVE USE AGREEMENT PRIVILEGE HEREIN GRANTED, BE GUILTY OF ANY VIOLATION OF RESTRICTIONS OR COVENANTS, SAID LESSEE SHALL HAVE THEIR PRIVILEGE OF PERMISSIVE RECREATIONAL USE PERMANENTLY CANCELLED IMMEDIATELY.

USE AGREEMENT PRIVILEGE HEREIN GRANTED, OR GUILTY OF ANY VIOLATION OF RESTRICTIONS OR COVENANTS, SAID LESSEE SHALL HAVE THEIR PRIVILEGE OF PERMISSIVE RECREATIONAL USE PERMANENTLY CANCELLED IMMEDIATELY.

(7) LESSEE agrees to indemnify defend and hold LESSOR, its parent corporation, their employees, officers, and directors harmless from and against any claims, damages, causes of action, actions, lawsuits, costs, including reasonable attorney's fees at all judicial levels, resulting from injury or death to persons or damage or loss to personal or real property caused by or arising from the use of the property by LESSEE, his agents, servants, employees, invitees or guests.

(8) If it understood and agreed, however, that LESSOR, at its sole discretion, shall have the right to cancel this Agreement at any time, by written notice to LESSEE, such cancellation to become effective ten (10) days following the mailing thereof, as shown by the Postal indicator. In the event of such cancellation, a pro rata refund shall be given to LESSEE. But only if cancellation is not a product of lease violation.

(9) LESSEE shall not incur any indebtedness giving right to a lien of any kind upon the LESSOR'S interest in and to the above described lands. LESSOR'S interest shall not be subject to liens for improvements made by the LESSEE on the above described lands. In the event any liens are filed, due to improvements made by the LESSEE, the LESSEE shall immediately discharge said lien by such manner as permitted by law.

(10) Nothing herein contained shall be construed as limiting the LESSOR from having the full use and quiet enjoyment of its lands, save only as to the rights granted to the LESSEE by the terms of this Agreement, and nothing herein contained shall be construed or interpreted as granting anything to LESSEE other than the permissive recreational use privilege.

(11) In the event of any breach or non-performance of any of the covenants, agreements, terms or conditions to be performed by LESSEE, LESSOR has the right to declare this Agreement terminated and to re-enter the property and remove LESSEE and its property therefrom, and LESSEE agrees to peacefully vacate said property and pay all costs, including reasonable attorney's fees, that may be incurred by LESSOR in enforcing the covenants, agreements, terms and conditions of this Agreement.

(12) It is understood and agreed that this Agreement sets forth all of the covenants, agreements, terms and conditions between the parties and that there are no other oral or written agreements between them.

(13) It is further understood and agreed that no subsequent amendments, alterations or additions to this Agreement shall be binding upon the parties hereto unless reduced to writing and executed by said parties.

(14) LESSOR and LESSEE agree that this Agreement shall be governed by and construed under the laws of the State of Arizona.

(15) LESSEE shall not transfer or assign the interest or right provided in this agreement, nor attempt to grant any sublease or sub-license to any persons whomsoever without the written consent of the LESSOR. The consent of the LESSOR shall be at the LESSOR'S sole discretion.

(16) The parties hereto agree that time is of the essence in this Agreement.

(17) All notices or requests between the parties shall be in writing and shall be served or mailed by Certified Mail (Return Receipt Requested) at the addresses above set forth or such address as the applicable party shall designate in writing.

(18) This Agreement and all of its terms and conditions shall extend to and be binding upon the parties hereto and upon their respective heirs, executors, administrators, successors and assigns.

(19) The invalidation of any provision or clause in whole or in part by judgement or court order shall in no way affect any of the other provisions or clauses, which shall remain in full force and effect.

(20) It is understood between the parties hereto that the real property has been inspected by the LESSEE and that the real property is being accepted in an "as is" condition.

(21) The LESSEE shall pay any and all broker commissions for this Agreement, if any. The LESSOR covenants that there are no brokers claiming a commission through the LESSOR.

(21) The LESSEE shall pay any and all broker commissions for this agreement, if any. The LESSOR covenants that there are no brokers claiming a commission through the LESSOR.

(22) The prevailing party in any legal proceedings brought to enforce rights under this Agreement shall be entitled to reimbursement of all reasonable costs and expenses, including, but not limited to, attorney's fees at all judicial levels.

(23) Rio Rico Properties, Inc. reserves the right to limit vehicular traffic both in number and area.

IN WITNESS WHEREOF, the LESSOR and LESSEE have executed this Agreement as of the date and year first above written.

WITNESSES:

RIO RICO PROPERTIES, INC.

_____

BY: _____
LESSOR

_____

_____

WITNESSES:

_____

BY: _____
LESSEE - SIGNATURE

_____

_____
LESSEE - PRINTED NAME

PERMIT NUMBER ASSIGNED: _____

PRIMARY VEHICLE LICENSE NO: _____

PRIMARY VEHICLE MAKE & MODEL: _____

EXHIBIT "A"

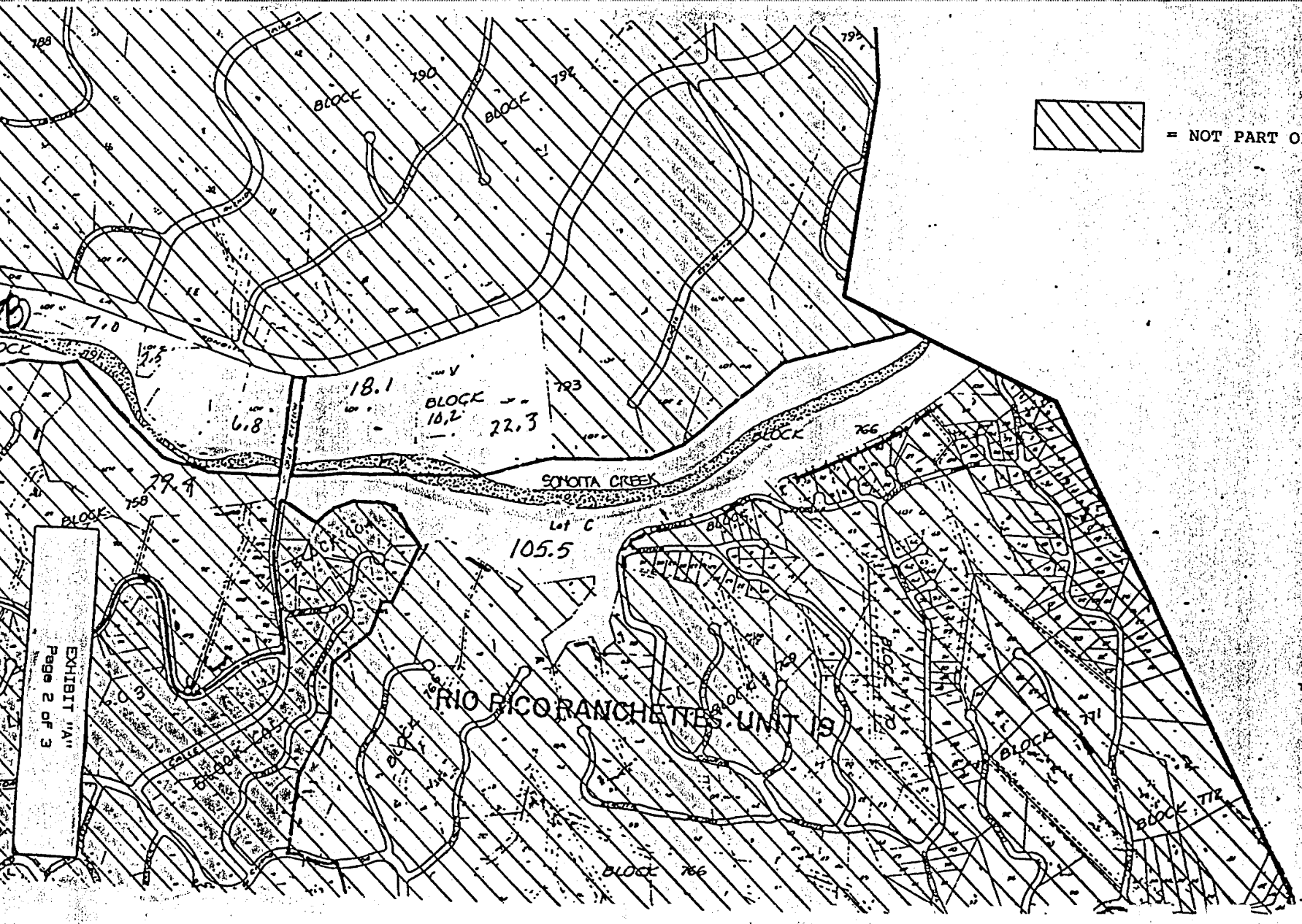
93 MAR 30 AM 10: 30

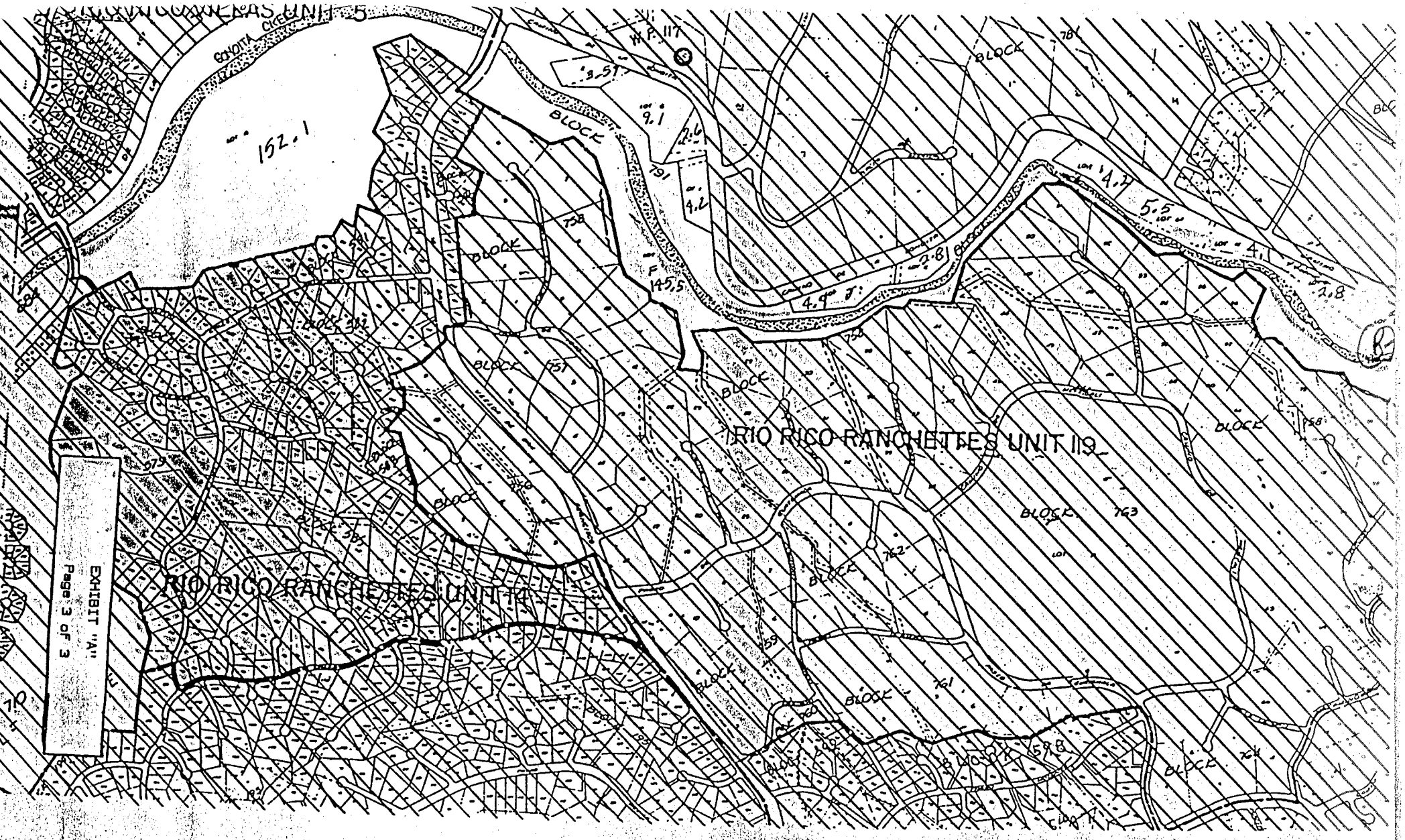
OFFICE OF AIR QUALITY

LEGAL DESCRIPTION OF SONOITA CREEK PERMISSIVE USE AGREEMENT:

Rio Rico Villas Unit No. 5, Block 786, Lot A only; Rio Rico Ranchettes Unit No. 16, Block 791, Lots 2, F, G, H, I, J, K, L, M, N, O, P, Q, R, & S only and Block 793, Lots T, V, & W only; Rio Rico Ranchettes Unit No. 19, Block 766, Lot C only. For a total of 520.19 acres.

EXHIBIT "A"


= NOT PART OF THE LEASE
BLOCK
790
792
788
7.0
7.5
18.1
6.8
BLOCK 10.2
22.3
793
29.4
758
SONOITA CREEK
Lot C
105.5
766
771
772
RIO RICO RANCHETTES UNIT 19
EXHIBIT "A"
Page 2 of 3


COYOTA CREEK
152.1
W.P. 117
9.1
2.6
4.2
3.51
145.5
4.9
2.8
4.1
5.5
2.8
BLOCK
RIO RICO RANCHETTES UNIT 119
RIO RICO RANCHETTES UNIT 14
EXHIBIT "A"
Page 3 of 3

CITY OF NOGALES DEVELOPMENT STANDARDS AND ORDINANCES

Sections:

600	Automobile Parking
8-5-6	Air Quality
8-8-2	Streets
8-16-10	Permit Limitations and Conditions
8-16-13	Necessity for Completion of Grading Before ccupation of Building
8-16-0	Responsibility of Permitee
8-16-22	Completion of Work
8-16-23	Design Standards for On-Site Retention of Storm Water
8-19-6	Assurance of Construction of Public Improvements, Off-Site Improvements, Improvements Security

CITY OF
NOGALES

CITY OF NOGALES DEVELOPMENT STANDARDS AND ORDINANCES

CITY OF NOGALES, ARIZONA
777 N. GRAND AVENUE
NOGALES, ARIZONA 85621

MAYOR

MARY P. MACIAS

BOARD OF ALDERMEN

GENE COTA
GEORGE M. KARAM
MARCO RIVERA
VICTOR M. SESTEAGA
MARCOS SILVA
JACK N. TIDWELL

PLANNING AND ZONING COMMISSION

JAMES CLARK
I.K. MOE
CRAIG POTTINGER
MANFRED CRIPE
SHERRI KARAM
MARY HELEN MALEY

CITY ADMINISTRATOR

EARL SIRES

DEPARTMENT OF PLANNING AND ZONING/
COMMUNITY DEVELOPMENT

MARK ROWDEN, DIRECTOR

--- NORTH GRAND AVENUE • NOGALES, ARIZONA 85621 • (602) 287-6571 • FAX: (602) 287-2230

SECTION 600

AUTOMOBILE PARKING - OFF-STREET PARKING REQUIREMENTS

SEC. 601 OFF-STREET PARKING, GENERAL

In all zoning districts, off-street parking facilities shall be provided in an amount not less than that hereinafter specified, for the parking of self-propelled motorized vehicles, for the use of occupants, employees, patrons, members and clients of buildings and uses erected or established after the effective date of this ordinance, and of existing buildings and uses which are extended, enlarged or changed thereafter.

A. No building permit shall be issued nor approval of site plans or subdivision plats issued until the applicant has presented satisfactory evidence to either the Zoning Administrator or the Director of Planning and Zoning and Commission that applicant owns or has otherwise available for his use sufficient property to provide the parking required in this Section.

B. For the purpose of this Section an "off-street parking space" shall mean an area located entirely on private property consisting of a rectangle measuring no less than eight and one-half feet by nineteen feet. In addition, adequate drives or aisles providing access, turning and maneuvering space shall be provided on private property and each off-street parking space shall be accessible from streets or alleys except for exemption in certain circumstances.

C. Where parking areas are located in commercial centers or on a lot whose development requires more than fifty (50) off-street parking spaces, then up to thirty percent (30%) of those spaces may be for compact vehicles and shall measure no less than seven and one-half feet by fifteen feet.

In addition, adequate drives or aisles providing access turning, and maneuvering space shall be provided on private property and each off-street parking space shall be accessible from streets or alleys except for certain circumstantial exemptions.

D. Commercial motor vehicles classed by the manufacturer's rating as exceeding one and one-half ton capacity, and tractors, semi-trailers or busses, shall be parked only in rear yards of any residential district.

E. Mobile or manufactured homes shall not be parked in any residential district except for construction offices, watchman's quarters and other exceptions noted in this Article.

F. Vacant lots or open land areas, public or private, in any residential district may not be used as an area for the parking of customer and employee passenger vehicles.

G. The parking of more than one commercial vehicle of not more than five (5) ton rated capacity, or the parking of a commercial vehicle of more than five (5) ton capacity on any lot in any residential district shall be considered a commercial use and is prohibited.

H. Parking of heavy equipment, such as backhoes, frontloaders, roadgraders, generators and like equipment is prohibited in any residential district.

I. In commercial/industrial districts, floor area shall mean the gross floor area and/or the open land area needed for service to the public as customers, patrons, clients or patients, including area occupied by fixtures and equipment used for display or sale of merchandise. It shall not mean floors or parts of floors used principally for non-public purposes such as storage, automobile parking, incidental repair, processing or packaging of merchandise, show windows or for offices incidental to the management or maintenance of stores or buildings, or to restrooms or similar.

J. Any lighting used to illuminate parking spaces in any district shall be so arranged as to reflect the light away from adjoining lots in residential districts.

K. In commercial/industrial districts control shall be established to prevent vehicles from leaving parking and maneuvering areas excluding driveway openings and shall be provided on the property in the following manner:

1. For parking or maneuvering areas abutting an exterior property line, a solid masonry wall or a minimum six-inch high curb or bumper guards shall be installed and be located so that no part of a vehicle shall extend over or beyond the property line.

2. On other parking and maneuvering areas, curbing or bumper guards shall be installed unless such area is bounded by a fence, wall, building, or established landscaped plot. Solid curbing shall be installed if required for drainage control by the City Engineer.

L. For the purpose of converting a parking area into the required or permitted parking spaces, plans must be submitted to show how the required or permitted parking spaces shall be arranged in the area on private property supplied for that purpose and to indicate in the parking area sufficient space for turning maneuvers, as well as adequate ingress and egress to the parking area before a permit to construct is granted.

1. All such plans shall be submitted to the Planning and Zoning department if five or more lots are to be developed.

2. Before issuance of a building permit the Zoning Administrator may require the approval of the City Engineer or author-

ized representative for all such plans requiring or providing for three (3) or more off-street parking spaces.

M. Whenever a building permit has been granted and the plans so approved for off-street parking, the subsequent use of such property shall be deemed to be conditional upon the unqualified continuance and availability of the parking provisions contained in such plans. Any use of such property in violation hereof shall be deemed a violation of this Ordinance.

Should the owner or occupant of any building to whom a building permit has been granted containing off-street parking requirements so change the use to which such building is put as to increase off-street parking as required under this Section, it shall be unlawful and a violation of this Ordinance to begin or maintain such altered use until such time as the increased off-street parking provisions of this Section are complied with.

N. No addition or enlargement of an existing building or use shall be permitted unless the parking requirements of this Ordinance are met for the entire building or use.

O. In the case of mixed uses, the total requirements for off-street parking space shall be the sum of the requirements of the various uses computed separately as specified in this Section, and off-street parking space for one use shall not be considered as providing the required off-street parking for any other use.

P. Any commercial lot used for the parking of three (3) or more motor vehicles, prior to being subject to the provisions of this Ordinance shall withing three (3) months from the effective date of this Ordinance be paved for dust control. This provision shall also apply to lots within newly annexed areas and to include areas for storage of pneumatically tired vehicles and used car lots.

SEC. 601.1 <u>Pre-Existing Buildings and Uses</u>

Buildings and uses in existence at the effective date of this Ordinance shall be exempt from the parking requirements herein after specified; provided, however, that whenever the usable floor area of such an existing building is changed, or an existing building is changed, or an existing use of premises is extended, off-street parking for the increased floor area or use shall be provided in the minimum amount hereinafter specified for that kind of use.

SEC. 601.2 <u>Replacement Space Required</u>

The owner or occupant of any building or use subject to off-street parking requirements under this Ordinance shall not discontinue or reduce any existing required parking lot without first having established other parking space in replacement therefore, which replacement space meets all requirements of this Ordinance.

SEC. 601.3 Prohibited Use of Parking Space

The use of off-street parking space as required under this Code, for the storage of merchandise, vehicles for sale or rent, or repair of vehicles shall be prohibited.

SEC. 602 Computation of Off-Street Parking Requirements

In order to compute the off-street parking requirements, the following page of general rules shall apply.

SEC. 602.1 Minimum Required Spaces A Sum of Individual Requirements

When a principal building or use includes several different types of activities which generate different levels of parking need, according to the schedule set forth in Section 606, the minimum required number of off-street parking spaces shall be the sum of individual requirements for the several uses computed separately.

SEC. 602.2 Computations Based on Employees

When used on computation of off-street parking requirements, the term "employees" shall include proprietors and administrative personnel, as well as, all other personnel engaged on the premises in the use of a building, structure or lot. The number of employees shall be the greatest number on duty on the premises at any one time, day or night.

SEC. 602.3 Functional Requirement

When computation of parking requirements results in a fractional requirement, any fraction of one-half or less shall be disregarded, and any fraction over one-half shall be counted as one (1) space.

SEC. 603 OFF-STREET PARKING SPACE DIMENSIONS

Every required off-street parking space shall have a minimum width of eight and one-half feet (8 1/2) and a minimum length of nineteen (19) feet, exclusive of access drives and aisles. When used as a unit if measurement of unmarked parking lots, each required space shall constitute an area of not less than one-hundred sixty-one and one-half (161.5) feet in a rectangle described above, and two-hundred sixty square feet, which shall include drives and aisles.

SEC. 604 LOCATION OF REQUIRED OFF-STREET PARKING

Required off-street parking shall be located as follows:

SEC. 604.1 Location of Off-Street Parking - Residential Use

Required off-street parking shall be located on the same lot or parcel as the use it is intended to serve; provided however, that parking for cooperative or condominium-type multi-family residence may be provided in a parking lot not farther than two hundred (200) feet from the entrance to each dwelling unit it is intended to serve.

SEC. 604.2 Location of Off-Street Parking - Non-Residential Use

Required off-street parking shall be located within three hundred (300) feet of the building or use it is intended to serve, the distance being measured from the nearest point of the building or use to the nearest point of the parking lot; provided however, that parking facilities for a stadium, auditorium, outdoor sports arena, or similar use may be located not farther than thirteen hundred (1300) feet from the nearest point of such building or use.

SEC. 605 METHODS OF PROVIDING REQUIRED OFF-STREET PARKING

Required off-street parking may be provided by any one, or a combination, of the following methods:

(a) By providing the required parking space on the same lot as the building or use being served; or, where practical, and with the approval of the Board of Adjustment, an area in the public right-of-way abutting such building or use may be included as a portion of the parking requirements if said area is fully improved for parking in accordance with standards of the City of Nogales.

(b) By the collective provision of required parking for two (2) or more buildings or uses, whereupon the total of such parking shall be not less than the sum of the requirements for the several buildings or uses have operating hours which do not overlap, the Board of Adjustment may grant a reduction of individual and collective requirements based upon the special circumstances involved. A written contract for joint use of such facilities shall be executed between the parties concerned and a copy filed with the Building Inspector.

(c) By securing the consent to use off-street parking facilities under another's ownership which is not otherwise used during the principal operating hours of the building or use in question; provided however, that consent shall be in written form and a copy filed with the Building Inspector.

SEC. 606 SCHEDULE OF REQUIRED OFF-STREET PARKING

The minimum number of off-street parking spaces required for buildings, structures and uses shall be determined according to the schedule herein set forth. For a use not specifically listed, requirements shall be the same as those for the most similar use listed:

SCHEDULE OF REQUIRED OFF-STREET PARKING

Building, Structure or Use	Parking Requirement
(a) One or two-family residence	2 per dwelling unit
(b) N/A	
(c) Boarding houses, resident clubs	1 per dwelling unit, plus 1 per guest room
(d) Downtown hotels	1 per guest room or suite plus 1 per 3 employees
(e) Motels	1 per guest room
(f) Mobile home parks	1 1/4 per mobile home site, plus 1 per 2 employees
(g) Hospitals, sanitariums, convalescent homes	1 per 3 beds, plus 1 per resident doctor, plus 1 per 3 non-resident employees
(h) Medical and dental offices and clinics	3 per doctor plus 1 per 2 employees
(i) Mortuaries, funeral parlors	1 per 3 chapel seats, plus 1 per funeral vehicle
(j) Churches, theaters, auditoriums, assembly halls, meeting rooms	1 per 3 seats plus 1 per 3 employees
(k) Skating rings, dance halls, dance studios	1 per 100 sq. ft. of open activity area, plus 1 per 3 employees
(l) Bowling alleys	1 per alley plus 1 per employee, 1 per restaurant/bar chair
(m) Community centers, libraries, civic clubs, museums, stadiums, outdoor sports arenas	1 per 4 seats, plus 1 per 3 employees
(n) Office and public administration buildings	1 per 200 sq. ft. of usable floor space
(o) Restaurants, night clubs, bars	1 per 3 seats or 1 per 50 sq. ft. of usable floor area (whichever is greater) plus 1 per 3 employe

(p)	Filling stations, beauty shops, barber shops	1 per service bay or service chair, plus 1 per 2 employees
(q)	Banks, savings and loan agencies	2 per teller window, plus 1 per 2 employees
*(r)	Elementary and junior high schools	1 per employee
*(s)	High schools, trade schools	1 per 10 students, plus 1 per employee
(t)	Drive-in food or drink places where food is consumed on the premises	1 per 15 sq. ft. of usable floor area, plus 1 per 3 employees
(u)	Furniture and appliance stores, household equipment and apparel repair services, auto and machinery sales	1 per 400 sq. ft. of usable floor area, plus 1 per 3 employees
(v)	Planned neighborhood shopping centers	1 per 250 sq. ft. of usable floor area
(w)	Retail establishments not elsewhere listed	1 per 150 sq. ft. of usable floor area
(x)	Auto and machinery repair shops	2 per service bay, plus 1 per 2 employees
(y)	Wholesale, industrial manufacturing establishments	1 per 2 employees

(z) Multi-family residential

1. Single family (See Section 502.7, (a), (1)

2. Duplex
   a. 1 1/4 spaces each unit, 1 & 2 bedrooms
   b. 1 1/2 spaces each unit, 3 bedrooms or more

3. Multiplex
   a. 1 1/4 spaces each unit, 1 & 2 bedrooms
   b. 1 1/2 spaces each unit, 3 bedrooms or more

4. Apartments
   a. 1 1/4 spaces per unit, 1 bedroom
   b. 1 1/2 spaces per unit, 2 bedroom
   c. 2 spaces per unit, 3 bedroom
   d. 2 1/2 spaces per unit, 4 bedroom or more

*

Note: Elementary, Junior and Senior schools shall provide off-street loading and unloading aisles, access ways, drives and maneuvering space for school buses. Schools may provide extra parking spaces for private vehicles off-on loading students off-street. On-street off-on loading of students shall be allowed but in designated areas and under control of a school district employee assigned for traffic control at all loading points at all loading times.

SEC. 607 PARKING LOT PLACEMENT AND ACCESS REGULATIONS

The following regulations shall determine the placement, and access to, parking lots.

SEC. 607.1 Setback from a Street

Where a parking lot abuts a residential district across a street or streets, no part of the parking lot shall be closer than fifteen (15) feet to the street line. Where a parking lot abuts a residential district on the same side of a street and in the same block, no part of the parking lot shall be closer to the street line than the minimum required front setback for residential properties in the block. Regardless of the district in which it is located, every part of a parking lot shall be set back from every lot line a sufficient distance to insure that no part of any parked vehicle will project over any lot line. (See Section 601)

SEC. 607.2 Setback from an Interior Lot Line

Where a parking lot abuts a residential district along its interior side lot line, and is not separated therefrom by an alley, no part of the parking lot shall be closer than three (3) feet to said lot line.

SEC. 607.3 Rear Setback

Where a parking lot abuts a residential district along its rear lot line and is not separated therefrom by an alley, no part of the parking lot shall be closer than three (3) feet to said lot line. Where the rear lot line is contiguous to an alley, no setback is required.

SEC. 607.4 Access to Parking from Alley

Any parking lot may use an abutting alley for direct access to parking spaces; provided that, the full width of the alley is dedicated to the public and fully improved with a hard, all-weather, dust-free surface, properly drained to prevent impoundment of surface water.

SEC. 607.5 Access to Parking from a Street

Access to a parking lot from a street shall be limited to driveways and there shall be no direct access to any off-street parking space from a street.

SEC. 607.6 Ingress and Egress

No entrance or exit to a parking lot shall be located closer than fifteen (15) feet to an abutting residential district.

SEC. 608 REQUIRED PARKING LOT IMPROVEMENTS AND MAINTENANCE

Parking lots shall be developed and maintained in conformance with the following regulations.

SEC. 608.1 Surfacing and Drainage

Every parking lot shall be constructed and maintained so as to provide a hard, all-weather, dust-free surface, properly drained to prevent impoundment of surface water.

SEC. 608.2 Screening

Where the interior side lot line or rear lot line of a parking lot abuts a residential district and is not separated therefrom by an alley, a solid, unpierced, site-obscuring fence not less than six (6) feet in height above grade shall be erected abutting the lot line; provided however, that in no case shall a screen wall extend closer to a street line than the minimum required setback for residential properties in the same block.

SEC. 608.3 Landscaping

The area between the street line and the parking lot shall be suitably landscaped and maintained by the owner or operator of the parking lot.

SEC. 608.4 Lighting

Parking lots used during hours of darkness shall be lighted. In the case of parking lots located in or abutting a residential district the overall height of lighting fixtures shall not exceed twelve (12) feet above grade. In every case, lighting fixtures shall be so constructed and arranged as to reflect light away from adjacent residential districts and conform to any and all light ordinance of the City of Nogales.

A. General Provisions

Whenever the expression "Off-Street Loading Space" is used, it shall mean an on-the-property space for the standing, loading, and unloading of vehicles, to avoid undue interference with the public use of streets, alleys and sidewalks.

B. Off-street Loading Required

In the use of land for residential, commercial, industrial, or any other purpose, no residential, commercial, industrial, or any other building or structure shall be erected unless provision is made for the location on the lot of off-street loading space on the basis of the following minimum requirements.

Every hotel, office building, restaurant, department store, freight terminal or railroad yard, hospital or sanitarium, industrial plant, manufacturing establishment, retail establishment, storage warehouse except self-service storage warehouses, or wholesale establishment and all other structures devoted to similar mercantile or industrial pursuits, which has an aggregate gross floor area of 15,000 square feet or more shall provide off-street truck loading or unloading berths in accordance with the following table:

Square Feet of Aggregate Gross Floor Area Devoted To Such Use	Required No. Berths
15,000 sq ft to 25,000 sq ft	1
25,001 sq ft to 40,000 sq ft	2
40,001 sq ft to 75,000 sq ft	3
75,001 sq ft to 150,000 sq ft	4
150,001 sq ft to 250,000 sq ft	5
250,001 sq ft to 350,000 sq ft	6
350,001 sq ft to 450,000 sq ft	7
For each additional 100,000 sq ft	1 Additional

The off-street loading facilities required shall in all cases be on the same lot or parcel of land as the structure they are intended to serve. In no case shall the required off-street loading space be part of the area used to satisfy the off-street parking requirements of this ordinance.

The provisions of this section shall apply to the entire City of Nogales, including the Central Business District (downtown).

SEC. 609.1 Dimension of Loading Space

Every required off-street loading space shall have a minimum width of twelve (12) feet, a minimum length of forty (40) feet and a minimum height of fourteen (14) feet, exclusive of access aisles and maneuvering space.

SEC. 609.2 Location of Loading Space

Required off-street loading space may occupy all or any part of a required rear yard except as provided elsewhere in this ordinance, and may be partially or entirely enclosed within a build-

ing. Where a side yard abuts an alley in a non-residential district, loading space may be located in that side yard.

SEC. 609.3 Use of Alley for Maneuvering Space

Where a building or use in a non-residential district requiring off-street loading space abuts an alley, such alley may be used for maneuvering space for loading and unloading; provided, however, that no alley abutting any residential district may be so used.

SEC. 610 PLANS REQUIRED FOR OFF-STREET PARKING AND LOADING SPACE

Plans shall be submitted to and approved by the Zoning Administrator showing how the required parking and loading spaces are to be arranged in the area provided for the purpose. Such plans shall show access streets, alleys and drives, location of all points of ingress and egress, parking spaces, loading spaces, aisles and maneuvering space, and location and design of all screen walls, landscaping and lighting. Before issuance of a Zoning Compliance Certificate, the Zoning Administrator may wish to obtain the approval of the Planning Director for the plan, in accordance with General Plan requirements and other regulations.

Section 700

SUPPLEMENTARY DISTRICT REGULATIONS - SIGNS

SEC. 701 INTENT

Signs are herein regulated in the interest of promoting traffic safety, safeguarding public health and comfort, facilitating police and fire protection and preventing adverse community appearance. Regulations are designed to permit maximum legibility and effectiveness of signs, and to prevent their over-concentration, improper placement, and excessive height, bulk and area.

SEC. 702 PERMIT REQUIRED

It shall be unlawful for any person, firm or corporation to erect, repair, alter, relocate or maintain within the City of Nogales any sign as defined in this Ordinance, except as hereinafter provided, without first obtaining a Building Permit from the Building Inspector. All illuminated signs shall, in addition, be subject to all provisions of the Electrical Code; Building Permits shall not be required for name plate signs, home occupation signs, utility signs, real estate signs in residential districts, or for minor repairs or painting of any permitted sign.

SEC. 702.1 Application for Permit

In addition to information otherwise required for issuance of a Building Permit, application for Building Permits for signs shall include:

(a) Position of sign in relation to nearby buildings or structures.

(b) Two blueprints of plans and specifications, including method of construction and attachment to the building or ground;

(c) Structural calculations proving that the sign is designed for wind pressures in accordance with requirements of this Code.

(d) Name of person, firm or corporation erecting structure.

(e) Written consent of the owner of the building, structure or premises on which sign is to be erected.

B. Method of measurement: Vibration measurement procedures shall conform to the methods described in this section or to procedures approved by the Arizona Department of Environmental Quality.

1. Instrumentation shall be capable of measuring RMS value of the vibration velocity over the frequency range of 10 to 1,000 Hz.

2. Measurement values shall be recorded for a sufficient period of observation to provide a representative sample.

3. Attachment of the vibration transducer to the ground shall be by magnetic or screw attachment to a steel bar of a minimum of 9 inches (22.9 cm.) in length, driven flush with the ground surface.

C. Exemptions: The rules of this section shall not apply to:

1. Vibration resulting from the operation of any equipment or facility of a surface carrier engaged in interstate commerce by railroad.

2. Vibration resulting from the operation of any road vehicle.

3. Vibration resulting from construction activities and equipment, between 6:00 a.m. and 8:00 p.m.

4. Vibration resulting form roadway maintenance and repair equipment.

Section 8-5-6 Air Quality

Any land use shall be operated so that air quality conforms with all applicable state or federal regulations.

A. Smoke. No emission of smoke from any source shall be permitted to exceed a greater density than the density described as No. 1 on the Ringleman Chart. However, smoke may be emitted, which is equal to but not darker than No. 2 on the Ringelman Chart, for not more than four (4) minutes in any eight (8) hour period. For the purpose of grading the density of smoke, the Ringleman Chart, as published by the U.S. Bureau of Mines shall be the standard. All measurements shall be taken at the point of emissions of the smoke.

B. Fly ash, dust, fumes, vapors, gases and other forms of Air Pollution. No emission shall be permitted which can cause damage to health, to animals, or vegetation, or other forms of property, or which can cause any excessive soiling.

Section 8-5-7 Odors

Any land use shall not emit noxious odors which are perceptible at the points of determination identified in the following table:

LAND USE CATEGORY IN WHICH ODOR-PRODUCING USE IS LOCATED	POINT OF DETERMINATION
Residential/Commercial	At or beyond any lot line of the lot containing the use.
Industrial	At or beyond the boundary of the lot containing the use.

Section 8-5-8 Water Quality

Any land use shall be operated so that water quality effected by the use shall be in conformance with all applicable state or federal regulations.

Section 8-5-9 Toxic and Hazardous Materials

See Article One, Section 312

Section 8-5-10 Explosives

See Article One, Section 312

5. One vertical curb along a median island or traffic separator the length of the perimeter of the development.

6. Such storm drains, irrigation, flood control and other public improvements as would normally be required under this Code.

Section 8-8-2 Streets

A. General Provisions. No development permit or subdivision approval shall be issued unless the development has frontage or approved public access to a public street. Abutting streets shall be dedicated and improved to the Design Standards of Section 8-8-3. No development will be permitted where it will cause traffic generation beyond the streets' current carrying capacity including pavement width and signalization. No development permits will be granted where such development will create dangerous or hazardous traffic conditions.

B. Street Orientation for Energy Conservation. To plan for energy conserving orientation of future urban development, new streets should be designed in an east-west orientation. When topographic conditions or existing street layout make street design for good solar orientation difficult or undesirable, lots shall be laid out so that the units can be oriented to the south to the greatest extent possible.

C. Street Arrangement. All streets shall be properly related to special traffic generators, such as industries, business districts, schools and shopping centers and to the pattern of existing and proposed land uses.

D. Traffic Circulation Plan Conformance. Whenever the development embraces any part of a street designated in the adopted Traffic Circulation Plan or in any adopted neighborhood or specific plan, such street shall be developed in conformity therewith; provided, however, that the developer may request and the City Council may approve minor deviations in alignment whever it is found to be impractical to conform to the exact alignment shown on the Traffic Circulation Plan or other plan because of adverse topography, drainage problems, existing development, or traffic safety. Such minor deviations may be made without adversely affecting the public purpose to be served by the street; provided however, that the distance between an Arterial or Collector and a parallel Collector does not exceed fifteen hundred feet (1,500').

3. Street jogs with centerline offsets less than one hundred twenty-five (125) feet shall be avoided except where waived by the City Engineer.

4. Street intersections with more than four (4) legs and Y-type intersections with legs meeting in acute angles shall be prohibited.

K. Intersection Design and Construction

1. Intersections shall be designed and constructed in accordance with the improvement standards for streets.

2. The approach to intersections shall have a relatively level area with a grade of not more than 2% for a distance of twenty-five feet measured from the nearest right-of-way line of the intersecting streets, except for unusual circumstances where City Engineer shall determine grade and distance in writing.

L. Street and Alley Construction. All streets and alleys shall be graded and paved with Asphaltic Concrete or Portland Cement Concrete to standards approved by the City. (See Article 3, Minimum Standards for Public Works Construction)

1. Where the minimum width (thirty-two (32) feet paved) access road is allowed, it shall be designed and constructed so that it can easily be widened to the full width street without reconstructing the center thirty-two (32) feet. Connection to existing and proposed streets shall be designed to safely accommodate traffic including any traffic control devices, and any drainage which may ultimately flow in the street.

2. The developer is required to develop one-half of the right-of-way of a perimeter street and to pave not less than twenty (20) feet of pavement width on each side of interior streets, except at intersections where the required street width is greater than fifty (50) feet.

3. The construction of a Principal or Major Arterial Street is the responsibility of the City. The developer is responsible for the construction of frontage roads or other public streets providing access to property adjacent to Principal and Major Arterials.

M. Curb-Gutter Design and Construction: All streets shall have Portland Cement Concrete curbs and gutters along the pavement edge constructed to city minimum standards for construction, except as noted below:

1. Combined six inch (6") high vertical curb and gutter is required on all streets except three and one-half inch (3) high rolled curb and gutter may be installed on streets in residential and industrial areas as long as the street drainage can be contained within the street sections.

N. Sidewalk Design and Construction:

1. Sidewalks shall be located behind the back-of-curb, provided that lighting standards, utility poles, traffic control devices, fire hydrants, mailboxes and similar obstructions can be located outside of the sidewalk area. In cases where such items cannot be located outside of the sidewalk area, the sidewalks may be located five (5) feet behind the back-of-curb. In all cases not otherwise governed by the provisions of the Manual of Uniform Traffic Control Devices, a minimum clearance of two (2) feet shall be maintained between the face-of-curb and any construction. See Article 3. In case of demonstrated necessity or existing unusual conditions the City Engineer may approve a reduction of minimum clearance to within one foot of the face-of-curb.

2. All streets shall have Portland Cement Concrete sidewalks behind the curb-gutter where curb-gutter is required. All accesswalks shown on the approved plan shall be constructed of Portland Cement Concrete or other appropriate material, and constructed to city minimum standards. Sidewalks shall be a minimum of four (4) inches thick and four (4) feet wide in residential districts and five (5) feet wide in commercial and industrial districts where required.

3. All returns shall have handicapped ramps at all corners of each intersection.

4. Sidewalks shall be required for all new development on lots of 12,000 square feet or smaller (residential and commercial/industrial subdivisions), otherwise development shall follow existing conditions, if sidewalks exist, then new development shall include sidewalks, if not, then sidewalks shall not be required.

O. Street Monument Construction: Permanent monuments consisting of a brass cap set in concrete, shall be installed to designate street center lines at all angle points and at points of curvature and at all street intersections. Concrete bases shall be no less than six inches in diameter and twenty-four inches deep with at least one (1) vertical steel

reinforcing bar of minimum one-half inch (½") diameter placed directly beneath the brass cap and extending the full length of the concrete. After all improvements have been installed, the developer shall be responsible for having a registered land surveyor check the location of monuments and certify as to their accuracy prior to acceptance by the City of the public improvements for maintenance.

P. Striping and Signage. All required painting, striping, and signage shall be installed by the developer in accordance with a plan approved by the City Engineer.

Section 8-8-3 Street Design Standards

A. General Provisions.

1. Type. PRINCIPAL ARTERIAL (RESERVED)

a. Function. To expedite the movement of traffic to and from major trip generators. To collect from and distribute traffic to major and minor arterial and major collector streets.

b. Design Volume. 30,000+ vehicles per day.

c. Right-of-Way. 200 feet (The Council may approve reducing the required right-of-way by 25 feet along any frontage where a frontage street is not required or contemplated.)

d. Constructed Street Width. Shall be determined by the City Engineer based on 10 year projected traffic volumes.

e. Number of Moving Lanes. 6-8

f. Design Speed. 55 m.p.h.

g. Level of Service. B

h. Access. Access shall be permitted only at intersection with Principal Major and Minor Arterial or Major Collector Streets.

1. Residential Uses. No direct access.

2. Commercial Uses. No direct access.

3. Industrial Uses. No direct access.

6. Any additional plans, drawings, specifications or calculations reasonably required by the City Engineer.

7. Provisions for on-site retention of storm water, unless waived by the City Engineer, or otherwise not required by this section.

8. Specifications shall contain information covering construction and material requirements.

9. Plans and specifications shall be based on the soil report when such report is required.

B. The soil report shall show the information obtained from surface, subsurface and geological investigations necessary to provide information on which to base the design of the proposed project. The report shall include at least all pertinent data as applicable to the proposed project, concerning:

1. The nature, distribution and strengths of existing soil and rock.

2. Geologic factors affecting stability and safety.

3. Conclusions and recommendations for grading requirements including the correction of weak and/or unstable soil conditions.

4. Opinions and recommendations covering the adequacy of sites to be developed by the proposed grading operations.

Section 8-16-10 Permit Limitations and Conditions

General. The issuance of a grading permit shall constitute an authorization to do only that work which is described or illustrated on the application for the permit or on the site plans and specifications approved by the City Engineer.

The issuance of a permit or the approval of drawings and specificationss shall not be construed to be a permit for, nor an approval of any violation of or deviation from the provisions of this section or any other ordinance, law, rule or regulation. A permit issued shall be invalid if, in the work completed, a violation of this section or deviation therefrom, ensued. When such violation occurs, the permit shall be deemed to be canceled and the ground restored to the condition it was in prior to start of the grading work.

The issuance of a permit, based upon drawings and specifications, shall not prevent the City Engineer from thereafter requiring the correction of errors in said drawings and specifications or from stopping unlawful construction operationss being carried on thereunder.

1. Jurisdiction of Other Agencies. Permits issued under the requirements of this section shall not relieve the owner of

responsibility for securing required permits for work to be done which is regulated by any other ordinance, or division of the City of Nogales or other governing agency.

2. Time Limits. The permittee shall fully perform and complete all of the work required to be done pursuant to the grading permit within the time limit specified. If no time limit is specified, the permittee shall complete the work within 180 days after the date of the issuance of the grading permit.

If the permittee is unable to complete the work within the specified time, he shall, prior to the expiration of the permit, present in writing to the City Engineer a request for an extension of time, setting forth the reasons for the requested extension. If, in opinion of the City Engineer, such an extension is warranted, he may grant additional time for completion of the work.

3. Storm Drainage Precautions. All persons performing any grading operations shall put into effect all safety precautions which are necessary in the opinion ofthe City Engineer and provide adequate anti-erosion and/or drainage devices, debris basins, or other safety devices to protect the life, limb, health and welfare, and private and/or public property from damage of any kind.

4. Conditions of Approval. In granting any permit under this ordinance, the City Engineer may attach such conditions as may be reasonably necessary to prevent creation of a nuisance or hazard to public or private property. Such conditions may include, but shall not be limited to:

a. Compliance with dust control requirements of the City and County.
b. Requirements for fencing of excavations or fills which would otherwise be hazardous.
c. Improvement of any existing site condition to bring it up to the standards of this section.

5. Liability. Neither the issuance of a permit under the provisions of this ordinance nor the compliance with the provisions hereof, or with any conditions imposed in the permit issued hereunder, shall relieve any person from responsibility for damage to other persons or property, nor impose any liability upon the City for damage to other persons or property.

6. Revocation. Should the City Engineer find the work under the permit issued under these provisions is not proceeding in accordance with the drawings, specifications, and details of the application upon which such permit was issued, and/or is proceeding in violation of this or any other ordinance of the City, or should he find that there has been any false statement or misrepresentation as to a material fact in the application, payment for said permit or plans on which the permit was based, the City Engineer shall notify the person obtaining the permit and owner

if not the same that such work fails to conform to said permit, or that the permit was obtained by false representations and that such failure in obtaining the permit be corrected without delay. If the owner or person obtaining the permit fails or refuses to make such correction within the time specified in said notice, the City Engineer shall revoke such permit and serve notice of such revocation upon such person to whom the permit was issued. Such notice shall be in writing and signed by the City Engineer. It shall be unlawful for any person to proceed with any part of such work after such notice is served.

Section 8-16-11 Denial of Permit

1. Geological or Flood Hazard. If, in the opinion of the City Engineer the land area for which grading is proposed is subject to geological or flood hazard to the extent that the proposed corrective work will not eliminate or sufficiently reduce the hazard to human life or property, the grading permit and building permits for habitable structures shall be denied.

2. Unlawful Grading. The City Engineer shall not issue a permit in any case where he finds that the work as proposed by the applicant will endanger any private property or result in the deposition of debris on any public way or seriously interfere with any existing drainage course. However, if it can be shown to the satisfaction of the City Engineer that tf retaining structures, buttress fills, drainage devices, or by other means, the City Engineer may issue the permit after the applicant has complied with all other pertinent regulations of this ordinance.

Section 8-16-12 Grading Permit Fees and Plan Review Fees

1. Before issuance of a grading permit the City Engineer shall collect the fees set forth in the table of Permit Fees to follow. Such fees shall be paid in lawful United States currency or by collectible draft/check. Should such draft/check be uncollectible within a reasonable time, the permit shall be null and voided. The application for permit shall state the quantity of excavation and fill involved. For excavation and fill on the same site, the fee shall be based on the volume of the excavation or fill, whichever is greater:

TABLE OF PERMIT FEES

Application processing charge	$20
Less than 100 cubic yards	No fee
101 to 1,000 cubic yards	$40 for the first 100 cubic yards, plus $10 for each additional 100 cubic yards or fraction thereof.
1001 to 10,000 cubic yards	$200 for the first 1,000 cubic yards, plus $10 for each additional 1000 cubic yards or fraction thereof.

10,001 to 100,000 cubic yards	$350 for the first 10,000 cubic yards, plus $50 for each additional 10,000 cubic yards or fraction thereof.
100,001 cubic yards or more	$500 for the first 100,000 cubic yards, plus $50 for each additional 10,000 cubic yards or fraction thereof.

2. In order to cover part of the cost to review grading and drainage plans, the City Engineer shall collect the fees set forth in this section before providing grading and drainage plan review services.

Field Review	$50 flat fee
Office Review	$25 per sheet for 3rd review and each thereafter
Revisions	$50 each Plan sheet
Updates	$20 each Plan sheet

Permit reinstatement fee, if no revisions, shall be based on the percentage of property to be developed and the original earthwork quantities.

Section 8-16-13 <u>Necessity for completion of grading before occupation of building</u>

1. Necessity for completion of improvements before occupation of the building.

A. The Chief Building Inspector shall deny final approval of any building permit or any clearance for occupation of any building, until all the required grading, retention and improvements including corrective work necessary to remove and eliminate any hazard, all as determined by the City Engineer, are completed and have been inspected and approved by the City Engineer. The City Engineer at his option may accept cash, surety bond or assurance of construction through loan commitment, if posted with the City Engineer in the form as provided by 2, 3, and 4 to follow.

B. The cash, surety bond or assurance of construction agreement or a portion thereof, the amount of such portion to be determined by the City Engineer, may be retained or called upon by the City Engineer at any time as funds to be utilized for performing any work required to complete the required grading and improvements, if the City Engineer finds that the required grading and improvements are not being completed to his satisfaction.

2. Conditions. Every bond shall include the conditions that the permittee shall:

A. Comply with all the provisions of this section, applicable laws, and ordinances;

B. Comply with all of the terms and conditions of the permit for excavation or fill to the satisfaction of the City Engineer.

C. Complete all of the work contemplated under the permit within the time limit specified in the permit. The City Engineer may, for sufficient cause, extend the time specified in the permit but not such extension shall release the surey upon the bond.

D. The cash/surety bond shall include penalty provisions on a form approved by the City Attorney for failure to complete the work on schedule.

3. Failure to Complete Work. The term of each bond shall begin upon the date of filing and shall remain in effect until the completion of the work to the satisfaction of the City Engineer. In the event of failure to complete the work and failure to comply with all of the conditions and terms of the permit, the City Engineer may have the work required by the permit to be completed to his satisfaction. The surety executing such bond or deposit shall continue to be firmly bound to have all work completed and provide for the payment of all necessary costs and expenses that may be incurred or expended by the City in causing any and all such required work to be done. In the case of a cash deposit, said deposit or any unused portion thereof shall be refunded to the permittee.

4. Assurance of Construction Through Loan Committment. In lieu of providing cash or surety provided above in this section, the permittee may provide assurance of construction for grading improvements by delivering to the City Engineer, an appropriate agreement between an approved lending institution and the permittee, stating that funds sufficient to cover the entire cost of performing the proposed work, including engineering and inspection costs, in an amount approved by the City Engineer, have been deposited with such approved lending institution, or have been committed to be loaned by such lending institution to the permittee. Such agreement shall provide that such funds in the stated amount are specifically allocated, and will be used by the permittee, or on his behalf, only for the purpose of performing the grading improvements. The City shall be the beneficiary of such agreement, or the permittee's rights thereunder shall be assigned to the City and the City Engineer shall approve each disbursement of any such funds. The agreement shall expressly provide that the approved lending institution shalll upon demand by the City Engineer immediately turn over to the City sufficient funds to complete all required grading or improvements, if the City Engineer determines that the required grading or improvements are not being satisfactorily completed. The agreement

may also contain terms, conditions and provisions normally included by such lending institutions in loan commitments for construction funds, or as may be necessary to comply with statutes and regulations applicable to such lending institutions, so long as such conditions do not conflict with the requirements of this ordinance.

Section 8-16-14 Design Standards for Cuts

1. Maximum Slope. Cuts shall not be steeper in slope than one and one-half horizontal to one vertical unelss a retaining wall or other approved support is provided or unless the owner furnishes a soils engineering report proving to the satisfaction of the City Engineer that the proposed deviation will be stable, will not endanger any property or result in the deposition of debris on any public way or interfere with any existing drainage course.

The City Engineer may require the excavation to be made with a cut face more flat in slope than one and one-half horizontal to one vertical if he considers it necessary for stability and safety.

2. Drainage Terraces. Cut slopes exceeding forty feet in vertical height shall be terraced. Drainage terraces are to be a minimum of six feet wide, paved, and must carry water to a safe disposal area. Terraces shall be cut at intervals not exceeding thirty feet vertically. Where only one terrace is required, it shall be at mid height.

Section 8-16-15 Design Standards for Fills

1. Finishing. All material placed as fill shall be bladed and graded to a uniform surface and shall not be left on the site as irregular dumping.

2. Compaction. All fills shall be compacted to not less than the minimum densities as listed below and as determined in accordance with ASTM D698-70. Field density shall be determined by ASTM D1556-64.

Location	Minimum Density
Under structures	90%
Parking lots, driveways, roads	85%
Yards, open spaces	75%

Soil reports may require slight variations or modifications

Fills which will support the foundations of structures shall be constructed under the supervision of an engineer licensed by the State of Arizona.

Exceptions: a. Fills in non-hillside areas that are made for yard purposes and which do not exceed eighteen inches in depth

4. Notification of Non-Compliance. If, in the course of fulfilling his responsibility under this chapter, the supervising engineer finds that the work is not being done in conformance with this chapter or the plans approved by the City Engineer, he shall immediately notify the person in charge of the grading work and the City Engineer in writing of the non-conformity and of the corrective measures to be taken.

Section 8-16-19 Safety Precautions

If at any stage of the work the City Engineer determines by inspection that further grading as authorized will endanger any property or result in the deposition of debris on any public way or interfere with any existing drainage course, the City Engineer shall require, as a condition to allowing the work to be completed, that such reasonable safety precautions be taken as he considers advisable to avoid such likelihood of damage.

Notice to comply shall be submitted to the permittee and owner in writing. After a notice to comply is written, a period of ten days shall be allowed for the contractor to begin to make the corrections unless an imminent hazard exists, in which case the corrective work shall begin immediately.

If the City Engineer finds any existing conditions not as stated in the granting permit or approved plans, he may refuse to approve further work until approval is obtained for a revised grading plan which will conform to the existing conditions.

Section 8-16-20 Responsibility of Permittee

1. Compliance with Plans and Requirements. All permits issued hereunder shall be presumed to include the provision that the applicant, his agent, contractors, or employees, shall carry out the proposed work in accordance with the approved plans and specifications and in compliance with all the requirements of this chapter.

2. Protection of Utilities. During the grading operations, the permittee shall be responsible for the prevention of damage to any street or drainage facilities or to any public utilities or services. This responsibility applies within the limits of grading and along any routes of travel of equipment.

3. Protection of Adjacent Property. The permittee is responsible for the prevention of damage to adjacent property and no person shall excavate on land sufficiently close to the property line to endanger any adjoining public street, sidewalk, alley, or other public or private property prior to supporting and protecting such property from settling, cracking, or other damage which might result.

Section 8-16-21 Modification of Approved Plans

No modification of the approved grading plans may be made without the approval of the City Engineer. All necessary soils

and geological reports hall be submitted with the plans.

Section 8-16-22 Completion of Work

1. Final Reports. Upon completion of the work, the City Engineer may require the following reports:

A. Certification by the supervising engineer that all grading lot drainage, and drainage facilities have been completed in conformance with the approved plans and this section.

B. A soils engineering report including certifications of soil bearing capacity of compacted fills, summaries of field and laboratory tests and locations of tests.

C. An engineering geology report based on the final construction. It shall include specific approval of the grading as affected by geological factors. Where necessary, a revised geologic map and cross sections, and any recommendations regarding building restrictions or foundation setbacks, shall be included.

2. Notification of Completion. The permittee or his agent shall notify the City Engineer when the grading operation is ready for final inspection. Final approval shall not be given until all work, including installation of all drainage structures and their protective devices, have been completed and required reports have been submitted.

Section 8-16-23 Design Standards for On-Site Retention of Storm Water

On-site retention of storm water shall be required for all developments equal to or exceeding one (1) acre in size unless the site is served by a storm sewer, channel, or natural drainageway having an adequate outlet capacity from the development to a major drainage outfall such as, but not limited to, a storm drain or natural watercourse approved by the City Engineer as a safe place to deposit such waters.

On-site storm water retention areas shall be adequate to contain a volume of water computed for 2, 5, and 10 year frequency storm run-off. The tributary area used in the calculation shall be the area to be developed. Further development of an existing site which increases the developed area by one or more acres shall require retention of water in a ratio of the percentage of increase over the original amount equal to the amount of increase percentage of added development over the original amount.

Exception: The requirement for on-site retention may be waived by the City Engineer if he determines that said retention is impractical because of, but not limited to, terrain, poor percolation, or incompatibility with existing or surrounding improvements. The City Engineer may require additional drainage studies or reports in such cases to determine if a critical drainage problem will be created on adjacent or down-stream properties.

Any variation authorized by these grading and drainage regulations that allows the City Engineer flexibility in the decision making for waivers, changes, exceptions, opinions and other requirements, shall be made in writing to the permittee and made available to the Planning and Zoning Office and the Zoning Administrator.

The Drainage Report requirements in addition to the regulations of this Section shall include the following requirements unless in conflict with other provisions of this Ordinance:

DRAINAGE REPORT REQUIREMENTS

1. A Cover Sheet, including:

   1.1 Title of Report.

   1.2 Approximate location of project referenced to City Streets, including Section, Township & Range.

   1.3 Seal and Signature of the Registered Professional Civil Engineer responsible.

   1.4 Engineer's address and phone number.

   1.5 Name, and address and phone number of the client for whom the report was prepared.

   1.6 Planning case number is applicable

   1.7 A brief explanation of the purpose for which the report w submitted, such as subdivision requirement, development plan requirement, floodplain use permit, speculation, etc.

2. An Introduction, including:

   2.1 A Legal description of project.

   2.2 A location plan which shows the physical relationship of the project to nearby properties, as well as major streets and waterways within the vicinity.

   2.3 A description of existing development within the watersheds affecting the project itself.

   2.4 A description of future development anticipated within the watersheds affecting the project.

   2.5 A recent, legible aerial photo of an area extending no less than 1/4 mile in every direction beyond the project limits. The scale shall be no smaller than 1"=400'.

2.6 Description of any physical features within the project, or contributing watersheds, which might be noteworthy from the standpoint of hydrologic and/or hydraulic considerations, such as ground cover, soil types, etc.

2.7 A brief summary of any historical hydrologic and/or hydraulic information known to be available for the project. The source and date of information should be included.

2.8 A brief description of the proposed development for the property under study. This should include such things as type and use of buildings, density and whether drainage improvements are to be private or public.

3. An Objectives section, including a brief description of the purpose of the report in relationship to development of the project.

4. A Procedures section, describing the methodology and assumptions used in preparing the report.

5. A Results for Existing Conditions section, describing in detail the findings of the report with regard to the existing drainage on the site, taking into account all offsite hydraulic controls. This section shall contain all computations used in arriving at the results and include but not limited to:

5.1 A watershed map, showing watersheds and concentration points for all sources of drainage affecting the project. Watershed maps should be on 200 scale aerial topography maps unless a large watershed size makes such a map to large to conveniently fit on a drafting table. In this case, a 7.5 Minute U.S.G.S. Quadrangle map may be substitued.

5.2 All hydrologic data sheets prepared while determining the quantities of flow affecting the project. A data sheet shall be required for each drainage concentration point where a significant watercourse enters and/or exits the project. These calculations shall all be for future (Developed) watershed conditions. The method to be used shall be the Hydrologic Design for Highway Drainage in Arizona , ADOT Bridge Division.

5.3 All hydraulic calculation sheets prepared while determining the depth of flow, velocity of flow, and aerial extent each floodprone area contained within the project, clea identified and labeled. All cross sections shall plotted to scale, and include water surface elevations, mannings roughness values, ineffective flow areas, encroachment areas, and any other pertinent physical conditions affecting flow. Plotted cross sections must also include all pertinent hydraulic information such as depth of flow, channel and overbank velocities, flow area, wetted perimeter, Froude number, rating curves, and channel slope. If computer analysis is used, cross section plotting requirements are the same. Tabulated cross sections alone are not acceptable. Computer graphics must be adequately annotated.

5.4 All calculations needed to assess the influence upon the floodplain of existing structures such as levees, culverts, bridges, and roadways which act as wiers within and adjacent to the project.

5.5 A copy of a contour map or, if the project involves subdivision of land or commercial-industrial development, a copy of the tentative plat and/or development plan which includes:

5.5.1 Delineation in a clear and precise manner of flood prone areas subject of 100 year flood flows exceed fifty (50) cubic feet per second (cfs.). If comple channelization of the 100 year flood is proposed, floodplain limits need only be shown entering and leaving the channelized reach.

5.5.2 Clear identification and labeling of each cross section used in mapping the flood prone areas, so that easy cross reference to associated hydrologic and hydraulic data sheets and text is possible.

5.5.3 Labeling of all significant points of drainage concentration which enter and/or leave the project, accompanied by the quantities of flow and contributing drainage areas.

5.5.4 Contours clearly plotted at intervals of two feet, unless unusual topographic relief dictates otherwise.

5.5.5 A scale no smaller than 1"=40', unless unusual physical features dictate otherwise.

6. A Recommendations for Post Development Conditions section, describing in detail how the drainage affecting the parcel is to be handled by the proposed development. This section includes:

6.1 A site plan, Tentative plat or development plan showing locations and lowest floors of all buildings, locations and identification of all proposed drainage structures, proposed channel cross sections, channel gradients, existing and proposed floodplain limits, bank protection material and limits, proposed grades and any other information useful in reviewing the drainage report. This plan may be the same one used in the "Results Existing Conditions" section if convenient and the existing topography is clearly legible.

6.2 Conceptual drawings of all proposed hydraulic structures. These need not be construction drawings, but should impart enough information to tell the reviewer what is intended to be build and how it will function hydraulically. Their major parameters, such as toe down depth, cut-off wall depth and number, freeboard, bank protection thickness, key-ins, etc., shall be used at later stages in the engineering design and review process.

All pertinent hydraulic parameters related to the design of these structures shall accompany the drawings. These will include flow rate, depth, velocity, cross sectional area, wetted perimeter , Mannings n-values, Froude numbers, scour depth, critical depth, wave heights, total energy and sequent depths, and any other information applicable or useful.

6.3 All calculation sheets used in the design of the proposed hydraulic structures. Calculation sheets shall describe in a concise, logical manner all assumptions, data and formulas used in the hydraulic analysis.

7. A "Summary and Conclusions" section, giving a brief summary of the report, and conclusions drawn from the findings. This section should tell how the proposed development and drainage design comply with floodplain regulations, and why the proposed design is a sound one from an engineering standpoint.

8. A References section, which lists all references used in compiling the report. References must be provided for all sources of information, as well as for nonstandard formulas and analytic methods. The first use of each such formula or method in the report shall have an annotation giving reference and page number on which the formula or method can be found in the original.

NOTE 9.1 Output from new or uncommon computer programs must be accompanied by a detailed explanation of how the program works and to review the results. Placing as much of the output information possible in the form of figures, graphs and charts is very helpful. Undocumented or poorly explained computer output may be rejected without review.

NOTE 9.2 Drainage report "addendums" or separate information sheets prepared in response to our review of reports will not be accepted. Every submittal and resubmittal must be a complete, self-contained drainage report.

NOTE 9.3 For small projects which receive no significant offsite runoff, are easily drained, do not contribute significant amounts of runoff to City streets or drainageways and therefore do not warrant a full scale drainage study, a drainage statement in letter form may, with prior approval of the City Engineer, be submitted in lieu of a drainage study. The statement shall contain a brief description of the project, be sealed by a professional civil engineer, and briefly describe the amount of runoff expected, the method of disposal, and any other drainage aspects pertinent to the project. It shall also include all items listed under sections 1 and 2, computation of pertinent 100 year runoff peaks and whatever other information the consulting engineer considers applicable.

NOTE 9.4 Although we appreciate the fact that the Engineering Consultant and his client are interested in a timely review of the drainage report, it is rarely possible for us to predict exactly when review comments will be ready. For that reason, until a formal written response to a drainage report submittal has actually been sent, the official status of the report will be "in review". No more detailed information can be given to status inquiries.

the Commission on the appropriate certificates on the plat within five (5) working days after approval. Said plat shall be recorded with the Santa Cruz County Assessor's office, at owner's expense, whereupon a photo copy of the recorded mylar shall be provided to the city for records filing.

6. After completion of all off-site improvements and public improvements and before official acceptance and formal dedication to the city of said improvements, the developer shall provide the Planning Director two copies of all as-built drawings on the plat, if different from the original recorded plat.

7. Once all off-site improvements and public improvements have been completed, the developer shall request in writing that the City Engineer inspect all the improvements for acceptance by the City. If all improvements are acceptable by the City Engineer, he shall so state in writing and shall recommend to the Board of Aldermen that all said improvements to be dedicated to the City be accepted by and into the city maintenance system.

8. At the next regularly scheduled meeting of the Board of Aldermen the dedications shall be placed on the agenda for public hearing and with the stated recommendation by the City Engineer, all public improvements to be dedicated to the city shall be formally accepted by the Board. At that time any bond, cash or other improvements guarantee remaining in the city's possession concerning the development shall be returned to the owner, minus any funds used for necessary completion of any required improvement, if any.

SEC. 8-19-6 Assurance of Construction of Public Improvements, Off-Site Improvements, Improvements Security

Any person required to install public improvements-off-site improvements under the provisions of this Code shall provide security by one of the following methods:

1. Posting of a performance bond issued by a qualified surety in the amount of the total costs of all off-site improvements, public improvements, grading and drainage, engineering and surveyor costs, and materials cost for said public improvements, off-site improvements; or

2. Establishing a cash trust in the same amount as 1 above, said funds to be deposited with the city to the credit of said developer; or

3. Depositing with the city a certificate of deposit issued by a banking institution authorized to issue same, in the amount

as stated in 1 above; or

4. Filing with the city an executed contract of guaranty between the city and a trust company, banking institution or other financial institution authorized to enter into such contracts, for the amount stated in 1 above; or

5. Filing with the city a third party trust agreement executed by a trust company, banking institution or other financial institution authorized to enter into such contracts, in the amount stated in 1 above.

The amount of said security is to be based upon the costs estimates prepared by the developer's registered professional civil engineer and submitted to the city in writing, breaking out the various individual costs as stated in 1 above, and a total cost of all the individual costs.

A completion date for the improvements shall be declared by the owner or his agent and engineer and the security shall provide for its forfeiture to the city in the amounts of any required improvements not completed or not in compliance with this code and state code, or not acceptable to the city by the declared completion date due to the default of the developer/owner. Where applicable, a concurrent agreement may be executed between the city and developer/owner providing for incremental improvements in Planned Area Developments, provided, however, that each approved increment shall conform to the security requirements above stated. The Board of Aldermen may require of owner/developer such further assurance of completion of improvements as the Board may deem necessary in the best interests of the public health, safety and welfare.

AUTHORITIES USED FOR
SANTA CRUZ COUNTY RACM

Development Code:

Article 12	Planned Area Development
Article 19	Landscaping, Screening, and Buffering

Arizona Revised Statutes [A.R.S.]

§ 11-251., specifically § 11-251.17 and § 11-251.51

Title 48, Chapter 21, Flood Control Districts

ARTICLE 12

PLANNED AREA DEVELOPMENT

___1201___ Definition
___1202___ Purpose
___1203___ Site Locations
___1204___ Site Development Standards
___1205___ Project Density
___1206___ Compatible Uses
___1207___ Management of Common Property
___1208___ Submital Procedures
___1209___ Findings of Fact
___1210___ Significance of Approval
___1211___ Building Permits
___1212___ Control of the Planned Area Development After Completion
___1213___ Reserved

SEC. 1201 DEFINITION

Planned Area Development or "PAD" shall mean a parcel of land or contiguous parcels of land of a size sufficient to accommodate an integrally planned environment, controlled by a single landowner, or by a group of landowners to be developed as a single entity. The scale and uses should be compatible with adjacent parcels, and with the intent of the zoning or districts in which the project is located. Common open space while an essential element, may be passive open space and not necessarily accessible. A "PAD" is an "overlay district", not a seperate zoning district.

SEC. 1202 PURPOSE

A. The purpose of a planned area development is to permit greater design flexibility and, consequently, more creative and imaginative design for development than generally is possible under conventional zoning and subdivision regulations. It is intended that planned area developments built pursuant to this section include the following objectives:

1. To insure such developments are compatible, both in substance and location, with the goals and objectives of the comprehensive plan and/or other specific adopted area or town plans;

2. To promote flexibility and quality in design and to permit diversification in the location, type and uses of structures;

3. To promote the efficient use of land by means of more economical arrangement of buildings, circulation systems, land uses and utilities;

4. To preserve to the greatest extent possible the existing landscape features and amenities and to encourage the harmonious combination of such features with structures and other improvements;

5. To provide for useable and suitably located recreation facilities and other public and common facilities;

6. To combine and coordinate architectural styles, building forms and building relationships within the planned area developments in concert with adjacent and surrounding land and development; and

7. To insure a high quality of development within the County.

B. Deviation from specific site development standards is allowable as long as the general purposes for the standards are achieved and the general provisions of the zoning regulations are observed.

SEC. 1203 <u>SITE LOCATIONS</u>

A Planned Area Development (PAD) may be established in all of the zoning districts as provided in this Code according to the conditions set out in the article; provided, however, that the design and amenities of the proposed PAD must be superior to the development which would result under the existing conventional zoning requirements for the parcel.
If a proposed project requires rezoning, a request may be considered by the Commission concurrently with its approval of the conceptual site plan or preliminary plan.

SEC. 1204 <u>SITE DEVELOPMENT STANDARDS</u>

A. <u>Minimum Project Area.</u> In a Planned Area Development, there shall be a minimum site size of five (5) acres.

B. <u>Minimum Dimensions.</u> The minimum lot area, width, frontage, and yard requirements otherwise applying to individual buildings in the zone in which a planned area development is proposed do not apply within a PAD except as hereinafter provided.

C. Peripheral Setbacks. Along project boundaries, the required front, side or rear yards shall be the same as those required by Articles Nine (9) and Ten (10) of this Code.

D. Open Space: A minimum of twenty-five (25) percent of the gross lot area shall be developed as permanent open space. The minimum open space of all sites shall be landscaped and permanently maintained in accordance with Article _____. The open space may be allocated as follows:

1. Common Open Space is land allocated to the general use of the public for recreational use both passive and active. A credit of one (1) square foot will be given for each one (1) square foot of land set aside specifically for this purpose.

2. Pedestrian Trails (equestrian, bike ways, golf cart and walkways) shall be given credit towards common open space.

3. Private Open Space is designed for the exclusive use of individual dwelling units such as patio areas, decks and balconies, of at least sixty (60) square feet with a minimum dimension of six (6) feet, may be included as part of the required open space and be given credit for one (1) square foot of required open area for each two (2) square feet so provided, not to exceed two hundred (200) square feet of total open space credit for any one (1) dwelling unit.

4. Open Space does not include vehicular circulation areas such as parking areas, streets, right of ways, driveways and driveway easements.

E. Landscaping: Landscaping shall consist primarily of "low water use" groundcovers, trees, shrubs, and or living plants and with sufficient permanent irrigation to properly maintain all vegetation. Retention of onsite stormwater may consitute sufficient irrigation for some native plant species. Decorative design elements such as fountains, pools, benches, sculptures, planters, and similar elements may be placed within landscaped areas. See Article _____ .

F. Building Heights. The maximum building height for all uses within any Planned Area Development shall be those heights set by the respective zoning district in which the PAD is located or by the Board of Supervisors.

Santa Cruz Co.
P+Z

ARTICLE 19

LANDSCAPING, SCREENING AND BUFFERING

____1901___ Purpose and Intent
____1902___ Scope
____1903___ Performance Standards
____1904___ Design Standards
____1905___ Vegetation Salvage Plans
____1906___ Plant Management
____1907___ Landscape Plans
____1908___ Street Trees
____1909___ Parking Areas
____1910___ Buffer and Screening Requirements
____1911___ Enforcement
____1912___ Definitions
____1913___ Reserved
____1913___ Appendices

SEC. 1901 PURPOSE AND INTENT

The purpose of this article is to promote the health, safety and general welfare of the county by creating a healthy living environment through the preservation of the county's various plant communities, conservation of groundwater, reduction of soil erosion and air pollution.

The intent of this article is to reduce adverse impacts upon the environment and between potentially incompatible uses and zones by requiring a minimum level of natural landscape preservation, site revegetation, buffering and screening. This article does not determine the compatibility or incompatibility of two different uses or zones. The Director of Planning, Planning and Zoning Commission and the Board of Supervisor makes that determination through the planning and zoning process.

SEC. 1902 SCOPE

The provisions of this chapter shall apply to all new residential, commercial and industrial development in Santa Cruz County which occurs after the effective date of this ordinance. These provisions shall also apply to:

1. building expansions and additions that cumulatively or singularly exceed 25% of the existing gross floor area will require the entire site to be brought into landscape conformance, and

2. changes in the use of land which would result in increased intensity of use as evidenced by increased parking requirements or when expansion of outside activities will require the entire site to be brought into landscape conformance.

3. Tree and Cacti Protection: Trees and cacti to be preserved on site that qualify for landscaping points (see Section 1903, 4) shall be protected before construction commences so as to prevent root damage, trunk damage and soil compaction. On site construction includes, but is not limited to grading, clear-cutting, trenching and building construction. Trees and cacti shall be protected in the following manner:

   a) prior to any land clearing all trees to be removed shall be clearly marked with red flagging tape.

   b) prior to any land clearing all trees, cacti and shrubs to be preserved shall have barriers erected which, as a minimum, are made of 1" X 1" or similar sturdy stock, for shielding of protected plants, no closer than six (6') feet from the tree trunk or the drip line, whichever is greater, of all such trees or groups of plants.

   c) The owner, developer, or agent shall not cause or permit the movement of equipment or the storage of equipment, materials, debris or fill to be placed within the required protective barrier.

   d) The owner, developer, or agent shall not cause or permit the cleaning of equipment or materials or the storage or disposal of waste materials such as paints, oils, solvents, asphalt, concrete, mortar or any other material harmful to the life of a tree within the drip line of any protected tree or group of trees.

   e) No damaging attachment, wires (other than supportive wires for a tree), signs or permits may be fastened to any tree protected by this ordinance.

   f) Large property areas or areas with steep slopes, containing protected trees and or vegetation may be ribboned off in lieu of barriers as required by sub section 3 b above by placing stakes a minimum of fifty (50) feet apart and tieing ribbon or rope from stake to stake along the outside perimeter of such areas to be cleared.

SEC. 1907 LANDSCAPE PLAN REQUIREMENTS

A Landscape Plan shall be required by the Planning and Zoning Department for the following:

1. Any development plan or subdivision plat that requires sixteen or more public parking spaces.

2. Any development plan or subdivision plat, that contains common areas, open space or natural areas owned or controlled by a homeowners/property owners association.

3. When screening, buffering or landscaping is required by the Board of Supervisors as a condition of rezoning or for other reasons,

4. Any recreation/activity site plan

5. Any plan or plat for apartments or other rental projects

6. Any plan or plat within a Historic or Preservation zone

7. Any landscaping on medians or roadsides within a public right-of-way

8. Any site that is graded in excess of fifty (50%) percent.

The Landscape Plan may be a component of the Vegetation Salvage Plan or a separate document.

9. It shall include the following components:

a) The Landscape Plan (herein after referred to as the Plan) shall be drawn on a sheet no larger than 24" X 36". A north arrow, scale, project name, owner's name and address landscape architect's name and address, property lines and project limits, topographic lines and elevations are required.

b) The Plan shall show all existing and proposed buildings, parking areas, roadways and walkways, locations and types of landscaped areas and materials, walls and screening and stormwater harvesting devices.

c) The Plan shall denote all existing, preserved, relocated and introduced plant materials, both graphically and written (botanical and common name) along with specified sizes and quantities.

d) A design concept statement shall be incorporated into the Plan which explains: plant selection, comments on the site's soil conditions, site grading and how stormwater harvesting will be utilized in the site's revegetation.

e) A plant list, from the approved county plant list shall be incorporated into the Plan denoting both botanical and common names of all plants, specified sizes, graphic symbols and whether the plant is preserved, transplanted or introduced.

g) Street trees shall not be planted within three (3) feet of any permanent hard surface paving or walkway (unless a root divertor is applied) and spaces between the tree and such hard surface may be covered by a tree grate, bricks, sand and or paver blocks.

SEC. 1909 PARKING AREAS

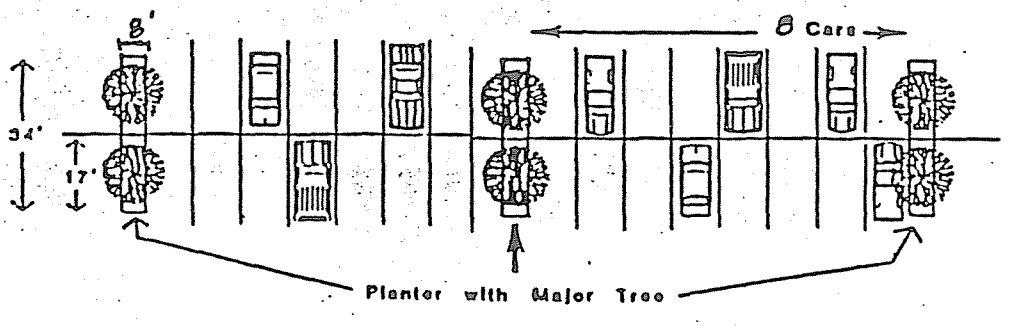
1. The purpose of this section is to establish design guidelines to moderate air temperature through the placement of trees within parking areas and to screen the perimeter from public view. These guidelines shall apply to parking areas of sixteen (16) spaces or more.

2. Design Standards: A landscaped planter shall be provided for every eight (8) parking space.

SPACES	PLANTERS
16 - 23	1
24 - 31	2
32 - 39	3
40 - 48	4
etc.....	

a) Planters shall be curbed and shall have a minimum dimension of 8 feet by 17 feet measured from the back of curb. At least one (1) curb cut shall be provided to allow stormwater access into the planter.

b) Each planter, within the parking area, shall be planted with at least one tree, having a clear trunk of 4.5 feet, and at least three shrubs, with a mature height of no more than 3 feet; and the remainder covered by ground cover. The planting grade shall be lower that the grade of the surrounding parking area to allow for retention of on site stormwater runoff.



c) On the parking lot perimeter, vehicles may encroach 2' feet upon a landscaped area, when the said area is at least eight (8') feet in depth and protected by wheel stops or curbing and utilize that encroachment as part of the required depth of the abutting parking space.

SEC. 1910 BUFFER AND SCREENING REQUIREMENTS

1. A Buffers purpose is to reduce the impacts of adjacent land uses upon each other and/or the surrounding community. Buffers shall be located on the outer perimeter of a lot or parcel, extending from the main building to the lot or parcel boundary line. Buffers shall not be located on any portion of an existing or dedicated public or private street right-of-way. Utility easements may be used to satisfy fifty (50%) percent of the required buffer area, if the landowners agree, with the approval of the Planning Director. The property owner is responsible for the establishment and maintenance of screening in accordance with the requirements of this section unless the abutting use has already provided said screening in compliance with the standards of this section.

2. If a discrepancy occurs between the yard set back and the required buffer, whichever distance is greater shall be utilized.

3. No main and or accessory structure shall occupy any portion of a buffer area, unless approved by the Board of Adjustment

4. In buffers exceeding forty (40') feet, thirty (30%) percent of the required distance, immediately adjacent to the affected use, shall be landscaped and screened. The remainder of the buffer may be used for utilities and parking provided the minimum landscape and screening standards are exceeded.

5. Within buffers, screening may be required by the Planning Director, Planning and Zoning Commission or Board of Supervisors and may consist of any of the following:

   a) At least one (1) row of deciduous or evergreen trees or a mixture of each, and spaced not more than fifteen (15) feet apart, and at least one (1) row of evergreen shrubs spaced not more than five (5) feet apart which will grow to form a continuous hedge at least five (5) feet in height within three (3) years of planting, turf, low growing evergreen shrubs, evergreen ground cover or inorganic mulch covering the balance of the area.
   b) A masonry wall

d) Walls shall be required along the rear of reverse frontage lots with a height of six (6) feet. Such walls shall be of slump block or masonry construction with stucco or mortar wash finish, or compatible alternatives approved by the building inspector. Street trees and landscaping materials shall be required between the wall and curb.

e) Exterior boundaries of mobile home and trailer parks shall be landscaped and provided with a masonry wall having a height of six (6) feet.

f) In cases where the landscape requirements for a site are exceeded by the points generated by the buffer requirements, both the buffer requirements and street tree requirements shall be met.

SEC. 1911 ENFORCEMENT

The Planning Director is charged with the enforcement of this code. He shall appoint, according to law, all subordinate officials and assistants necessary to the enforcement of this code as outlined in Article 9, Section 907 and Section 908 of the Santa Cruz County Zoning Ordinance of 1973.

SEC. 1912 DEFINITIONS

1. Buffer: a horizontal distance from the main building(s) of proposed use to the property line of an adjacent zoning district.

2. DBH (Diameter at Breast Height): the diameter of a tree trunk measured at approximately four and a half (4 1/2') feet or fifty four (54") inches above the ground.

3. Deciduous: plants that are naturally without foliage for a portion of the year

4. Drip Line: an imaginary vertical line running from the outermost branches or portion of the tree to the ground

5. Effluent: reclaimed wastewater

6. Excavate: the removal or recovery by any means whatsoever of soil, rock, minerals, mineral substances or organic substances other than vegetation, from water or land on or beneath the surface thereof, or beneath the land surface, whether exposed or submerged

7. Grade: to change the natural contours of the land

ARIZONA REVISED STATUTES

ty iles from the limits of the county
:ei reimbursement for actual expenses
: o: ..ot to exceed fifteen dollars for each
ttending board meetings or otherwise
their duties at the county seat.
ie l ard of supervisors shall approve by a
em rs, reimbursement for such expenses
d in this section except that a member of
f supervisors seeking reimbursement for
ou ant to this section shall refrain from
ucl uestion.

Chairman; quorum; public sessions

ie supervisors shall elect a chairman, who
i to is other duties, shall sign all orders
:s the board.
majority of the board constitutes a quorum
nsaction of business.
l s ions of the board shall be public.

M utes of proceedings

board shall cause to be recorded in full
ings had by it in a book designated the minutes
th board. The full minutes of proceedings
pu ished once not later than one month
n meeting in the official newspaper of the
The published minutes shall include all
and warrants approved by the board in excess
iun ed dollars except that multiple demands
ra from a single supplier or individual
hundred dollars whose cumulative total
ne thousand dollars in a single reporting period
all so be published. Such reporting period
ot ceed thirty days. Each newspaper that
es the minutes of the board shall supply to the
ibraries in each city, town and county a copy
ubli ed minutes.

S poena of witnesses; production of books and papers

oard may, by its chairman, issue subpoenas to
att dance of any person and the production
boo or papers relating to the affairs of the
for amination upon any matter within their
tion. A witness is bound to attend, and
and to answer all questions which he would
d t nswer in the matter before a court. Obe
:o t subpoena, or to an order to attend or to
may be enforced by the board, and for that
the board has all the powers conferred by law
urt of record.

A thority to require services of sheriff

oard may direct the sheriff to attend its meetings
preserve order, and serve subpoenas, notices
ion Neither the officer serving subpoenas nor
nes s are entitled to fees.

Administration of oaths by board or clerk

me er of the board or the clerk may administer
ns, t no fees shall be charged therefor.

Custody and inspection of records

oo records and accounts of the board shall
at e office of the clerk of the board, and
, a shall be open to public inspection.

Pecuniary interest as bar to vote of supervisor

per or shall not vote upon any measure in
ie, any member of his family or his partner,
arily interested.

11-333. Misconduct by supervisor; penalty

A supervisor who neglects or refuses to perform any duty imposed on him without just cause, or who wilfully violates any law provided for or relating to the office of supervisor, or fraudulently or corruptly performs any duty imposed upon him by law, or wilfully, fraudulently or corruptly attempts to perform an act as supervisor unauthorized by law, in addition to other penalties or punishment prescribed, shall forfeit to the county five hundred dollars for every such act, which may be recovered on his official bond, and is further liable on his official bond to any person injured thereby for all damages sustained. 1955

ARTICLE 3. CLERK OF BOARD

11-341. Appointment; duties

The board of supervisors shall appoint a clerk of the board, who shall:

1. Record all proceedings of the board.
2. Make full entries of the board's resolutions and decisions on all questions concerning the raising of money for and allowance of accounts against the county.
3. Record the vote of each member on every question upon which there is a division or at the request of any member present.
4. Sign all orders made and warrants issued by order of the board for the payment of money.
5. Record the reports of the county treasurer of the receipts and disbursements of the county.
6. Preserve and file all accounts acted upon by the board.
7. Preserve and file all petitions and record the actions of the board thereon.
8. Record all orders levying taxes.
9. Perform all other duties required by law or rule or order of the board. 1955

11-342. Financial statement to state treasurer

The clerk of the board, immediately after he receives each county treasurer report as provided by § 11-501, shall prepare a statement of the amount of all money, from whatever source collected or paid over to the board, showing the portion thereof belonging to the state. Within ten days after he receives each county treasurer report, the clerk shall transmit a certified copy of such statement to the state treasurer. 1983

ARTICLE 4. POWERS AND DUTIES

11-251. Powers of board

The board of supervisors, under such limitations and restrictions as are prescribed by law, may:

1. Supervise the official conduct of all county officers and officers of all districts and other subdivisions of the county charged with assessing, collecting, safekeeping, managing or disbursing the public revenues, see that such officers faithfully perform their duties and direct prosecutions for delinquencies, and, when necessary, require the officers to renew their official bonds, make reports and present their books and accounts for inspection.
2. Divide the counties into such districts or precincts as required by law, change them and create others as convenience requires.
3. Establish, abolish and change election precincts, appoint inspectors and judges of elections, canvass election returns, declare the result and issue certificates thereof.
4. Lay out, maintain, control and manage public roads, ferries and bridges within the county and levy such tax therefor as may be authorized by law.
5. Provide for the care and maintenance of the indigent sick of the county, erect and maintain hospitals therefor and, in its discretion, provide a farm in connection with the county hospital and adopt ordinances for working the farm.
6. Provide suitable rooms for county purposes.
7. Purchase, receive by donation or lease real or personal property necessary for the use of the county prison and take care of, manage and control it, but no purchase of real property shall be made unless the value has been previously estimated by three disinterested citizens of the county, appointed by the board for that purpose, and no more than the appraised value shall be paid therefor.
8. Cause to be erected and furnished a courthouse, jail, hospital and such other buildings as necessary, and construct and establish a branch jail, when necessary, at a point distant from the county seat.
9. Sell at public auction, after thirty days' previous notice given by publication in a newspaper of the county, stating the time and place of the auction, and convey to the highest bidder, for cash or contract of purchase extending not more than ten years from the date of sale and upon such terms and conditions and for such consideration as the board shall prescribe, any property belonging to the county which the board deems advantageous for the county to sell, or which the board deems unnecessary for use by the county, and shall pay the proceeds thereof into the county treasury for use of the county, except that personal property need not be sold but may be used as a trade-in on the purchase of personal property when the board deems this disposition of the personal property to be in the best interests of the county. When the property for sale is real property, the board shall have such property appraised by a qualified independent fee appraiser who has an office located in this state. The appraiser shall establish a minimum price which shall in no instance be less than ninety per cent of the appraised value. The notice regarding the sale of real property shall be published in the county where the property is situated and may be published in one or more other counties, and shall contain, among other things, the appraised value, the minimum acceptable sale price, and the common and legal description of the real property. Notwithstanding the requirement for a sale at public auction prescribed in this paragraph, a county may with unanimous consent of the board, without a public auction, sell or lease any county property to any other duly constituted governmental entity, including the state, cities, towns and other counties. A county may with unanimous consent of the board, without public auction, sell or lease any county property for a specific use to any solely charitable, social or benevolent nonprofit organization incorporated or operating in this state. A county may dispose of surplus equipment and materials that have little or no value or are unauctionable in any manner authorized by the board.
10. Examine and exhibit the accounts of all officers having the care, management, collection or disbursement of money belonging to the county or appropriated by law or otherwise for the use and benefit of the county.
11. Examine, settle and allow all accounts legally chargeable against the county, order warrants to be drawn on the county treasurer therefor and provide for issuing the warrants.

12. Levy such tax annually on the taxable property of the county as may be necessary to defray the general current expenses thereof, including salaries otherwise unprovided for, and levy such other taxes as are required to be levied by law.

13. Equalize assessments.

14. Direct and control the prosecution and defense of all actions to which the county is a party, and compromise them.

15. Insure the county buildings in the name of and for the benefit of the county.

16. Fill by appointment all vacancies occurring in county or precinct offices.

17. Adopt provisions necessary to preserve the health of the county, and provide for the expenses thereof.

18. With the approval of the department of health services, contract with any qualified person to provide all or part of the health services, funded through the department of health services with federal or state monies, that the board in its discretion extends to residents of the county.

19. Contract for county printing and advertising, and provide books and stationery for county officers.

20. Provide for rebinding county records, or, if necessary, the transcribing of county records.

21. Make and enforce necessary rules and regulations for the government of its body, the preservation of order and the transaction of business.

22. Adopt a seal for the board, a description and impression of which shall be filed by the clerk in the office of the county recorder and the secretary of state.

23. Establish, maintain and conduct or aid in establishing, maintaining and conducting public aviation fields, purchase, receive by donation or lease any property necessary therefor, lease, at a nominal rental if desired, sell such aviation fields or property to the United States or any department thereof, or sell or lease such aviation fields to a city, exchange lands acquired pursuant to this section for other lands, or act in conjunction with the United States in maintaining, managing and conducting all thereof, and, when any such property or part thereof is not needed for the purposes herein mentioned, it shall be sold by the board and the proceeds paid into the general fund of the county.

24. Acquire and hold property for the use of county fairs, and conduct, take care of and manage them.

25. Authorize the sheriff to offer a reward, not exceeding ten thousand dollars in one case, for information leading to the arrest and conviction of persons charged with crime.

26. Contract for the transportation of insane persons to the state hospital or direct the sheriff to transport such persons. The county is responsible for such expense to the extent the expense is not covered by any third party payor.

27. Provide for the reasonable expenses of burial for deceased indigents as provided in section 36-831, maintain a permanent register of deceased indigents including name, age and date of death, and when burial occurs, the board shall mark the grave with a permanent marker giving the name, age, and date of birth, if known.

28. Sell or grant to the United States the title or interest of the county in any toll road or toll train in or partly within a national park, upon such terms and consideration as may be agreed upon by the board and the secretary of the interior of the United States.

29. Enter into agreements for acquiring rights-of-way, construction, reconstruction or maintenance of highways in their respective counties, including highways which pass through Indian reservations, with the government of the United States, acting through its duly authorized officers or agents pursuant to any act of Congress, except that the governing body of any Indian tribe whose lands are affected must consent to the use of its land, and any such agreements entered into prior to June 26, 1952 are validated and confirmed.

30. Do and perform all other acts and things necessary to the full discharge of its duties as the legislative authority of the county government.

31. Make and enforce all local, police, sanitary and other regulations not in conflict with general law.

32. Budget for funds for foster home care during the school week for mentally retarded and otherwise handicapped children who reside within the county and attend a school for the handicapped in a city or town within such county.

33. Do and perform all acts necessary to enable the county to participate in the "economic opportunity act of 1964" (P.L. 88-452; 78 Stat. 508, as amended).

34. Provide a plan or plans for its employees which provide tax deferred annuity and deferred compensation plans as authorized pursuant to title 26, United States Code annotated. Such plans shall allow voluntary participation by all employees of the county. Participating employees shall authorize the board to make reductions in their remuneration as provided in an executed deferred compensation agreement.

35. Adopt and enforce standards for shielding and filtration of commercial or public outdoor portable or permanent light fixtures in proximity to astronomical or meteorological laboratories.

36. Subject to the prohibitions, restrictions and limitations as set forth in section 11-830, adopt and enforce standards for excavation, landfill and grading to prevent unnecessary loss from erosion, flooding and landslides.

37. Make and enforce necessary ordinances for the operation and licensing of any establishment not in the limits of an incorporated city or town in which is carried on the business of providing baths, showers or other forms of hydrotherapy or any service of manual massage of the human body.

38. Provide pecuniary compensation as salary or wages for overtime work performed by county employees, including those employees covered by the provisions of title 23, chapter 2, article 9. In so providing, the board may establish salary and wage plans incorporating classifications and conditions prescribed by the federal fair labor standards act.

39. Establish, maintain and operate medical clinics as defined in title 36, chapter 24, article 1.

40. Enact ordinances under its police authority prescribing reasonable curfews in unincorporated areas of the county for persons under the age of eighteen and fines not to exceed the fine for a petty offense for violation of such ordinances on the request or petition of either:

(a) A homeowners' association which represents a majority of the homeowners in the area covered by the association and to which the curfew would apply.

(b) A majority of the residents of the area to which the curfew would apply.

41. Lease or sublease personal property owned by the county to other political subdivisions of this state to be used for a public purpose.

42. In addition to the agreements authorized by section 11-651, enter into long-term agreements for the purchase of personal property, provided that the board may cancel any such agreement at the end of

fiscal year, at which time the seller may r
property and the agreement shall be de
nated.

43. Make and enforce necessary ordina
conflict with the laws of this state to regu
recreational motor vehicles operated
county on public lands without lawful a
private lands without the consent of the la
or which generate air pollution. For purp
paragraph, "off-road recreational mot
means three and four wheel vehicles ma
for recreational nonhighway all terrain

44. Acquire land for roads, drainage
other public purposes by exchange wit
auction, except that notice shall be publi
days before the exchange listing the prop
ship and descriptions.

45. Purchase real property for public pu
vided that final payment shall be made no
five years after the date of purchase.

46. Lease purchase real property an
ments for real property for public purpose
that final payment shall be made not lat
teen years after the date of purchase.

47. Make and enforce ordinances for the
and disposition of domestic animals subje
mane, unhealthful or dangerous conditions
stances. An ordinance enacted pursuant to
graph shall not restrict or limit the autho
game and fish commission to regulate the
wildlife. For the purposes of this paragrap
tic animal" means an animal kept as a p
primarily for economic purposes.

48. If a part of a parcel of land is to be
roads, drainage, flood control or other publi
and the board and the affected property ow
mine that the remainder will be left in suc
tion as to give rise to a claim or litigation c
vierance or other damage, acquire the wh
by purchase, donation, dedication, exchang
nation or other lawful means and the rema
be sold or exchanged for other properties r
any public purpose.

49. Make and enforce necessary rules pro
the reimbursement of travel and subsis
penses of members of county boards, commis
advisory committees when acting in the pe
of their duties, if the board, commission or
committee is authorized or required by f
state law or county ordinance, and the meml
without compensation.

50. Provide a plan or plans for county
benefits which allow for participation in a
plan that meets the requirements of th
States internal revenue code of 1986.

51. Make and enforce ordinances which
restrictive than state requirements to redu
courage the reduction of carbon monoxide a
levels, provided an ordinance does not es
standard for vehicular emissions, includi
measures to reduce or encourage the reducti
encounter use of motor vehicles by employe
county and employees whose place of emplo
the unincorporated areas of the county.

52. Make and enforce ordinances to provic
reimbursement of up to one hundred per ce
cost to county employees of public bus or
transportation to and from their place of emp

53. Lease for public purposes any real p
agreements for real property and persor
under the same terms and conditions, t

in their respective counties, including
which pass through Indian reservations
ov ment of the United States, acting
d authorized officers or agents pursu
act of Congress, except that the governing
y Indian tribe whose lands are affected
ent to the use of its land, and any such
s e ered into prior to June 26, 1952 are
an confirmed.
nd perform all other acts and things nece
full discharge of its duties as the legisla
rit of the county government.
e d enforce all local, police, sanitary and
lations not in conflict with general law.
get for funds for foster home care during
work for mentally retarded and otherwise
ed ildren who reside within the county
d a hool for the handicapped in a city or
in such county.
and perform all acts necessary to enable the
par ipate in the "economic opportunity act
P. 88-452; 78 Stat. 508, as amended),
vide a plan or plans for its employees which
x deferred annuity and deferred compensa
s a authorized pursuant to title 26, United
de notated. Such plans shall allow volun
ici tion by all employees of the county
ting employees shall authorize the board to
uctions in their remuneration as provided in
tec eferred compensation agreement.
opt nd enforce standards for shielding and
of commercial or public outdoor portable or
nt light fixtures in proximity to astronomi
eter ological laboratories.
bje to the prohibitions, restrictions and
ns set forth in section 11-830, adopt and
tandards for excavation, landfill and grading
nt unnecessary loss from erosion, flooding
dsl s.
ak nd enforce necessary ordinances for the
n and licensing of any establishment not in
ts of an incorporated city or town in which is
on the business of providing baths, showers or
rm f hydrotherapy or any service of manual
o he human body.
rovide pecuniary compensation as salary or
or overtime work performed by county em
ir uding those employees covered by the
ns title 23, chapter 2, article 9. In so pro
the board may establish salary and wage
ncorporating classifications and conditions
ed by the federal fair labor standards act
sta ish, maintain and operate medical
as fined in title 36, chapter 24, article
nact ordinances under its police authority
oing reasonable curfews in unincorporated
f th county for persons under the age of eig
id es not to exceed the fine for a petty
or lation of such ordinances on the request
tion of either:
homeowners' association which represents
ty the homeowners in the area covered by
oci on and to which the curfew would apply
majority of the residents of the area to which
rfew would apply.
Lea or sublease personal property owned by
nt o other political subdivisions of this state
use for a public purpose.
In addition to the agreements authorized by
11-651, enter into long-term agreements
rch e of personal property, provided that the
ma cancel any such agreement at the end of a

fiscal year, at which time the seller may repossess the property and the agreement shall be deemed terminated.

43. Make and enforce necessary ordinances not in conflict with the laws of this state to regulate off-road recreational motor vehicles operated within the county on public lands without lawful authority, on private lands without the consent of the lawful owner or which generate air pollution. For purposes of this paragraph, "off-road recreational motor vehicle" means three and four wheel vehicles manufactured for recreational nonhighway all terrain travel.

44. Acquire land for roads, drainage ways and other public purposes by exchange without public auction, except that notice shall be published thirty days before the exchange listing the property ownership and descriptions.

45. Purchase real property for public purposes, provided that final payment shall be made not later than five years after the date of purchase.

46. Lease purchase real property and improvements for real property for public purposes, provided that final payment shall be made not later than fifteen years after the date of purchase.

47. Make and enforce ordinances for the protection and disposition of domestic animals subject to inhumane, unhealthful or dangerous conditions or circumstances. An ordinance enacted pursuant to this paragraph shall not restrict or limit the authority of the game and fish commission to regulate the taking of wildlife. For the purposes of this paragraph, "domestic animal" means an animal kept as a pet and not primarily for economic purposes.

48. If a part of a parcel of land is to be taken for roads, drainage, flood control or other public purposes and the board and the affected property owner determine that the remainder will be left in such a condition as to give rise to a claim or litigation concerning severance or other damage, acquire the whole parcel by purchase, donation, dedication, exchange, condemnation or other lawful means and the remainder may be sold or exchanged for other properties needed for any public purpose.

49. Make and enforce necessary rules providing for the reimbursement of travel and subsistence expenses of members of county boards, commissions and advisory committees when acting in the performance of their duties, if the board, commission or advisory committee is authorized or required by federal or state law or county ordinance, and the members serve without compensation.

50. Provide a plan or plans for county employee benefits which allow for participation in a cafeteria plan that meets the requirements of the United States internal revenue code of 1986.

51. Make and enforce ordinances which are more restrictive than state requirements to reduce or encourage the reduction of carbon monoxide and ozone levels, provided an ordinance does not establish a standard for vehicular emissions, including ordinances to reduce or encourage the reduction of the commuter use of motor vehicles by employees of the county and employees whose place of employment is in unincorporated areas of the county.

52. Make and enforce ordinances to provide for the reimbursement of up to one hundred per cent of the cost to county employees of public bus or van pool transportation to and from their place of employment.

53. Lease for public purposes any real property, improvements for real property and personal property under the same terms and conditions, to the extent applicable, as are specified in sections 11-651 and 11-653 for lease purchases. 1989

11-251.01. Conveyance to nonprofit housing corporation

The board of supervisors may convey any land and improvements thereon owned by the county directly and without compliance with the provisions of paragraph 9 of § 11-251 to a nonprofit corporation which operates housing units limited to those which are federally financed or sponsored. Such title so conveyed shall remain with the nonprofit corporation until such time as the bonded indebtedness incurred and due to the United States government or an agency thereof, is paid and at which time title to such land and the improvements thereon shall revert to the county. 1970

11-251.02. Additional powers of the board

The board of supervisors may:

1. Authorize the use of county personnel, facilities, equipment, supplies and other resources in search or rescue operations involving the life or health of any person.

2. Contract for the acquisition, rental or hire of equipment, services, services supervision, supplies and other resources for use in such search or rescue operations. 1971

11-251.03. Records center; contents; open to inspection

The board of supervisors may establish a central records center for the preservation, storage and handling of all records required by law to be kept by county officers and justices of the peace. In any county having such a central records center, all county officers and justices of the peace shall deliver to the board of supervisors such public records in their custody required by law to be kept which are of legal, administrative, historical or other value, as determined pursuant to § 41-1351, and which are required to be so delivered by the rules and regulations issued by the director of the department of library, archives and public records. County officers and justices of the peace may make and retain copies of records necessary for those officers to perform the duties of their office. Public records in such center shall be open to public inspection and be preserved in the manner prescribed by law. 1976

11-251.04. Authority to set rates for private towing carrier; definition; violation; classification

A. Except as provided in subsection B of this section, the board of supervisors may regulate the maximum rate and charge for towing, transporting or impounding a motor vehicle from private property without the permission of the owner or operator of the vehicle by any private towing carriers doing business within the boundaries of the county. A private towing carrier is subject to the maximum rate and charge regulation prescribed by the board of supervisors for all such towing, transporting or impounding services if the vehicle being towed or transported is towed from private property located on property that lies within the boundaries of the county.

B. The provisions of subsection A of this section shall not apply to the towing, transporting or impounding of a motor vehicle from private property without the permission of the owner or operator of the vehicle by a private towing carrier where the vehicle being towed or transported is towed or transported from property that lies within the boundaries of an

ARIZONA REVISED STATUTES

not to exceed twelve per year, against the parcels of land actually receiving irrigation service.

C. Rates for water service to district lands shall not be subject to regulation by the corporation commission. 1985

48-3476. Payment of district taxes required in advance

A. Before any particular parcel of district land is entitled to irrigation service, all district taxes and charges for the construction or repair of facilities standing against such parcel, whether for the current year or carried forward from a previous year or years, together with all penalties and interest for failure to make payment when due, shall be paid in full.

B. Any trustee who knowingly authorizes and effects the delivery of water to any parcel of district land on which the taxes and charges specified in subsection A have not been paid, shall be personally liable for payment thereof. If an individual, organization or irrigation project, having a contract with the district, delivers water to any parcel of district land for or on account of which such charges and taxes have not been paid, such individual, organization or irrigation project shall be liable to the district in the amount involved and the district may withhold such amount from any payments due such individual, organization or project until the payments have been made. 1985

48-3477. Reimbursement for county services

Services provided by a county to an irrigation water delivery district are subject to reimbursement pursuant to § 11-251.06. 1985

CHAPTER 21

FLOOD CONTROL DISTRICTS

ARTICLE 1. COUNTY FLOOD CONTROL DISTRICTS

Section
48-3601. Definitions.
48-3602. Organization of county flood control district.
48-3603. Powers, duties and immunities of district and board; exemption.
48-3604. Establishing zones in the district.
48-3605. Assistance for floodplain delineations; duties of director.
48-3606. Assistance for topographic mapping.
48-3607. Director may contract for work.
48-3608. Assistance in flood insurance program.
48-3609. Floodplain delineation; regulation of use.
48-3609.01. Watercourse master plans; definition.
48-3610. Assumption of powers and duties by cities and towns; resolution; definitions.
48-3611. Citizens' flood control advisory board; qualification; functions.
48-3612. Board of review.
48-3613. Authorization required for construction in watercourses; exceptions; enforcement.
48-3614. Declaration of public nuisance; abatement.
48-3615. Violation; classification.
48-3616. Survey and report of flood control problems and facilities; comprehensive program; adoption by board; hearing.
48-3617. Development of flood control plan by director of water resources.
48-3618. Resolution calling for bond election; notice; manner of conducting election.
48-3619. Form, issuance and sale of bonds; limitation on bonded indebtedness; payment of bonds and interest.
48-3620. Certification and levy of taxes; limitation.
48-3620.01. Joint projects by zones.
48-3620.02. Authority for zone projects.
48-3621. Right-of-way.
48-3622. Permission required to connect to storm water drain; fee; violation; classification.
48-3623. Authority to issue refunding bonds; procedure; disposition of proceeds.
48-3624. Cooperation in flood control projects.
48-3625. Limitation on powers.
48-3626. Compliance; enforcement.
48-3627. Reimbursement for county services.

ARTICLE 1. COUNTY FLOOD CONTROL DISTRICTS

48-3601. Definitions

In this article, unless the context otherwise requires:

1. "Area of jurisdiction" means the incorporated and unincorporated areas of the county, including public lands, excluding those incorporated areas of cities or towns which have elected to assume floodplain management powers and duties pursuant to § 48-3610.

2. "Board" means the board of directors of a flood control district organized under this article.

3. "District" means a flood control district organized pursuant to this article.

4. "Flood" or "floodwaters" means a temporary rise in water level including groundwater or overflow of water onto lands not normally covered by water.

5. "Floodplain" means the areas adjoining the channel of a watercourse including areas where drainage is or may be restricted by man-made structures which have been or may be covered partially or wholly by floodwater from the one hundred-year flood.

6. "Floodplain regulations" means the codes, ordinances and other regulations adopted pursuant to this article relating to the use of land and construction within the floodway and floodplain areas.

7. "Floodway" means the channel of a river or other watercourse and the adjacent land areas necessary in order to discharge the one hundred-year flood without cumulatively increasing the water surface elevation more than one foot.

8. "One hundred-year flood" or "base flood" means a flood that has a one per cent chance of being equalled or exceeded in a one year period, based on the criteria established by the director of water resources.

9. "Person" means an individual or his agent, firm, partnership, association or corporation, or agent of the aforementioned groups, or this state or its agencies or political subdivisions.

10. "Regulatory flood elevation" means the elevation which is one foot above the base flood elevation for a watercourse for which the base flood elevation has been determined and shall be as determined by the criteria developed by the director of water resources for all other watercourses.

11. "Watercourse" means a lake, river, creek, stream, wash, arroyo, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

48-3602. Organization of county flood control district

A. Each county shall organize a county flood control district to include and govern its area of jurisdiction.

B. The county board o
board of directors of the d
not receive compensation
but are entitled to reimbu
expenses in attending distr
sary expenses incurred in
out this state if necessary t
district.

C. County flood control
any flood protection distr
chapter 18, article 10 of th
tence of a county flood c
itself affect the existence
protection district organiz
article 10 of this title.

48-3603. Powers, duties trict and bo

A. A county flood contr
this article is a political
state and has all the powe
ties granted generally to
the constitution and laws
munity of its property ar

B. The board of director
and duties in the acquisi
properties of the district a
latory functions under th
exercised by the governing
ration.

C. A district organized
through its board of dire

1. Acquire by eminent d
dedication, exchange or ot
way for and construct, o
control works and storm d
without the district for t

2. Acquire by eminent
dedication, exchange or ot
pose of by sale, exchange
and personal property wit
district.

3. Contract and join wi
States or any other flood
board, municipality, poli
mental agency, irrigation
ment district, association,
in acquiring, constructing
ing flood control works, a

4. Enter into contracts
this state, the United State
district, municipality, poli
mental agency, irrigation
ment district, association,
against liability by virtue
ages occurring through t
structures, streets, rights-o
tion with the operation
and the regulation of floo

5. Acquire and maintain
drainage facilities within
of the district if mutually
such facilities.

6. Acquire, convert and
these facilities as storm drai
agreeable to owners of su

7. Construct, maintain
and storm drainage facilit
in the district by agreemen
other municipal corporati
and other persons and
persons for the cost of

AUTHORITIES USED FOR
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY RACM

Arizona Revised Statutes [A.R.S.]

§ 49-426
49-422

Arizona Administrative Code, Title 18 Environmental Quality, Chapter 2 Air Pollution Control

R-18-2-407

ARIZONA LAWS RELATING TO ENVIRONMENTAL QUALITY

1992 EDITION

Issued by
Department of Environmental Quality
Phoenix, Arizona 85004
With the cooperation of the Environmental and
Natural Resources Law Section of the
Arizona State Bar

THE MICHIE COMPANY
Charlottesville, Virginia
1992

ARIZONA LAWS RELATING TO ENVIRONMENTAL QUALITY — 1992 EDITION

shall not be limited to the relevant factors prescribed by the clean air act.

B. No rule may be enacted or amended except after the director first holds a public hearing after twenty days' notice of such hearing. The proposed rule, or any proposed amendment of a rule, shall be made available to the public at the time of notice of such hearing.

C. The department shall enforce the rules adopted by the director.

D. All rules enacted pursuant to this section shall be made available to the public at a reasonable charge upon request. Laws 1992

49-426. Permits; delayed compliance orders; duties of director; exceptions; applications; objections; fees; definitions

Text of section as amended by Laws 1992, Ch. 299, § 12 and Ch. 319, § 51, effective September 30, 1992

A. An installation permit shall:

1. Be issued by the director in compliance with the terms of this section.

2. Be required for any person commencing construction of or making a modification to any building, structure, facility or installation which may cause or contribute to air pollution or the use of which may eliminate, reduce or control the emission of air pollutants.

3. Authorize the temporary operation pursuant to paragraphs 1 and 2 for a period of ninety days following installation if the applicant has complied with the terms of the permit. This paragraph shall not apply to any hazardous waste disposal facility constructed pursuant to title 49, chapter 5, article 1, except that such facility may be authorized, after the issuance of an installation permit, to temporarily operate the building, structure, facility or installation for which such installation permit has been issued only for the purpose of testing under such conditions as are imposed by the director. Such authorization shall be for a period not to exceed ninety days and shall not be construed as to allow operation for commercial purposes. All tests, inspections, analyses or gathering of information necessary to comply with the installation permit or to qualify for an operating permit shall be gathered during the ninety-day period. The director may for good cause shown extend the term of the temporary operating permit for up to ninety additional days. An installation permit shall remain in effect until the operating permit for such equipment is granted or denied or the application is canceled. The terms and conditions of an installation permit are incorporated into and become terms and conditions of the operating permit unless expressly modified.

B. The provisions of this section shall not apply to motor vehicles, to agricultural vehicles or agricultural equipment used in normal farm operations, or to fuel burning equipment which, in the aggregate with other such equipment of the applicant at the same location or property other than a one or two family residence, is rated at less than five hundred thousand British thermal units per hour.

C. Before any building, structure, facility or installation described in subsection A of this section may be operated or used beyond the time period authorized in subsection A of this section, an operating permit shall be obtained in writing from the director. No such operating permit shall be granted either by the director or the hearing board for any such building, structure, facility or installation described in subsection A of this section that is or has been constructed or installed without an installation permit until the necessary information is presented to the director and such building, structure, facility or installation is altered, if necessary, and made to conform to the applicable standards.

D. Every application for an installation permit or an operating permit shall be filed in the manner and form prescribed by the director, and shall contain all the information necessary to enable the director to make the determination to grant or deny such application. The director may require that such application include all buildings, structures, facilities or installations that are used or to be used by the applicant in a certain process or a single facility or location. Before acting on an application for an installation permit or an operating permit, the director may require the applicant to furnish further information or further plans or specifications. The director shall act, within a reasonable time, not to exceed thirty days, on such application and shall notify the applicant in writing of the proposed approval or denial of such application, except that the director may have a reasonable period of time in which to gather information, inspect premises, and issue such permits.

E. The director shall give notice of the proposed permit once each week for two consecutive weeks in a newspaper of general circulation in the county in which the building, structure, facility or installation is or will be located. The notice shall describe the proposed permit and air contaminants to be emitted and shall state that any person who may be adversely affected by the permit may file a written objection to the permit within fifteen days after the last publication of notice. The notice shall also state that any interested person may submit comments on the proposed permit and may request a public hearing. An objection shall state the name and mailing address of the objector, be signed by the objector, his agent or his attorney and clearly set forth reasons why the permit should not be issued. Grounds for objection are limited to whether the proposed permit meets the criteria for issuance prescribed in this section or in section 49-427.

F. Permits issued pursuant to this section may be issued subject to such terms and conditions as the director deems necessary, following public notice and an opportunity for public hearing, and subject to payment, upon issuance, of a reasonable fee based on the actual cost of processing the permit application, but not exceeding twenty-five thousand dollars. The director shall adopt, by rule, criteria for determining permit fees and for public hearings.

G. Operating permits may contain such terms and conditions as are consistent with the federal clean air act, as amended, and are found by the director to be necessary. Operating permits issued pursuant to this section shall be issued for a period of three years, except that operating permits containing the terms and conditions of primary nonferrous smelter orders or delayed compliance orders as authorized by sections 119 and 113(d) of the federal clean air act or consent decrees entered into before a court of competent jurisdiction shall be issued for the time periods provided for therein.

H. Except as provided in section 49-808, subsection E and subsection B of this section, any person burning used oil, used oil fuel, hazardous waste or hazardous waste fuel shall first obtain a permit from the

director. Any per
subsection shall
governing:
1. Limitations
rates of used oil
hazardous waste
2. The frequen
ducted by the p
3. The frequer
monitoring to b
4. Requiremer
5. Numeric
pounds per hour
nants to be emitt
used oil fuel, h
fuel.
I. For purpos
otherwise requi
1. "Building"
tion" means all
that belong to t
located on one o
ties and that ar
or persons unde
of any vessel.
considered as p
they belong to
same two-digit
dustrial classif
the 1977 suppl
2. "Clean air
(P.L. 88-206,
through 7671)
amendments fo
3. "Commen
of a source:
(a) For purp
act, that the ov
sary preconstr
by federal law
the following:
(i) Begun or
of physical on
completed wit
(ii) Entered
tual obligatio
fied without s
to undertake
to be complet
(b) For pur
the owner or
program of co
has entered i
take and com
uous progran
4. "Constr
source or ch
source includ
demolition of
in actual em
5. "Modific
change in or
source that i
pollutant em
relevant de
emission of
by more tha
6. "Source
or installati
pollution or
control the

ARIZONA LAWS RELATING TO ENVIRONMENTAL QUALITY

1992 EDITION

Issued by
Department of Environmental Quality
Phoenix, Arizona 85004
With the cooperation of the Environmental and
Natural Resources Law Section of the
Arizona State Bar

THE MICHIE COMPANY

each nonattainment area plan developed by a certified metropolitan planning organization. The adopted nonattainment area plan shall be transmitted to the department for inclusion in the state implementation plan provided for under section 49-404.

I. After adoption of a nonattainment area plan, if on the basis of the reasonable further progress determination described in subsection F of this section or other information, the control officer determines that any person has failed to implement an emission limitation or other control measure, means or technique as described in the resolution adopted pursuant to subsection G of this section, the control officer shall issue a written finding to the person, and shall provide an opportunity to confer. If the control officer subsequently determines that the failure has not been corrected, the county attorney, at the request of the control officer, shall file an action in superior court for a preliminary injunction, a permanent injunction, or any other relief provided by law.

J. After adoption of a nonattainment area plan, if, on the basis of the reasonable further progress determination described in subsection F of this section or other information, the director determines that any person has failed to implement an emission limitation or other control measure, means or technique as described in the resolution adopted pursuant to subsection G of this section, and that the control officer has failed to act pursuant to subsection I of this section, the director shall issue a written finding to the person and shall provide an opportunity to confer. If the director subsequently determines that the failure has not been corrected, the attorney general, at the request of the director, shall file an action in superior court for a preliminary injunction, a permanent injunction, or any other relief provided by law.

K. Notwithstanding subsections A and B of this section, in any metropolitan area with a metropolitan statistical area population of less than two hundred fifty thousand persons, the governor shall designate an agency that meets the criteria of section 174 of the clean air act and that is recommended by the city that causes the metropolitan area to exist and the affected county. That agency shall prepare and adopt the nonattainment area plan. If the governor does not designate an agency, the department shall be certified as the agency responsible for the development of a nonattainment area plan for that area. 1992

49-407. Private right of action; citizen suits

A. Except as provided in subsection B, a person having an interest may commence a civil action in superior court on his own behalf against the director alleging a failure of the director to perform an act or duty under this article or article 2 of this chapter that is not discretionary with the director or alleging that the director has unreasonably delayed an action within the director's authority. The court has jurisdiction to order the director to perform the act or duty.

B. No action may be commenced before sixty days after the plaintiff has given notice of the alleged violation to the director.

C. The court, in issuing a final order in an action brought under this section, may award costs of litigation, including reasonable attorney and expert witness fees, to any party whenever the court determines it is appropriate.

D. Nothing in this section restricts any right that any person or class of persons may have under any other statute or under the common law to seek enforcement of an emission standard or limitation or to seek any other relief against the state or a political subdivision. 1992

ARTICLE 2. STATE AIR POLLUTION CONTROL

49-421. Definitions

In this article, unless the context otherwise requires:

1. "Air contaminants" includes smoke, vapors, charred paper, dust, soot, grime, carbon, fumes, gases, sulfuric acid mist aerosols, aerosol droplets, odors, particulate matter, windborne matter, radioactive materials, or noxious chemicals, or any other material in the outdoor atmosphere.

2. "Air pollution" means the presence in the outdoor atmosphere of one or more air contaminants or combinations thereof in sufficient quantities, which either alone or in connection with other substances by reason of their concentration and duration are or tend to be injurious to human, plant or animal life, or cause damage to property, or unreasonably interferes with the comfortable enjoyment of life or property of a substantial part of a community, or obscures visibility, or which in any way degrades the quality of the ambient air below the standards established by the director.

3. "Department" means the department of environmental quality.

4. "Director" means the director of environmental quality.

5. "Hearing board" means the state air pollution control hearing board.

6. "Person" includes any public or private corporation, company, partnership, firm, association or society of persons, the federal government and any of its departments or agencies, the state and any of its agencies, departments or political subdivisions, as well as a natural person.

7. "Special inspection warrant" is an order in writing issued in the name of the state of Arizona, signed by a magistrate, directed to the director or his deputies, authorizing him to enter into or upon any public or private property for the purpose of making an inspection authorized by law. 1986

49-422. Powers

A. In addition to any other powers vested in it by law, the department may:

1. Accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, to carry out any of the purposes of this chapter. All monies resulting therefrom shall be deposited in the state treasury to the account of the department.

2. Secure necessary scientific, technical, administrative, and operational services, including laboratory facilities, by contract or otherwise to carry out the purposes of this chapter.

3. Require, as specified in subsections B and C of this section, any source of air contaminants to monitor, sample or perform other studies to quantify emissions of air contaminants or levels of air pollution that may reasonably be attributable to that source, if the director either:

(a) Determines that monitoring, sampling or other studies are necessary to determine the effects of the source on levels of air pollution.

(b) Has reasonable cause to believe a violation of this chapter, rules adopted pursuant to this chapter or a permit issued pursuant to this chapter has been committed.

(c) Determines that those
sary to accomplish the pur
that the monitoring, sampli
source are necessary in ord
the source on the emissio

B. The director shall ado
of air contaminants to mor
quantify their emissions o
reasonably be attributable
taminants for which ambie
emission standards or desi
tice or operational standar
suant to section 49-424,
49-425, subsection A. In th
the director shall consider
of the monitoring, sampli

C. For those sources of a
rules are not required to b
section B of this section, t
source of air contaminants
form monitoring, sampling
its emissions or air polluti
attributed to such a sour
monitoring, sampling or o
mit or order, the director
cost and accuracy of any
reasonable under the circu
factors, modeling, mass
sions projections. The dire
itoring, sampling or other
order if the director deter
the following conditions

1. The actual or potent
tion may adversely affect
ronment.

2. A monitoring, sa
method is technically feas
nant and the source.

3. An adequate scientif
sampling or quantificatio

4. The monitoring, s
method is reasonably ac

5. The cost of the meth
the use to be made of t

D. Orders issued and
pursuant to this section
hearing board in the sam
for orders of abatement in
and for permit conditions

49-423. Hearing boar

A. There shall be an a
board appointed by the g
38-211.

B. The hearing board s
The five members shall b
of air pollution. At leas
shall be an attorney lice
state. At least three me
stantial interest, as defi
person required to obtai
article. At least one me
registered engineer. Eac
for a term of three year
the third Monday in Jan

C. The hearing board
vice-chairman and such
essary.

D. Hearing board me
sation as prescribed purs

air the state or a political
1992

AI POLLUTION

s t context otherwise re-

" cludes smoke, vapors,
oot, grime, carbon, fumes,
t aerosols, aerosol droplets,
, v dborne matter, radioac-
s c micals, or any other ma-
mosphere.
ans the presence in the out-
or ore air contaminants or
su cient quantities, which
ction with other substances
ntration and duration are or
im , plant or animal life, or
y, unreasonably interferes
oyment of life or property of a
mmunity, or obscures visibil-
d rades the quality of the
ta ards established by the

s the department of environ-

ne rector of environmental

eans the state air pollution

ny iblic or private corpora-
ip irm, association or soci-
l government and any of its
s, the state and any of its
or litical subdivisions, as
n.
wa rant" is an order in writ-
f the state of Arizona, signed
l t he director or his depu-
ent into or upon any public
he urpose of making an in-
w. 1986

ot r powers vested in it by
ay:
l administer grants or other
lic d private agencies, in-
rm ent, to carry out any of
apter. All monies resulting
ited in the state treasury to
rt nt.
cie ific, technical, adminis-
s ices, including labora-
ct or otherwise to carry out
apter.
d subsections B and C of
of contaminants to moni-
her studies to quantify emis-
ts or levels of air pollution
att utable to that source, if

onitoring, sampling or other
determine the effects of the
po tion.
us o believe a violation of
ted pursuant to this chapter
ant to this chapter has been

(c) Determines that those studies or data are necessary to accomplish the purposes of this chapter, and that the monitoring, sampling or other studies by the source are necessary in order to assess the impact of the source on the emission of air contaminants.

B. The director shall adopt rules requiring sources of air contaminants to monitor, sample or otherwise quantify their emissions of air pollution which may reasonably be attributable to such sources for air contaminants for which ambient air quality standards or emission standards or design, equipment, work practice or operational standards have been adopted pursuant to section 49-424, subsection A or section 49-425, subsection A. In the development of the rules, the director shall consider the cost and effectiveness of the monitoring, sampling or other studies.

C. For those sources of air contaminants for which rules are not required to be adopted pursuant to subsection B of this section, the director may require a source of air contaminants, by permit or order, to perform monitoring, sampling or other quantification of its emissions or air pollution that may reasonably be attributed to such a source. Before requiring such monitoring, sampling or other quantification by permit or order, the director shall consider the relative cost and accuracy of any alternatives which may be reasonable under the circumstances such as emission factors, modeling, mass balance analyses or emissions projections. The director may require such monitoring, sampling or other quantification by permit or order if the director determines in writing that all of the following conditions are met:

1. The actual or potential emissions or air pollution may adversely affect public health or the environment.

2. A monitoring, sampling or quantification method is technically feasible for the subject contaminant and the source.

3. An adequate scientific basis for the monitoring, sampling or quantification method exists.

4. The monitoring, sampling or quantification method is reasonably accurate.

5. The cost of the method is reasonable in light of the use to be made of the data.

D. Orders issued and permit conditions imposed pursuant to this section shall be appealable to the hearing board in the same manner as that prescribed for orders of abatement in sections 49-434 and 49-435 and for permit conditions in section 49-428. 1991

49-423. Hearing board

A. There shall be an air pollution control hearing board appointed by the governor pursuant to section 38-211.

B. The hearing board shall consist of five members. The five members shall be knowledgeable in the field of air pollution. At least one member of the board shall be an attorney licensed to practice law in this state. At least three members shall not have a substantial interest, as defined in section 38-502, in any person required to obtain a permit pursuant to this article. At least one member of the board shall be a registered engineer. Each board member shall serve for a term of three years. The terms shall expire on the third Monday in January of the appropriate year.

C. The hearing board shall select a chairman and vice-chairman and such other officers as it deems necessary.

D. Hearing board members shall receive compensation as prescribed pursuant to section 38-611. 1990

49-424. Duties of department

The department shall:

1. Determine whether the meteorology of the state is such that airsheds can be reasonably identified and air pollution, therefore, can be controlled by establishing air pollution control districts within well defined geographical areas.

2. Make continuing determinations of the quantity and nature of emissions of air contaminants, topography, wind and temperature conditions, possible chemical reactions in the atmosphere, the character of development of the various areas of the state, the economic effect of remedial measures on the various areas of the state, the availability, use, and economic feasibility of air-cleaning devices, the effect on human health and danger to property from air contaminants, the effect on industrial operations of remedial measures, and other matters necessary to arrive at a better understanding of air pollution and its control.

3. Determine the standards for the quality of the ambient air and the limits of air contaminants necessary to protect the public health, and to secure the comfortable enjoyment of life and property by the citizens of the state or in any defined geographical area of the state where the concentration of air pollution sources, the health of the population, or the nature of the economy or nature of land and its uses so require, and develop and transmit to the county boards of supervisors minimum state standards for air pollution control.

4. Conduct investigations, inspections and tests to carry out the duties of this section under the procedures established by this article.

5. Hold hearings relating to any aspect of or matter within the duties of this section, and in connection therewith, compel the attendance of witnesses and the production of records under the procedures established by section 49-432.

6. Prepare and develop a comprehensive plan or plans for the abatement and control of air pollution in this state.

7. Encourage voluntary cooperation by advising and consulting with persons or affected groups or other states to achieve the purposes of this chapter, including voluntary testing of actual or suspected sources of air pollution.

8. Encourage political subdivisions of the state to handle air pollution problems within their respective jurisdictions, and provide as it deems necessary technical and consultative assistance therefor.

9. Compile and publish from time to time reports, data, and statistics with respect to those matters studied and investigated by the department. 1992

49-425. Rules; hearing

A. The director shall adopt such rules as he determines are necessary and feasible to reduce the release into the atmosphere of air contaminants originating within the territorial limits of the state or any portion thereof and shall adopt, modify, and amend reasonable standards for the quality of, and emissions into, the ambient air of the state for the prevention, control and abatement of air pollution. Additional standards shall be established for particulate matter emissions, sulfur dioxide emissions, and other air contaminant emissions determined to be necessary and feasible for the prevention, control and abatement of air pollution. In fixing such ambient air quality standards, emission standards or standards of performance, the director shall give consideration but

AIR POLLUTION RULES

State of Arizona
Department of Environmental Quality
2005 North Central Avenue
Phoenix, Arizona 85004

A. All national parks and national forests having areas which extend into more than one county of the State of Arizona, as well all State parks and forests shall be under the jurisdiction of the Director in all matters relating to prescribed burning or slash disposal.

B. Each entity mentioned in Subsection A. shall comply with the following:

1. Each national park, State park, national forest or State forest hereinafter called forest will apply directly to the Bureau for an annual burning permit for all planned burning projects. Application will be made in the spring of the year, prior to June 1 for the ensuing fiscal year.

2. The application shall be in the form of a letter listing all projects. Enclosed with the letter will be copies of the Park Service or Forest Service approved burning plans for each planned project. A map of the burn and immediate surrounding area must accompany each plan.

3. The application and the Park Service or Forest Service plans will list the following:

a. Approximate date the project will start.
b. Location of project by sections, townships, or ranges.
c. Approximate elevation of project.
d. Aspect of any slopes.
e. Description of fuel to be burned.
f. Prescribed conditions for fire (e.g. time of day, fuel moisture, weather).

4. Each forest as part of the application will provide the Bureau with one emergency or 24-hour telephone number.

5. Each forest will notify the Bureau when a project planned starting date is later changed. Notification will be by telephone. Any other changes, such as fuel type, duration of burn or location, should be included in this notification.

6. The determination to allow burning will be made on a day-by-day basis. It is the responsibility of each park or forest to telephone the Bureau for such a determination. Large fires and those that continue during nighttime hours will require special forecasts made by the national weather service, the Department's meteorologist, or by the permittee if forecast procedures are approved by the Department. On site meteorological measurements by the permittee may be required as inputs to dispersion forecasts and smoke management during the burn.

7. Once each year, on or before December 31, the Forest Service or Parks Service shall submit to the Bureau a report outlining the progress of research and development concerning the effects of forest burn programs on air quality. Such report shall include, where applicable, innovations in the management of prescribed burning using meteorological data, as well as special burning methods, or innovative equipment. Alternatives to burning shall also be considered. Research as to cost effectiveness of the various methods should also be included.

R18-2-404. Open areas, dry washes or riverbeds

A. No person shall cause, suffer, allow, or permit a building or its appurtenances, or a building or subdivision site, or a driveway, or a parking area, or a vacant lot or sales lot, or an urban or suburban open area to be constructed, used, altered, repaired, demolished, cleared, or leveled, or the earth to be moved or excavated, without taking reasonable precautions to limit excessive amounts of particulate matter from becoming airborne. Dust and other types of air contaminants shall be kept to a minimum by good modern practices such as using an approved dust suppressant or adhesive soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, barring access, or other acceptable means.

B. No person shall cause, suffer, allow, or permit a vacant lot, or an urban or suburban open area, to be driven over or used by motor vehicles, trucks, cars, cycles, bikes, or buggies, or by animals such as horses, without taking reasonable precautions to limit excessive amounts of particulates from becoming airborne. Dust shall be kept to a minimum by using an approved dust suppressant, or adhesive soil stabilizer, or by paving, or by barring access to the property, or by other acceptable means.

C. No person shall operate a motor vehicle for recreational purposes in a dry wash, riverbed or open area in such a way as to cause or contribute to visible dust emissions which then cross property lines into a residential, recreational, institutional educational, retail sales, hotel or business premises. For purposes of this Subsection "motor vehicles" shall include, but not be limited to trucks, cars, cycles, bikes, buggies and three-wheelers. Any person who violates the provisions of this Subsection shall be subject to prosecution under A.R.S. 36-1720.

R18-2-405. Roadways and streets

A. No person shall cause, suffer, allow or permit the use, repair, construction or reconstruction of a roadway or alley without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne. Dust and other particulates shall be kept to a minimum by employing temporary paving, dust suppressants, wetting down detouring or by other reasonable means.

B. No person shall cause, suffer, allow or permit transportation of materials likely to give rise to airborne dust without taking reasonable precautions, such as wetting, applying dust suppressants, or covering the load, to prevent particulate matter from becoming airborne. Earth or other material that is deposited by trucking or earth moving equipment shall be removed from paved streets by the person responsible for such deposits.

R18-2-406. Material handling

No person shall cause, suffer, allow or permit crushing, screening, handling, transporting or conveying of materials or other operations likely to result in significant amounts of airborne dust without taking reasonable precautions, such as the use of spray bars, wetting agents, dust suppressants, covering the load, and hoods to prevent excessive amounts of particulate matter from becoming airborne.

R18-2-407. Storage piles

A. No person shall cause, suffer, allow, or permit organic or inorganic dust producing material to be stacked, piled, or otherwise stored without taking reasonable precautions such as chemical stabilization, wetting, or covering to prevent excessive amounts of particulate matter from becoming airborne.

B. Stacking and reclaiming machinery utilized at storage piles shall be operated at all times with a minimum fall of material and in such manner, or with the use of spray bars and wetting agents, as to prevent excessive amounts of particulate matter from becoming airborne.

R18-2-408. Mineral tailings

No person shall cause, suffer, allow, or permit construction of mineral tailings piles without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne. Reasonable precautions shall mean wetting, chemical stabilization, revegetation or such other measures as are approved by the Director.

AUTHORITIES USED FOR
ARIZONA DEPARTMENT OF TRANSPORTATION RACM

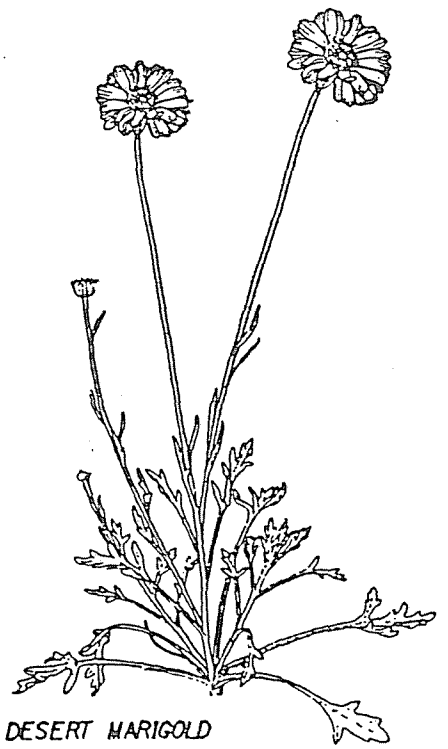
Arizona Revised Statutes [A.R.S.] Title 28, Transportation

ADOT Highways Divisions - Highway Maintenance Performance Guideline

ADOT Roadside Vegetation Managegment Program

ARIZONA DEPARTMENT OF TRANSPORTATION

Roadside Vegetation Management Program



DESERT MARIGOLD

Roadside Review Committee

TABLE OF CONTENTS

Page

I. ROADSIDE VEGETATION MANAGEMENT

A. Summary of Environmental Requirements i
B. Overview 1
C. Need for the Project 1
D. Personnel. 4

II. VEGETATION MANAGEMENT PROGRAM

A. Procedure 4
B. Objectives 4
C. Organization 5
D. Project Location 5
E. Land Ownership 5
F. Vegetation Management Activities 8
G. Herbicide Applications 8

III. SCENARIO SELECTION AND DESCRIPTION FOR HERBICIDE APPLICATIONS 16

A. Scenario "A" 23
B. Scenario "B" 24
C. Scenario "C" 25
D. Scenario "D" 26
E. Scenario "E" 27
F. Scenario "F" 28
G. Scenario "G" 29

IV. HERBICIDE CATEGORIES

A. Foliar Systemic Herbicides 30
B. Soil Active Herbicides 31
C. Adjuvants 31
D. Vegetation Control Chemicals 32
E. Material Storage 32

V. FIELD APPLICATIONS PROGRAM

A. Chemical Applications 32
B. Applicators and Spray Equipment. 34
C. Safety 34
D. Testing 37

VI. MOWING 38

VII. RESEEDING 38

VIII. FERTILIZING 40

IX. FENCELINE CONTROL 40

X. BRUSH AND SEEDLING TREE CONTROL 40

A. Brush Mowing 41
B. Spraying Stumps 41

XI. FIRE CONTROL 41

A. Sprayed Fireguards 42
B. Bladed Fireguards 42
C. Grass Fireguards 42

X. PERSONNEL 43

XI. SOCIAL, ECONOMIC, AND ENVIRONMENTAL CONSIDERATIONS

A. Threatened or Endangered Plant Species 43
B. Wildlife 45
C. Floodplain/Wetlands 48
D. Agricultural Areas 48

XII. COORDINATION

A. Consultation 48
B. Reference 49

MAPS AND FIGURES

MAP 1 STATE HIGHWAY SYSTEM 6
MAP 2(a) ARIZONA DEPARTMENT OF TRANSPORTATION AND URBAN HIGHWAYS 9
MAP 2(b) BUREAU OF LAND MANAGEMENT 10
MAP 2(c) STATE OF ARIZONA 11
MAP 2(d) FOREST SERVICE 12
MAP 2(e) INDIAN RESERVATION 13
MAP 2(f) NATIONAL PARK SERVICE 14
MAP 2(g) MILITARY 15
MAP 3(a) SCENARIO A 17
MAP 3(b) SCENARIO B 18
MAP 3(c) SCENARIO C 19
MAP 3(d) SCENARIO D 20
MAP 3(e) SCENARIO E 21
MAP 3(f) SCENARIO F 22
MAP 4 THREATENED OR ENDANGERED SPECIES LOCATIONS . 46

FIGURES

FIGURE 1 HERBICIDE SPAY LOG 35
FIGURE 2 HERBICIDE TEST ANALYSIS CHECK SHEET 39

Arizona Department of Transportation HIGHWAYS DIVISION - HIGHWAY MAINTENANCE PERFORMANCE GUIDELINE	Activity Number: 140 Effective Date: 7/1/92

ACTIVITY: Soil Stabilization Applications

DESCRIPTION AND PURPOSE:

Apply stabilization materials on cut slopes and fills where fine soils are eroding and filling drainage ditches and culverts.

PERFORMANCE GUIDELINE:	SCHEDULING CATEGORY	AUTHORIZATION REQUIRED	WORK QUANTITY
	Seasonal	District	Limited

Caution should be used in making applications only during calm wind conditions and low traffic volume to prevent chemicals from being carried away from designated areas by the wind, flowing water, or other natural or artificial causes.

CREW OPTIONS

1 Truck Driver
1 Chemical Sprayer
1 Worker
---
*3 Crew Total

*adjust crew as required.

EQUIPMENT OPTIONS

No.	Code	Description
1	01	Pickup
1	02/03/04	Truck
1	09	Truck, Misc.
1	28	Chemical truck, Large

MATERIAL OPTIONS

Code	Description
33L	Soil stabilizer - Liquid
34L	Erosion Blankets - Organic

WORK METHOD

1. Schedule work as recommended by the Vegetation Control Supervisor.
* 2. Place safety devices and signs.
** 3. Mix material according to the recommendations of the Vegetation Control Supervisor.
** 4. Apply chemicals at prescribed rate in scheduled areas.
5. Insure crew is trained in the use of hydroseeder operation.
6. Clean and maintain equipment before and after use.

* ADOTM-1-V-4812-15

**LICENSED PERSONNEL ONLY.

AVERAGE DAILY PRODUCTION RANGE

1 TO 6 ACRES

NOTES:

1. Report quantities used in units of UNMIXED material.
2. Record liquids in Gallons and dry materials in Pounds except as otherwise noted on the Highway Maintenance Material List.
3. Record blankets in square yards when used.

Recommended: 7/1/92 | Approved: 7/1/92

Maintenance Planning Engineer | Asst. State Engineer - Maintenance

Arizona Department of Transportation
HIGHWAYS DIVISION - HIGHWAY MAINTENANCE
PERFORMANCE GUIDELINE

Activity Number: 141

Effective Date: 7/1/92

ACTIVITY: Swath Machine Mow

DESCRIPTION AND PURPOSE:

Machine mow roadside areas to control weeds, eliminate snow drift lines, improve sight distance, and enhance appearance.

PERFORMANCE GUIDELINE:	SCHEDULING CATEGORY	AUTHORIZATION REQUIRED	WORK QUANTITY
	Seasonal	Org	Limited

Vegetation is not to to be mowed shorter than 5" nor before it is 15" high.
In rural areas mowing will extend one swath from edge of pavement where mowable. Additional swaths may be made where necessary to improve safety, or when it is otherwise in the public interest.
Coordinate this Activity with work done on Activities 142 and 143.

CREW OPTIONS

1 Mower Operator
1 Shadow Driver
---
*2 Crew Total

*adjust crew as required.

EQUIPMENT OPTIONS

No.	Code	Description
1	01	Pickup
1	02/03/04	Truck
1	31	Mowers/Rdside
1	52	Trailer
1	56	Arrowboard
1	57	Attenuator w/arrowboard

WORK METHOD

1. Service mower as necessary.
2. Start mower to insure proper operation.
* 3. Place safety devices and signs.
4. Commence mowing.
5. Clean around traffic control devices.

* ADOTM-1-V-4812-15

MATERIAL OPTIONS

Code Description

N/A

AVERAGE DAILY PRODUCTION RANGE

7 to 20 Swath Miles

NOTES:

1. A swath mile is defined as one pass of a mower, utilizing one mower head, mowing a distance of one mile.
2. Before mowing contact Vegetation Control Supervisor.

Recommended: Sam Maroney 7/1/92 | Approved: Bill Coles 7/1/92

Maintenance Planning Engineer | Asst. State Engineer - Maintenance

Arizona Department of Transportation HIGHWAYS DIVISION - HIGHWAY MAINTENANCE PERFORMANCE GUIDELINE	Activity Number: 142 Effective Date: 7/1/92

ACTIVITY: Chemical Vegetation Control, Safety Features

DESCRIPTION AND PURPOSE:

Apply chemicals along the roadside to eradicate, prevent, or retard the growth of vegetation around guardrail, signs, fences, curbs, sidewalks, etc.

PERFORMANCE GUIDELINE:	SCHEDULING CATEGORY	AUTHORIZATION REQUIRED	WORK QUANTITY
	Seasonal	District	Limited

Prior written approval of specific locations, herbicide selection and mixture, application rates, and general guidelines shall be obtained from the District Vegetation Control Supervisor. Special care shall be taken to insure that chemicals are applied only to the areas approved. Caution shall be exercised to prevent chemicals from being carried away from designated areas by the wind, flowing water, or other natural or artificial causes.

CREW OPTIONS

1 Truck Driver
1 Chemical Sprayer
---
*2 Crew Total

*adjust crew as required.

EQUIPMENT OPTIONS

No.	Code	Description
1	01	Pickup
1	02/03/04	Truck
1	28/29	Chemical truck
1	56	Arrowboard
1	57	Attenuator w/arrowboard

WORK METHOD

1. Schedule work as recommended by the Vegetation Control Supervisor.
* 2. Place safety devices and signs.
** 3. Mix herbicide according to the recommendations of the Vegetation Control Supervisor.
** 4. Apply chemicals at prescribed rate in scheduled areas.
5. Insure crew is trained in the use of herbicide application.
6. Clean and maintain equipment.

* ADOTM-1-V-4812-15

**LICENSED PERSONNEL ONLY.

MATERIAL OPTIONS

Code	Description
388	Imazapyr
339	Glyphosate
337	Sulfometuron Methyl

AVERAGE DAILY PRODUCTION RANGE

2 TO 8 Acres

NOTES:

1. Report quantities used in units of UNMIXED material.
2. Record liquid herbicides in Gallons and dry materials in Pounds except as otherwise noted on the Highway Maintenance Material List.

Recommended: 7/1/92 | Approved: 7/1/92

Maintenance Planning Engineer | Asst. State Engineer - Maintenance

Arizona Department of Transportation HIGHWAYS DIVISION - HIGHWAY MAINTENANCE PERFORMANCE GUIDELINE	Activity Number: 143 Effective Date: 7/1/92

ACTIVITY: Chemical Vegetation Control - Roadway Edge

DESCRIPTION AND PURPOSE:

Apply chemicals along the roadside to eradicate, prevent, or retard the growth of vegetation.

PERFORMANCE GUIDELINE:	SCHEDULING CATEGORY	AUTHORIZATION REQUIRED	WORK QUANTITY
	Seasonal	District	Limited

This Activity shall be used for right-of-way treatment which can be accomplished while the truck is on the edge of pavement or shoulder.

Prior written approval of specific locations, herbicide selection and mixture, application rates, and general guidelines shall be obtained from the District Vegetation Control Supevisor. Special care shall be taken to insure that chemicals are applied only to the areas approved. Caution shall be exercised to prevent chemicals from being carried away from designated areas by the wind, flowing water, or other natural or artificial causes.

CREW OPTIONS

1 Truck Driver

*1 Crew Total

*adjust crew as required.

EQUIPMENT OPTIONS

No.	Code	Description
1	02/03/04	Truck
1	28/29	Chemical Truck
1	56	Arrowboard
1	57	Attenuator w/arrowboard

WORK METHOD

1. Schedule work as recommended by the Vegetation Control Supervisor.
* 2. Place safety devices and signs.
** 3. Mix herbicide according to the recommendations of the Vegetation Control Supervisor.
** 4. Apply chemicals at prescribed rate in scheduled areas.
5. Insure crew is trained in the use of herbicide application.
6. Clean and maintain equipment.

* ADOTM-1-V-4812-15

**LICENSED PERSONNEL ONLY.

MATERIAL OPTIONS

Code	Description
330	Dicamba
335	Chlorsulfuron
345	Triclopyr

AVERAGE DAILY PRODUCTION RANGE

15 to 40 Acres

NOTES:
1. Report quantities used in units of UNMIXED material.
2. Record liquid herbicides in Gallons and dry materials in Pounds except as otherwise noted on the Highway Maintenance Material List.

Recommended: Sam Maroney 7/1/92 | Approved: [illegible] 7/1/92

Maintenance Planning Engineer | Asst. State Engineer - Maintenance

Arizona Department of Transportation HIGHWAYS DIVISION - HIGHWAY MAINTENANCE PERFORMANCE GUIDELINE	Activity Number: 144 Effective Date: 7/1/92

ACTIVITY: Chemical Vegetation Control, Off Road

DESCRIPTION AND PURPOSE:

Apply chemicals in the highway right-of-way at locations away from the roadway edge to eradicate, prevent, or retard the growth of vegetation.

PERFORMANCE GUIDELINE:	SCHEDULING CATEGORY	AUTHORIZATION REQUIRED	WORK QUANTITY
	Seasonal	District	Limited

For chemical treatment of vegetation within the right-of-way which requires off-road travel.

Prior written approval of specific locations, herbicide selection and mixture, application rates, and general guidelines shall be obtained from the District Vegetation Control Supervisor. Special care shall be taken to insure that chemicals are applied only to the areas approved. Caution shall be exercised to prevent chemicals from being carried away from designated areas by the wind, flowing water, or other natural or artificial causes.

CREW OPTIONS

1 Truck Driver
1 Operator
---
*2 Crew Total

*adjust crew as required.

EQUIPMENT OPTIONS

No.	Code	Description
1	02/03/04	Truck
1	28/29	Chemical Truck

WORK METHOD

1. Vegetation Control Supervisor schedules work to be accomplished.
* 2. Place safety devices and signs.
** 3. Mix herbicide according to the Manufacturer's specifications.
** 4. Apply chemicals at prescribed rate in scheduled areas.
5. Insure crew is trained in the use of herbicide application.
6. Clean and maintain equipment.

* ADOTM-1-V-4812-15

**LICENSED PERSONNEL ONLY.

MATERIAL OPTIONS

Code	Description
335	Chlorsulfuron
344	Triclopyr ester

AVERAGE DAILY PRODUCTION RANGE

4 to 10 Acres

NOTES:

1. Report quantities used in units of UNMIXED material.

2. Record liquid herbicides in Gallons and dry materials in Pounds except as otherwise noted on the Highway Maintenance Material List.

Recommended: Sam Maroney 7/1/92 | Approved: R.W. Collins 7/1/92

Maintenance Planning Engineer | Asst. State Engineer - Maintenance

Arizona Department of Transportation HIGHWAYS DIVISION - HIGHWAY MAINTENANCE PERFORMANCE GUIDELINE	Activity Number: 145 Effective Date: 7/1/92

ACTIVITY: Tumbleweed Disposal

DESCRIPTION AND PURPOSE:

Remove and dispose of tumbleweeds which have accumulated along fences, in cuts, in and around drainage structures, etc.

PERFORMANCE GUIDELINE:	SCHEDULING CATEGORY	AUTHORIZATION REQUIRED	WORK QUANTITY
	Seasonal	Area	Limited

Work to be performed in problem areas on an as-needed basis to prevent damaging or hazardous conditions from developing. Soil should be disturbed as little as possible to limit favorable regrowth potential. In other words, don't plow the ground for the next crop.

CREW OPTIONS

1 Truck Driver/Worker
1 Loader/Equipment Operator
1 Worker
---
* 3 Crew Total

* Adjust crew as required.

EQUIPMENT OPTIONS ***

No.	Code	Description
1	02/03/04	Truck
1	10	Grader
1	11	Loader
1	31	Roadside Mower
1	37	Weed Burner
1	52	Tilt trailer

WORK METHOD

* 1. Provide appropriate signing and traffic control.
2. In order of desirability, disposal shall be by:
   a) burning
   b) mowing
   c) removal
3. Activity shall be coordinated with District Vegetation Control Supervisor for subsequent chemical control. (Activities 142 or 143 or 144)

*ADOTM-1-V-4812-15

MATERIAL OPTIONS

Code Description

N/A

AVERAGE DAILY PRODUCTION RANGE

**2 to 6 Lineal Miles

NOTES:

1. Manual tumbleweed disposal should be reported under Activity 149-A.
** 2. Daily Production: estimate large width areas in 10-ft. widths times the length and convert to miles.
***3. Equipment complement used will depend upon work method.

Recommended: Sam Maroney 7/1/92 | Approved: Hal Collins 7/1/92

Maintenance Planning Engineer | Asst. State Engineer - Maintenance

Arizona Department of Transportation HIGHWAYS DIVISION - HIGHWAY MAINTENANCE PERFORMANCE GUIDELINE	Activity Number: 146 Effective Date: 7/1/92

ACTIVITY: Remove Trees and Brush

DESCRIPTION AND PURPOSE:
Cut, trim, and remove trees and brush which encroach onto the shoulder of the roadway.

PERFORMANCE GUIDELINE:	SCHEDULING CATEGORY	AUTHORIZATION REQUIRED	WORK QUANTITY
	Seasonal	Org	Limited

Work will be performed as needed to maintain sight distance, prevent swath mowing problems, and eliminate any potentially hazardous condition from developing. Trimming should be extensive enough to eliminate trouble areas for several years.

Prior written approval of specific locations, herbicide selection and mixture, application rates, and general guidelines shall be obtained from the District Vegetation Control Supervisor when herbicides are to be used. Special care shall be taken to insure that chemicals are applied only to the areas approved. Caution shall be exercised to prevent chemicals from being carried away from designated areas by wind, flowing water, or other natural or artificial causes.

CREW OPTIONS

1 Truck driver/Worker
2 Workers
*3 Crew Total

*adjust crew as required.

EQUIPMENT OPTIONS

No.	Code	Description
1	02/03/04	Truck
1	11	Loader
1	38	Brush Chipper

WORK METHOD

* 1. Place signs and safety devices.
2. Trim problem trees and brush.
3. In order of desirability, disposal shall be by:
   a. Chipping
   b. Stacking & burning
   c. Removal
** 4. Treat to prevent regrowth using a hand sprayer or small spray unit if efficient production can be achieved.

* ADOTM-1-V-4812-15

** LICENSED PERSONNEL ONLY.

MATERIAL OPTIONS

N/A

AVERAGE DAILY PRODUCTION RANGE

500 to 4,500 Lineal Feet

NOTES:

1. When using equipment code 31, slope/brush mower, report under 146-A.
2. Use of herbicide must be approved by the District Vegetation Control Supervisor.
3. Obtain a permit if waste is burned.
4. Work under 500 lineal feet shall be reported as Activity 149-A.

Recommended: Dan O'Malley 7/1/92 | Approved: [illegible] 7/1/92

Maintenance Planning Engineer | Asst. State Engineer - Maintenance

Arizona Department of Transportation
HIGHWAYS DIVISION - HIGHWAY MAINTENANCE
PERFORMANCE GUIDELINE

Activity Number: 147

Effective Date: 7/1/92

ACTIVITY: Reseed Bare Ground

DESCRIPTION AND PURPOSE:

Seed shoulders and other bare ground areas to establish ground cover for erosion control and aesthetic value.

PERFORMANCE GUIDELINE:	SCHEDULING CATEGORY	AUTHORIZATION REQUIRED	WORK QUANTITY
	Seasonal	District	Limited

Plant seed suitable to climate, soil conditions, and which will provide the adequate ground cover.

Seeding projects shall be planned in conjunction with shoulder blading or other work where top soil will be disturbed, and in accordance with the recommendations of the District Vegetation Control Supervisor.

CREW OPTIONS

1 Tractor Operator
1 Supply & Support Worker
---
*2 Crew Total

*adjust crew as required.

WORK METHOD

* 1. Place safety devices and signs.
2. Plant seed as prescribed by Vegetation Control Supervisor.
3. Clean and maintain equipment.
4. Document daily accomplishments for future reference.

EQUIPMENT OPTIONS

No.	Code	Description
1	02/03/04	Truck
1	34	Seed Drill
1	35	Tractor
1	52	Trailer

* ADOTM-1-V-4812-15

MATERIAL OPTIONS

Code	Description
01V	Revegetation Seed

AVERAGE DAILY PRODUCTION RANGE

3 to 6 Acres

NOTES:

Recommended: Sam Maroney 7/1/92 | Approved: [illegible] 7/1/92

Maintenance Planning Engineer | Asst. State Engineer - Maintenance

Arizona Department of Transportation HIGHWAYS DIVISION - HIGHWAY MAINTENANCE PERFORMANCE GUIDELINE	Activity Number: 149 Effective Date: 7/1/92

ACTIVITY: Other Vegetation Control

PERFORMANCE GUIDELINE:	SCHEDULING CATEGORY	AUTHORIZATION REQUIRED	WORK QUANTITY
	As Required	Area	Limited

This Activity shall be used only for vegetation control and related work which cannot be reasonably performed as Activities 141 through 147.
Proper safety devices and signs shall be used in every case where work involves exposure to traffic. Work site signing standard shall be ADOTM-1-V-4812-15.

Prior written approval of specific locations, chemical selection and mixture, application rates, and general guidelines shall be obtained from the Vegetation Control Supervisor when herbicides are to be used. Special care shall be taken to insure that chemicals are applied only to the areas approved. Caution shall be exercised to prevent chemicals from being carried away from designated areas by wind, flowing water, or other natural or artificial causes.

The following suffix letters shall be used:

A. Hand Cut Vegetation
B. Burn Weeds
C. Mechanical weed control (grader, loader, etc.)
D. Right-of-way inspection for vegetation control application
*E. Hand application of dry herbicides and pesticides
*F. Hand application of liquid herbicides and pesticides

This list is not all inclusive. Other miscellaneous vegetation control may be charged to this Activity.

If additional suffix letters are required, districts must coordinate with Maintenance Planning Services to avoid duplication. If suffix letter is not used, all work charged to this activity must be described in the comments section of the Daily Work Report.

* ALL CHEMICAL APPLICATION SHALL BE PERFORMED BY LICENSED PERSONNEL.

NOTES:

1. Labor-hours are used as a measure of work.
2. Quantity Standard must always be "1" when planning "labor-hour" Activities.

Recommended:	7/1/92	Approved:	7/1/92
Maintenance Planning Engineer		Asst. State Engineer - Maintenance	

ARIZONA

REVISED STATUTES

TITLE 28

TRANSPORTATION

Sections 28–101 to 1300 appear in this volume

Laws 1973, Ch. 146, § 86, effective July 1, 1974, substituted "Transportation" for "Motor Vehicles" as the title to this title.

Chapter

1. DEFINITIONS AND PENALTIES

Article		Section
1.	General Provisions	28–101
2.	General Penalties	28–181

2. STATE AGENCIES AND OFFICERS

1.	Motor Vehicle Division	28–201
1.1.	Proportional Registration	28–221
1.2.	Additional Highway Use Tax	28–226
2.	Highway Patrol and Law Enforcement Merit System Council	28–231
2.1.	Arizona Highway Patrol Reserve [Repealed]	28–251
3.	Traffic Safety Division [Repealed]	28–261

3. MOTOR VEHICLE REGISTRATION

1.	In General	28–301
2.	Registration of Vehicles of Historic Value	28–341
3.	Fleet Registration	28–351
4.	Nonresident Daily Commuter	28–361

4. UNIFORM MOTOR VEHICLE OPERATORS' AND CHAUFFEURS' LICENSE ACT

1.	Definitions	28–401
2.	Issuance, Expiration and Renewal of Licenses	28–411
2.1.	Medical Advisory Board	28–431
3.	Cancellation, Suspension or Revocation of Licenses	28–441
4.	Violation of License Provisions	28–471
5.	Penalties	28–491

5. NONRESIDENT RESPONSIBILITY

1.	In General	28–501

6. UNIFORM ACT REGULATING TRAFFIC ON HIGHWAYS

1.	Definitions	28–601
1.1.	Authority of Governor Relating to Federal Highway Safety Act	28–611
2.	Obedience to and Effect of Traffic Laws	28–621
3.	Traffic Signs, Signals and Markings	28–641
4.	Accidents	28–661
5.	Driving While Intoxicated and Reckless Driving	28–691
6.	Speed Restrictions	28–701

Chapter
6. UNIFORM ACT REGULATING TRAFFIC ON HIGHWAYS
Article — Section
7. Driving on Right Side of Roadway, Overtaking and Passing 28–721
8. Turning, Starting and Signals on Stopping and Turning 28–751
9. Right of Way 28–771
10. Pedestrians' Rights and Duties 28–791
11. Operation of Bicycles 28–811
11.1. Bicycle Safety Fund 28–821
12. Safety Zones 28–831
13. Special Stops Required 28–851
14. Stopping, Standing or Parking 28–871
14.1. Handicapped Parking 28–881
15. Miscellaneous Rules 28–891
16. Equipment 28–921
17. Inspection of Vehicles 28–981
18. Size, Weight and Load 28–1001
19. Penalties 28–1031
20. Parties, Procedure Upon Arrest and Reports in Criminal Cases 28–1051
21. Procedure for Adjudication of Civil Traffic Violations 28–1071
7. UNIFORM MOTOR VEHICLE SAFETY RESPONSIBILITY ACT
1. Definitions 28–1101
2. Administration 28–1121
3. Security Following Accident 28–1141
4. Proof of Financial Responsibility for the Future 28–1161
5. Violations and Penalties 28–1201
6. General Provisions 28–1221
7. Motor Carrier Financial Responsibility 28–1231
8. Mandatory Motor Vehicle Insurance 28–1251
8. SPECIAL ACTIVITIES
1. Dealers and Wreckers 28–1301
2. Engine Rebuilders [Repealed] 28–1341
3. Importation of Vehicles Registered Out-of-State for Purposes of Sale [Repealed] 28–1351
3.1. Transportation of Vehicles 28–1361.01
3.2. Vehicle Service Transporter Plates 28–1362
4. Motor Club Service 28–1371
4.1. Motor Club Arrest Bond Certificates 28–1391
5. Abandoned and Seized Vehicles 28–1401
6. Stolen Vehicles 28–1421
7. Designation of State Automobiles 28–1441
8. Title Service Companies 28–1451
9. TAXES
1. Motor Vehicle Fuel Tax 28–1501
2. Use Fuel Tax 28–1551
2.1. Motor Fuels Agreements 28–1590.01
3. Vehicle License Tax 28–1591
3.1. Distribution of Transportation Excise Tax 28–1594.01
4. Distribution of Highway User Revenues Generally 28–1595
5. Distribution of Highway User Revenues Specifically 28–1598
6. Motor Carrier Tax 28–1599
7. Collection Procedures 28–1599.31

Chapter
9. TAXES
Article
8. V
10. DRIVE
1. G
11. VEHIC
1. G
12. AVIATI
1. G
2. A
3. Ai
4. R
5. R
6. R
13. HIGHW
1. G
2. St
3. R
4. St
5. To
6. Ar
14. DISPOS
1. In
15. STATE I
1. In
1.1. Re
2. Gr
16. BEAUTI
1. Re
2. Re
17. COOPER
1. In
18. MULTIS
1. Ge
19. MOTOR
1. In
20. REGION
1. Ge
2. Pla
3. Reg
4. Fin
21. LOCAL T
1. Gen
2. Pub
22. UNBLEN
1. Gen

The dep
unless con

Title 28,
January 1,

Chapter
9. TAXES
Article — Section
8. Vehicle Transfer Tax [Repealed] 28–1599.51
10. DRIVER LICENSE COMPACT
1. General Provisions 28–1601
11. VEHICLE EQUIPMENT SAFETY COMPACT
1. General Provisions 28–1611
12. AVIATION IN GENERAL
1. General Provisions 28–1701
2. Aeronautics Division 28–1721
3. Aircraft Operation 28–1741
4. Registration and Taxation of Aircraft 28–1761
5. Registration and Regulation of Aircraft Dealers 28–1771
6. Registration and Regulation of Flying Clubs [Repealed] 28–1781
13. HIGHWAY DIVISION
1. General Provisions 28–1801
2. State Highway Fund and Budget 28–1821
3. Relocation Assistance 28–1841
4. State Highways and Routes 28–1861
5. Tourist Advertising 28–1881
6. Arizona Highway Patrol Fund 28–1891
14. DISPOSITION OF PUBLIC ROADWAYS
1. In General 28–1901
15. STATE HIGHWAY BONDING AUTHORIZATION
1. In General 28–2001
1.1. Regional Area Road Fund Bonds 28–2021
2. Grant Anticipation Notes 28–2031
16. BEAUTIFICATION OF HIGHWAYS
1. Regulation of Certain Advertising Displays 28–2101
2. Regulation of Junkyards 28–2131
17. COOPERATIVE NATIONAL HIGHWAY AID AGREEMENTS
1. In General 28–2201
18. MULTISTATE HIGHWAY TRANSPORTATION AGREEMENT
1. General Provisions 28–2301
19. MOTOR CARRIER SAFETY
1. In General 28–2401
20. REGIONAL PUBLIC TRANSPORTATION AUTHORITY
1. General Provisions 28–2501
2. Planning 28–2511
3. Regional Bus System 28–2521
4. Financing For Regional Public Transportation Authority 28–2531
21. LOCAL TRANSPORTATION ASSISTANCE
1. General Provisions 28–2601
2. Public Transportation Assistance 28–2611
22. UNBLENDED GASOLINE SHORTAGES
1. General Provisions 28–2701

Termination under Sunset Law

The department of transportation shall terminate on July 1, 1998, unless continued. See §§ 41–2368.04 and 41–2377

Title 28, relating to the department of transportation is repealed on January 1, 1999. See Historical Note following § 28–101

APPENDIX I

DOCUMENTATION OF CITY'S EFFORTS TOWARD ENFORCING EXISTING CODE

CITY OF NOGALES

C: Juan
File

93 FEB -5 AM 11:31
OFFICE OF AIR QUALITY

ENVIRONMENTAL QUALITY SRO

January 25, 1993

Mr. Mark L. Collins
262 N. Main Avenue
Tucson, Arizona 85701

Re: Dust Control at Nogales Truck Stop, 3010 Tucson Nogales Highway

Dear Mr. Collins:

The City of Nogales has been receiving numerous complaints related to dust and mud on the highway as a result of the truck traffic going in and out of the Nogales Truck Stop.

Your client, Nogales Truck Stop, is in violation of the City of Nogales Ordinance No. 20-X, Section 601-P. Your clients must comply with the regulations of said ordinance and plan for immediate dust control of the area above referenced.

A response to our notification is requested within five (5) days of receipt of this letter.

If you have any questions, please contact me or Mr. Nabor Rodriguez, Assistant Building Inspector at (602) 287-6571.

We look forward to your prompt attention in correcting this matter.

Sincerely,

Alejandro Barcenas

Alejandro Barcenas
Engineering Department

xc: Mr. Jose Maytorena, Nogales Truck Stop
Mr. Fernando Castro, City Assistant Administrator
Mr. Saji Vettiyil, City Attorney
A.D.E.Q

Possible to set up Meeting w/ Nogales/ ADEQ in NEXT Future

AB:aa
ABL012593.002

777 NORTH GRAND AVENUE • NOGALES, ARIZONA 85621 • (602) 287-6571 • FAX: (602) 287-2230

Mark L. Collins
ATTORNEY AT LAW
THE DAVIS HOUSE
262 N. MAIN
TUCSON, ARIZONA 85701

TELEPHONE (602) 884-0024

FACSIMILE (602) 624-7034

File copy

October 17, 1990

Mr. Rene Pena
Nogales City Engineer
1018 Grand Avenue
Nogales, Arizona 85621

Re: Nogales Truck Stop

Dear Mr. Pena:

I represent Nogales Truck Stop, Inc., an Arizona corporation (the "Truck Stop") in connection with recent flooding on and across its property located at 2651 Grand Avenue, Nogales, Arizona.

In the present situation, it is relatively clear that the abnormal increase in the flow of surface water onto the Truck Stop property was caused by work Dale Drake performed on the hill above the Truck Stop; work which was approved by the city of Nogales (the "City"). As I am sure you are aware, a property owner in Arizona may not change or modify the flow of surface water and, thereby, flood or otherwise damage a neighbor's property.

Unfortunately, this problem is not a new one. The owners and operators of the Truck Stop have complained on previous occasions to both your office and to Planning and Zoning about Mr. Drake's hazardous excavation of his property. They warned that unless Drake's activities were monitored and restrained he would eventually cause flooding of the Truck Stop property. These warnings apparently went unheeded and the City recently permitted Mr. Drake to drastically change and modify the flow of surface water across his property and, thereby, increase dramatically the flow of surface water onto the Truck Stop. While this increased flow resulted in tortious damage and expense to the Truck Stop, it fortuitously occurred before November 1st, the commencement of its busy season. If similar flooding were to occur after November 1st, the damage to the Truck Stop would amount to hundreds of thousands of dollars.

It is imperative that the City carry out its municipal responsibility and reverse the effects of the wrongful actions it permitted Mr. Drake to perpetrate. Unless immediate action is taken to reverse the effects of Mr. Drake's City approved actions, the Truck Stop intends to

EXHIBIT 1

hold both Drake and the City fully responsible for all of its resulting injuries and losses.

Thank you in advance for your assistance in this matter. If you have any questions or if either I or my client can be of any assistance to the City's efforts to resolve this matter, please let me know immediately.

Very truly yours,

LAW OFFICES OF MARK L. COLLINS

Mark L. Collins

MLC:dj

cc: Mr. Dale Drake
Nogales Truck Stop

CITY OF NOGALES

MEMORANDUM

TO: Gene Fontes, City Engineer

FROM: MARY HELEN MALEY, CITY ATTORNEY

DATE: March 7, 1991

RE: NOGALES TRUCK STOP

I am in receipt of the memo to Mr. Karam, Mayor and Council regarding the Nogales Truck Stop stating that we have been ignoring Mr. Collins. If you would have asked me first I could have shared the file I have on this matter with you. Attached hereto are copies of my letter to Mr. Collins in reply to his letter to Rene Pina. I had previously conducted an investigation and took the position that the City was not liable for any flooding problem at the Nogales Truck Stop. Attached hereto are copies of an analysis done by Jim Eaton, a copy of the grading and relevant portions of the Development Standards Manual. I have additional things in the file on this including hydrology and hydraulics report for Frank Reed Road Industrial Park prepared by Rey Sanchez in 1986 and submitted to the City at that time, grading plans and additional maps of the area. I will be happy to share anything else in my file with you. I believe Alex also has a file in your office.

Before responding to Mr. Collins, attorney for Nogales Truck Stop, I met with Jan Smith, attorney for Dale Drake, and Rey Sanchez at the site. After that meeting I advised Ms. Smith that Mr. Drake should not proceed with anything further until a master plan of that area was submitted and approved. I confirmed that advice with Mr. Drake personally when he visited me recently to discuss the possibility of a fire station site on his property in that area.

Since I had not heard anything from Mr. Collins after I sent my letter I assumed that nothing further was required and, after analyzing the situation, he had agreed that since the truck stop is in a floodplain area the work by Mr. Drake had not had any impact on the flooding problem there. I understand that this truck stop had been flooded out on prior occasions during heavy rains.

I am sending another copy of my letter to Mr. Collins and asking him to contact me. In the future if you receive letters in the

EXHIBIT 2.

1018 GRAND AVENUE · NOGALES, ARIZONA 85621 · (602) 287-6571

nature of claims against the city I would appreciate it if you would direct them to the City Attorney's Office for review. Thank you.

cl

Attachments

xc: Mayor
Board of Aldermen
Earl W. Sires, Assistant Administrator

mmm03061.002

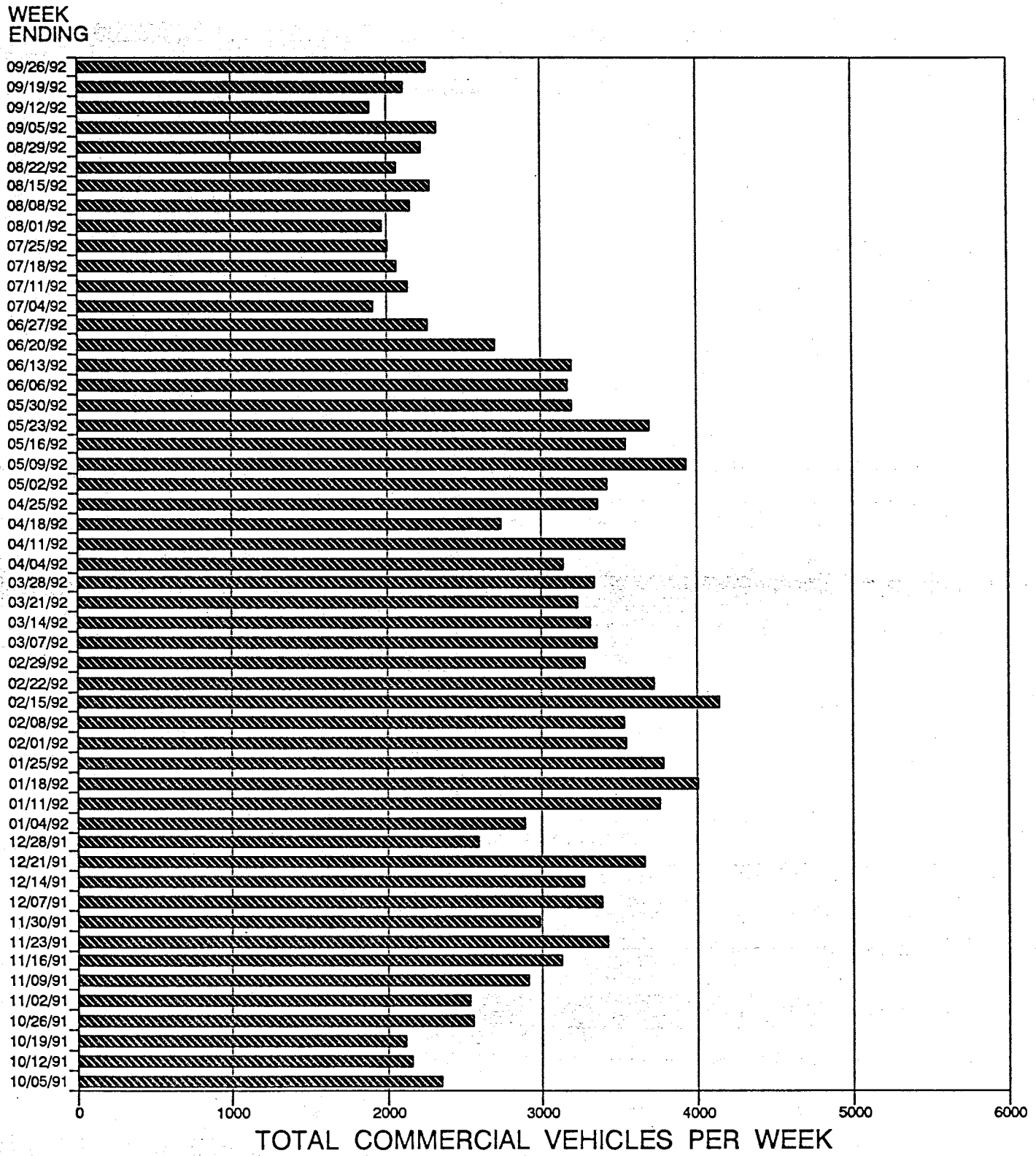
APPENDIX J

HISTORICAL BORDER CROSSING TRUCK VOLUME

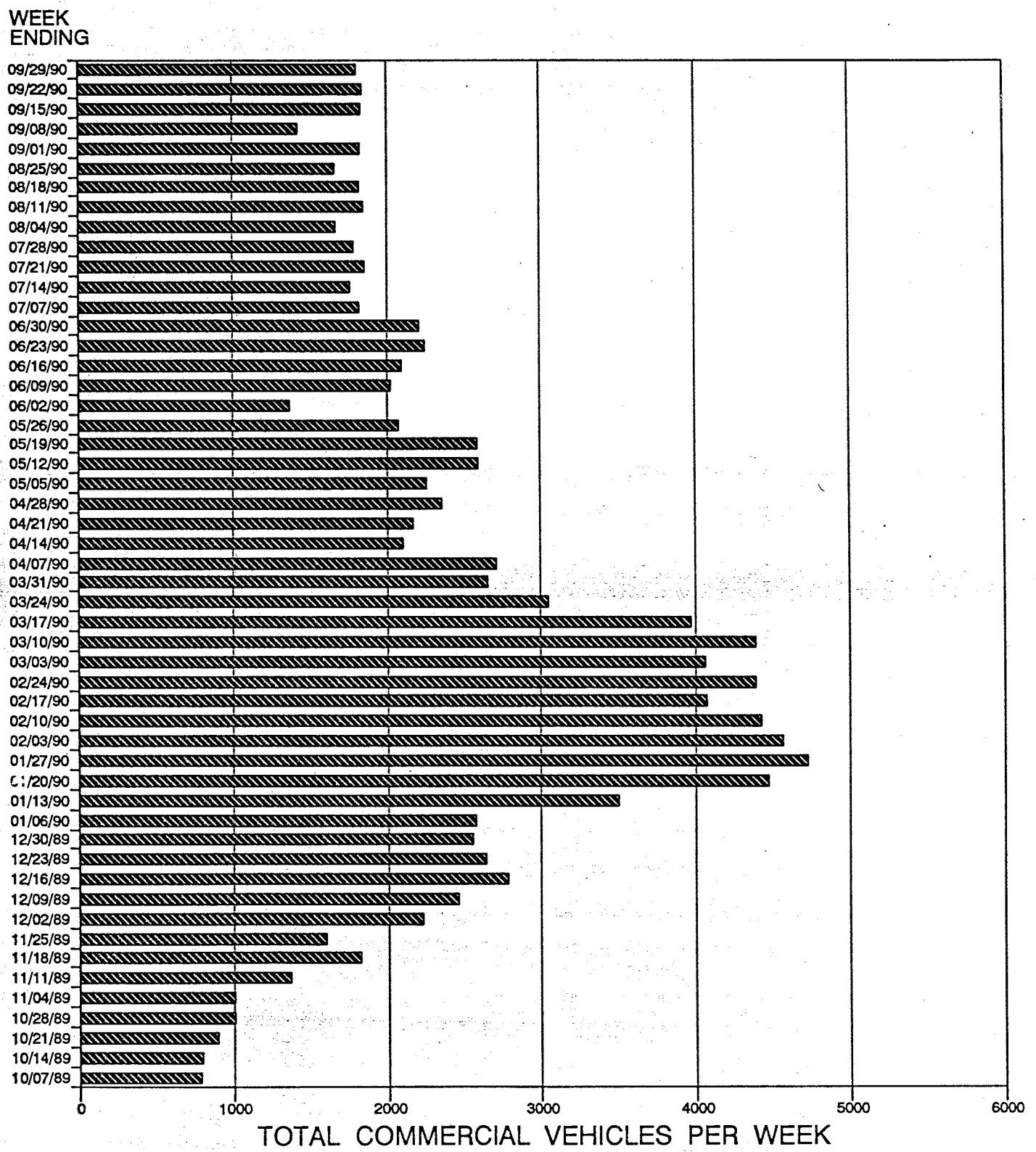
CF-16 DATA
Commercial Vehicles
FY 1983 - FY 1992

1983	86,315
1984	102,131
1985	102,648
1986	119,603
1987	106,992
1988	132,174
1989	154,335
1990	143,333
1991	167,385
1992	154,845

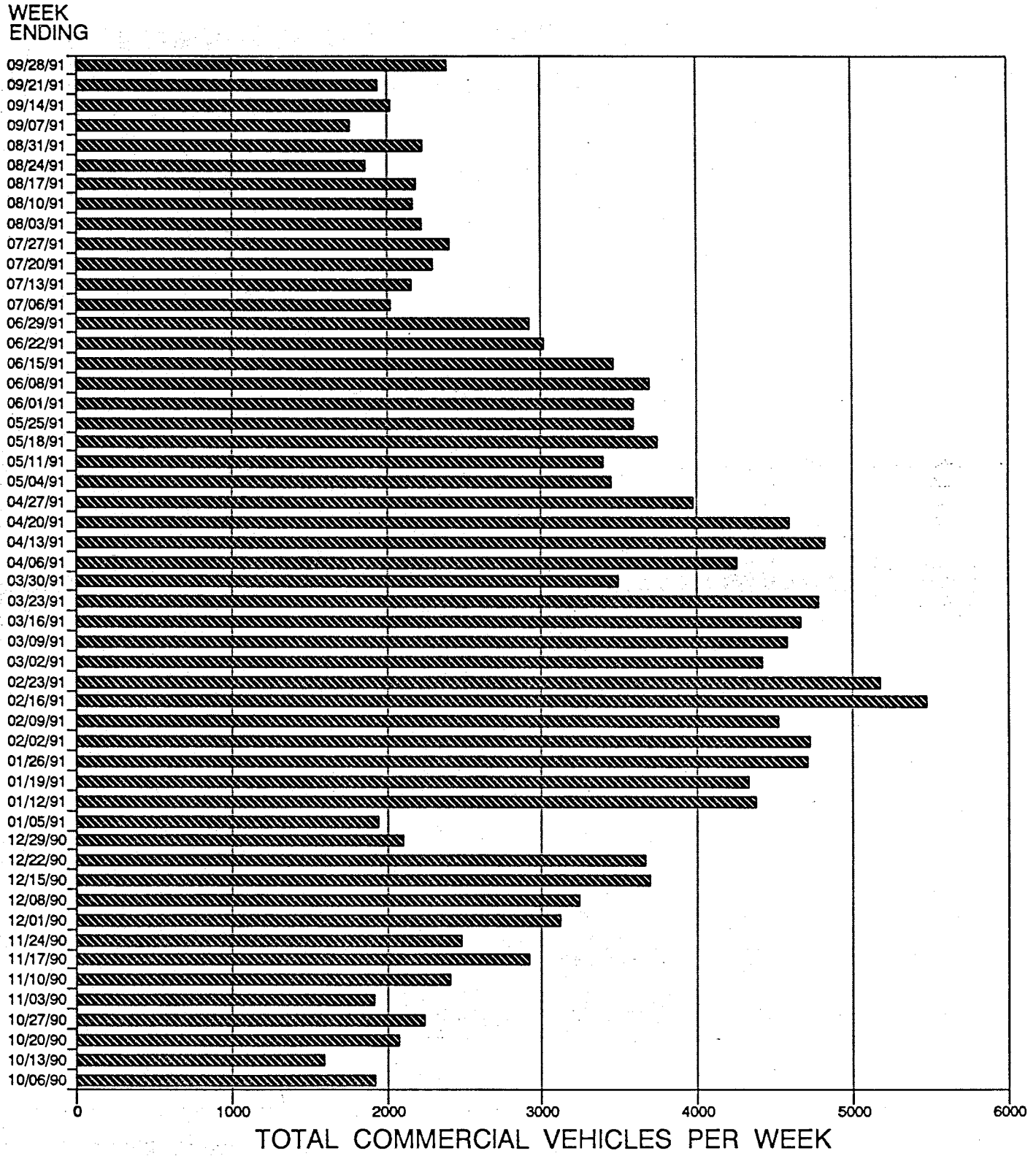
U. S. CUSTOMS COMMERCIAL FACILITY
NOGALES, ARIZONA - FY 1992



U. S. CUSTOMS COMMERCIAL FACILITY
NOGALES, ARIZONA - FY 1990



U. S. CUSTOMS COMMERCIAL FACILITY
NOGALES, ARIZONA - FY 1991



APPENDIX K

1992 STATE AND LOCAL AIR MONITORING STATIONS [SLAMS] NETWORK REVIEW AND SIP MONITORING REQUIREMENTS

MU:RT:201-8-24-92

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

FE SYMINGTON, GOVERNOR
DWARD Z. FOX, DIRECTOR

August 20, 1992

Ms. Julia Barrow, Section Chief
Environmental Assessment Section (A-3-2)
Air & Toxics Division
U. S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94103

Dear Ms. Barrow:

Enclosed please find our 1992 State and Local Air Monitoring Stations (SLAMS) Network Review, submitted to satisfy FY92 federal grant requirements.

If you have any questions, please contact me at (602) 207-2359.

Sincerely,

Ron Thaut
Monitoring Operations Coordinator
Air Quality Assessment

RAT/mt

cc: Jim Guyton, ADEQ Air Monitoring Manager

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF AIR QUALITY
AIR QUALITY ASSESSMENT SECTION

1992 State and Local Air Monitoring Stations (SLAMS) Network Review

Prepared by:
Ron Thaut
Air Quality Assessment Section

1992 SLAMS NETWORK REVIEW
STATE OF ARIZONA
DEPARTMENT OF ENVIRONMENTAL QUALITY

SUMMARY

The fifteen (15) air monitoring sites which are designated SLAMS network sites within the Arizona Department of Environmental Quality (ADEQ) air monitoring network are reviewed in this report in accordance with the monitoring objectives of EPA regulation 40 CFR Part 58, Appendix D.

Recommendations for status changes of designated ADEQ SLAMS sites by criteria pollutant are summarized in Table 1. Recommendations for individual SLAMS sites are summarized in Table 2.

TABLE 1: Number of ADEQ SLAMS sites by criteria pollutant and recommended changes.

STATUS	CARBON MONOXIDE	LEAD	NITROGEN DIOXIDE	OZONE	PM_{10}	SULFUR DIOXIDE	TSP
CONTINUE	NM	NM	NM	1	11	1	NM
DISCONTINUE	NM	NM	NM	0	1	0	NM
ADD	NM	NM	NM	0	1	0	NM
RELOCATE	NM	NM	NM	0	1	0	NM

NM - Pollutant not monitored as an ADEQ SLAMS site.

TABLE 2: Individual ADEQ SLAMS sites and recommended status changes.

SITE	OZONE	PM_{10}	SULFUR DIOXIDE	TSP
AJO		C		
CLARKDALE		D(5/6/92)		
DOUGLAS		C		
FLAGSTAFF		R/C(4/92)		
HAYDEN JAIL		C		
MONTEZUMA CASTLE NATIONAL MONUMENT		C		
NELSON		C		
NOGALES		C		
ORGAN PIPE NATIONAL MONUMENT		C		
PAUL SPUR		C**		
RILLITO		C*		
SAFFORD		C		
SAN MANUEL			C	
SHOW LOW		C		
YUMA CITY YARD	C			
YUMA JUVENILE CENTER		A**(5/18/92)		

C - Continue Site Operation
D - Discontinue Site Operation (Effective Date)
A - Add Site (Effective Date)
R - Relocate Site (Effective Date)
* - Collocation with Industry Monitor
** - Collocation for Precision of Measurement

The SLAMS Network Review data sheets are presented in alphabetic order by station name. Fifteen monitoring sites covering 3 criteria pollutant categories are presented. All sites monitor 1 criteria pollutant each.

Ozone (O_3)
The quantity and location of O_3 SLAMS is unchanged from last year. The single ADEQ O_3 SLAMS is located in Yuma at the City Maintenance Yard.

PM_{10}
Thirteen locations were monitored as ADEQ PM_{10} SLAMS in 1991-92. Of these, 2 are regional background monitors, 9 are source impact and population effects monitors and 2 monitors are devoted exclusively to the measurement of source impact. The Rillito PM_{10} site is the only one collocated with industry monitors.

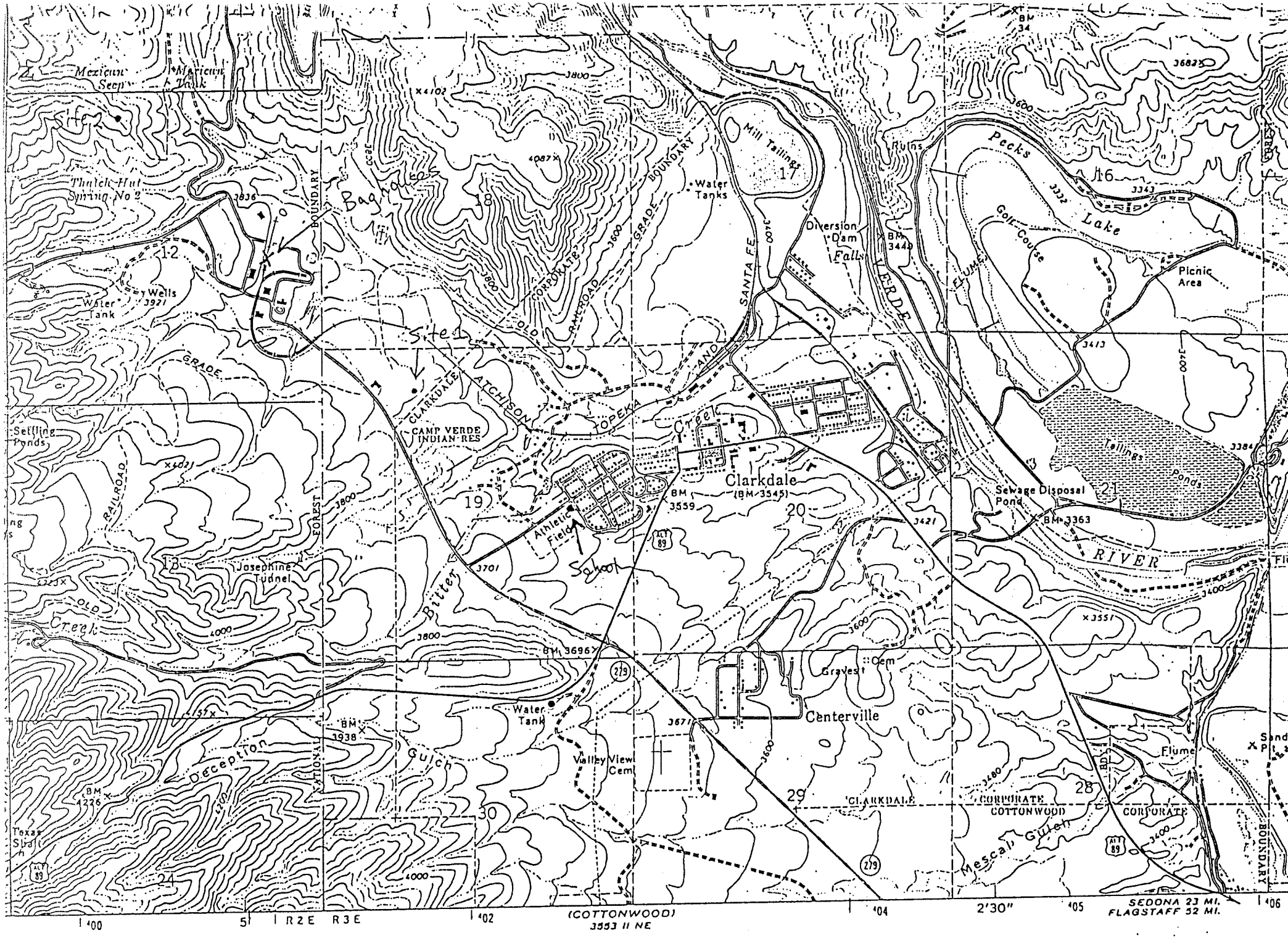
SO_2
A single SO_2 SLAMS site was operated during 1991-92 at San Manuel. The site is located 1.5 miles South-Southwest of the Copper Smelter.

1992 Updates
Additional site development information is supplied for the following location with the attached site description:

Clarkdale: The neighborhood-scale SLAMS site at the City Fire Station was closed effective May 6, 1992. ADEQ feels that the pre-approved PM_{10} monitoring sites being operated by the Phoenix Cement Company at their two locations is adequate. In regards to QC/QA, ADEQ has audited these sites and found them to be operating satisfactory. At the request of the local citizens ADEQ will operate a special interest site at the Clarkdale School.

Flagstaff: The neighborhood-scale SLAMS site at the Coconino County Administrative Complex (CACC, 219 East Cherry Street) has been moved to the City of Flagstaff Maintenance Yard on the southern edge of Thorpe Park effective April, 1992. We feel Thorpe Park will provide a better public health characterization in the western part of Flagstaff than did the CCAC site.

Yuma Juvenile Center: The Urban-scale special purpose monitor located at the Yuma County Juvenile Center, (2795 Avenue B), was changed to a SLAMS site effective May 18, 1992. ADEQ will be making precision measurements at this location.


Mexican Seep
Mexican Tank
Site 2
Thatch Hut Spring No 2
Bag Houses
Water Tank
Wells
Site 1
Settling Ponds
Mill Tailings
Water Tanks
Diversion Dam
Falls
Ruins
Pecks Lake
Golf Course
Picnic Area
Tailings Ponds
Sewage Disposal Pond
RIVER
Clarkdale
Athletic Field
School
CAMP VERDE INDIAN RES
Josephine Tunnel
Bitter Creek
Deception Gulch
Water Tank
Valley View Cem
Gravel Pit
Cem
Centerville
Flume
Mescal Gulch
CLARKDALE
CORPORATE
COTTONWOOD
CORPORATE
BOUNDARY
FOREST
RAILROAD
GRADE
OLD
CORPORATE
SANTA FE
ATCHISON
TOPEKA
AND
VERDE
FLUME
Texas Shaft
SEDONA 23 MI.
FLAGSTAFF 52 MI.
(COTTONWOOD)
3553 II NE
R2E
R3E
2'30"
SCALE 1:24 000

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Assessment Section
SLAMS Network Review
Particulate Monitoring Site Description

Site: Ajo County: Pima

Location: Arizona Department of Transportation Yard, 1200 N. Wells Road

SAROAD NO: 03-0020-001 Start Date: 4/1/85

Classification: SLAMS Spatial Scale: Neighborhood

Pollutant: PM-10

Major Source: Copper smelter tailings, fugitive sources/unpaved roads

SAMPLER INFORMATION

Supplier of samplers: E.P.A X State____ Local____
Number and Type of each sampler: Sierra Anderson Dichotomous Sampler Model 244E Serial Number 467

Frequency: 6th day Collocated: No
Method Modified? Yes Date method changed: 2/5/91

SITE REVIEW

1. Siting Requirements Meets Appendix "E" Guidelines: Yes X No____
2. Monitoring Objectives Point sources, local population
3. Site Development Information: (Check if attached)
   - ____ a) map: All monitoring sites located and identified
   - ____ b) map: Emission distribution in network area
   - ____ c) map: Meteorological conditions
   - ____ d) map: Past special monitoring sites located and identified
   - ____ e) map: Pollution concentration isopleth developed from monitoring data
   - ____ f) map: Population density

SITE OPERATIONS

1. Resources: Adequate
2. Quality Assurance: Complies with federal regulations

SITE RECOMMENDATION/COMMENTS Continue monitoring, site development information unchanged

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Assessment Section
SLAMS Network Review
Particulate Monitoring Site Description

Site: Douglas County: Cochise

Location: 15th Street City Park

SAROAD NO: 03-0240-004 Start Date: 3/2/85

Classification: SLAMS Spatial Scale: Neighborhood

Pollutant: PM-10

Major Source: Fugitive sources/unpaved roads, open burning from adjacent Aqua Prieta, Sonora, Mexico

SAMPLER INFORMATION

Supplier of samplers: E.P.A____ State X Local____
Number and Type of each sampler: Sierra-Anderson Dichotomous Sampler Model 241 (ASSET #50256)

Frequency: 6th day Collocated: No
Method Modified? Yes Date method changed: 3/6/91

SITE REVIEW

1. Siting Requirements Meets Appendix "E" Guidelines: Yes X No____
2. Monitoring Objectives Population
3. Site Development Information: (Check if attached)
   - ____ a) map: All monitoring sites located and identified
   - ____ b) map: Emission distribution in network area
   - ____ c) map: Meteorological conditions
   - ____ d) map: Past special monitoring sites located and identified
   - ____ e) map: Pollution concentration isopleth developed from monitoring data
   - ____ f) map: Population density

SITE OPERATIONS

1. Resources: Adequate
2. Quality Assurance: Complies with federal regulations

SITE RECOMMENDATION/COMMENTS Continue monitoring, site development information is unchanged

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Assessment Section
SLAMS Network Review
Particulate Monitoring Site Description

Site: Nogales County: Santa Cruz

Location: Morely & Hudgins Streets (Post Office)

SAROAD NO: 03-0540-004 Start Date: 3/8/85

Classification: SLAMS Spatial Scale: Neighborhood

Pollutant: PM-10

Major Source: Fugitive sources/unpaved roads, open burning from adjacent Nogales, Sonora, Mexico, vehicular emissions

SAMPLER INFORMATION

Supplier of samplers: E.P.A____ State X Local____
Number and Type of each sampler: Sierra Anderson Dichotomous Sampler Model 241 (ASSET #50261)

Frequency: 6th day Collocated: No
Method Modified? Yes Date method changed: 2/21/91

SITE REVIEW

1. Siting Requirements Meets Appendix "E" Guidelines: Yes X No____
2. Monitoring Objectives Population
3. Site Development Information: (Check if attached)
   - ____ a) map: All monitoring sites located and identified
   - ____ b) map: Emission distribution in network area
   - ____ c) map: Meteorological conditions
   - ____ d) map: Past special monitoring sites located and identified
   - ____ e) map: Pollution concentration isopleth developed from monitoring data
   - ____ f) map: Population density

SITE OPERATIONS

1. Resources: Adequate
2. Quality Assurance: Complies with federal regulations

SITE RECOMMENDATION/COMMENTS Continue monitoring, site development information is unchanged

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Assessment Section
SLAMS Network Review
Particulate Monitoring Site Description

Site: Organ Pipe National Monument County: Pima

Location: 0.3 miles west of Visitors Center

SAROAD NO: 03-0620-005 Start Date: 8/1/85

Classification: SLAMS Spatial Scale: Regional

Pollutant: PM-10

Major Source: Fugitive sources

SAMPLER INFORMATION

Supplier of samplers: E.P.A____ State X Local____
Number and Type of each sampler: Sierra-Anderson Dichotomous Sampler Model 241 S/N 50257

Frequency: 6th day Collocated: No
Method Modified? Yes Date method changed: 3/21/91

SITE REVIEW

1. Siting Requirements Meets Appendix "E" Guidelines: Yes X No____
2. Monitoring Objectives Background monitoring for Lower Sonoran Desert
3. Site Development Information: (Check if attached)
   - ____ a) map: All monitoring sites located and identified
   - ____ b) map: Emission distribution in network area
   - ____ c) map: Meteorological conditions
   - ____ d) map: Past special monitoring sites located and identified
   - ____ e) map: Pollution concentration isopleth developed from monitoring data
   - ____ f) map: Population density

SITE OPERATIONS

1. Resources: Adequate
2. Quality Assurance: Complies with federal regulations

SITE RECOMMENDATION/COMMENTS Continue monitoring, site development information unchanged

AMBIENT AIR MONITORING AND DESIGN VALUE REQUIREMENTS FOR PM_{10} SIPS

AMBIENT AIR MONITORING AND DESIGN VALUE
REQUIREMENTS FOR PM10 SIPS

AIR QUALITY SURVEILLANCE SYSTEM (Air Monitoring)

1. Provide for and/or verify the establishment of a SLAMS/NAMS ambient air monitoring network for PM10.

2. Verify that the network meets the requirements of 40 CFR Part 58, Appendices: A (Quality Assurance), C (Monitoring Methodology), D (Network Design), and E (Probe Siting Criteria) and that the PM10 Methodology comply with 40 CFR Part 50, Appendix J, and 40 CFR Part 53.

3. Provide for the operation of at least one PM10 SLAMS during any stage of an air pollution episode as defined in the contingency plan (Subpart H of 40 CFR Part 51).

4. Provide for the annual review of PM10 SLAMS/NAMS to determine if the network meets the monitoring objectives defined in Appendix D to 40 CFR Part 58, specifically, to review the network's ability to identify the point of maximum concentration and the impact of the most significant PM10 sources.

5. Verify that a SLAMS network description is available for public inspection and submission to the Administrator upon request. This must be available 6 months after the date of promulgation of the PM10 SIP and must include AIRS number, location, analyzer used, operating schedule, monitoring objective, and spatial scale of representativeness, designated worst site(s) operating at accelerated sampling (58.13), and a schedule for

   (i) locating, placing into operation and making available the AIRS site identification form for each SLAMS which is not located and operating at the time of PM10 SIP revision submittal,

   (ii) implementing quality assurance procedures for any PM10 station for which these procedures are not implemented on date of PM10 SIP revision submittal,

   (iii) resiting each PM10 station not sited according to the siting parameters of Appendix E by date of PM10 SIP revision submittal.

6. Verify compliance with obtaining EPA approval on any SLAMS/NAMS network modifications.

DESIGN VALUE

1. The complete set of data that was used in design value determination must be included in an appendix.

2. A review of data completeness, prescribed sampling frequency, and representativeness must be included in the PM10 SIP.

3. The air quality design value must be selected to represent a realistic worst case. A design value must be determined based on the methods described in the PM10 SIP Development Guideline; both an acceptable 24-hour design value and an acceptable annual design value must be determined for each site. Once the design values are determined, "the SIP-related emission limits should be based on the NAAQS (annual or 24-hour) which result in the most stringent control requirements." Also, a description of the method used to determine the design values for both the 24 hr and annual PM10 standard must be included.

APPENDIX L

SIGNED LOCAL RACM RESOLUTIONS BY CITY OF NOGALES AND SANTA CRUZ COUNTY

CITY OF NOGALES RESOLUTION

Exhibit B same as Section 4.1

CITY OF
NOGALES

CERTIFICATE

I certify that I am the duly appointed, qualified, and acting City Clerk of the City of Nogales, Arizona, that as such, I have in my possession all of the resolutions as adopted by the City Council of the City of Nogales, Arizona; that the attached is a true and correct copy of Resolution No. 93-06-32, which was presented to the City Council on the 9th day of JUNE, 1993, as it appears in my records.

6-9-93
Date

F Castro
Fernando Castro, City Clerk

777 NORTH GRAND AVENUE • NOGALES, ARIZONA 85621 • (602) 287-6571 • FAX: (602) 287-2230

RESOLUTION NO. 93-06-32

A RESOLUTION OF THE MAYOR AND CITY COUNCIL OF THE CITY OF NOGALES, ARIZONA STATING THE COUNCIL'S INTENT TO IMPLEMENT REASONABLY AVAILABLE CONTROL MEASURES TO REDUCE LEVELS OF PARTICULATE MATTER PM_{10} POLLUTION

WHEREAS, the Nogales area experiences air pollution of small particulate matter at levels above standards set by the U.S. Environmental Protection Agency; and

WHEREAS, the Arizona Department of Environmental Quality is preparing the State Implementation Plan for the Nogales PM_{10} Nonattainment Area in cooperation with the City of Nogales, Santa Cruz County and the Arizona Department of Transportation that includes measures to be implemented by the above parties for purposes of reducing emissions of particulates.

NOW, THEREFORE BE IT RESOLVED by the Mayor and City Council of the City of Nogales as follows:

Section 1. That the City Council adopts the Final State Implementation Plan for the Nogales PM_{10} Nonattainment Area [Plan] herewith attached as Exhibit A (A full text of the [Plan] is on file in the Clerk of the Council's Office).

Section 2. That the City Council agrees to proceed with a good faith effort to implement reasonably available control measures identified in Exhibit B and as presented in Section 4.1 of the [Plan], identified as City of Nogales RACM.

Section 3. That the City Council commits to fully implement the measures as expeditiously practicable prior to December 10, 1993, with the funding sources identified recognizing that available funding may depend upon programs or processes of various county, state, and federal agencies.

Section 4. That the City Council commits to annual reporting to the Arizona Department of Environmental Quality on the progress of implementing such commitments.

Section 5. That the City Council agrees to consider modifications of funding or actions toward implementation, if necessary. Additional measures, as appropriate, may be considered during the continuing planning process if implementation does not achieve progress toward reducing emissions, as required by the Clean Air Act.

PASSED AND ADOPTED by the Mayor and City Council of the City of Nogales, Arizona this 9 day of June, 1993.

Jose L. Canchola
Mayor

Attest:

Fernando Castro
City Clerk

APPROVED AS TO FORM:

Hugh Holub
Attorney for the City

Exhibit A

[Full text on file in planning and zoning department]

DRAFT
STATE IMPLEMENTATION PLAN
for the
NOGALES PM_{10} NONATTAINMENT AREA

Prepared by

Office of Air Quality
Arizona Department of Environmental Quality
3033 North Central, Phoenix, Arizona 85012

April, 1993

4.1 City of Nogales RACM

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number:NOG #1; see also NOG #10

Control Measure:Pave, vegetate, or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.

Target Source:Fugitive dust from trackout onto paved surfaces

Responsible Agency: City of Nogales Street Department

Ordinance/Policy/ Procedure/Operations: Ongoing operations of the City Street Department

Implementation schedule/Operation:**Ongoing, but City commits to paving the remainder of unpaved streets within the City limits within 5 years.** Specific projects will be implemented within the timeframes set below.

Authority Citation: Provide for the general welfare of the City's residents and visitors.

Financing and Man-power Resources: **Proposed $176,000 budget for repair and maintenance of all streets within the City for FY 93-94; Additional proposed $80,000 set aside for capital acquisition including a paving machine and a milling machine to recycle asphalt.** Budget is approximately 10% higher than FY 92-93 and has been rising by approximately 5-10% per year over the last 5 years.

As paving projects progress, City's one water truck can water the fewer miles of remaining unpaved surfaces more frequently.

Technical Documentation

Committed Level of Effort: **The City of Nogales commits to paving the remainder of its unpaved streets by January 1, 1998. The City since 1989 has paved an average of 2 miles of road per year and**

PUBLIC NOTICE

NOTICE IS HEREBY GIVEN THAT THE MAYOR AND BOARD OF ALDERMEN OF THE CITY OF NOGALES WILL MEET IN REGULAR SESSION THE EVENING OF:

WEDNESDAY, JUNE 9, 1993

AT 6:00 P.M.

IN THE CITY HALL COMPLEX COUNCIL CHAMBERS

AGENDA

1. Call to Order

2. Pledge of Allegiance

3. Call to the Public

4. Presentation to Council on Christmas in April, Presentation by Rebecca Bregen Director of Project CARE

5. Discussion and Proposal to Approve Application for Extension of Premises Patio Liquor Permit for Ryan's Pub; Applicant's Name: David Wagner

6. Discussion and Proposal to Approve Special Events Liquor License for Nogales Rotary Club for June 26, 1993; Applicant's Name: Silvia A. Terrazas

7. Award Proposal for Fish & Wildlife/Guevavi Ranch Restoration Project

8. Approval of Disbursement of MDBA Funds

9. Request Authorization to go for Bid for the following:
   1. Cold Mix
   2. Hot Mix
   3. Concrete
   4. Gasoline for service station
   5. Diesel and Petroleum Products from Bulk Plants
   6. Chlorine and Chemicals

10. Award bid (or readvertise if necessary) for One New 5 Gang Fairway Mower

11. Authorization to purchase Two (2) Defribulators for the Fire Department

12. Presentation of Resolution No. 93-06-32. A Resolution of the Mayor and Board of Aldermen of the City of Nogales Related to Air Quality Control Measures

13. Presentation of Resolution No. 93-06-33. A Resolution of the City of Nogales authorizing the submission of an amendment to Commerce CDBG Contract No. 163-90 and to amend existing Commerce Contract

14. Presentation of Resolution No. 93-06-34. A Resolution of the City Council of the City of Nogales to extend existing Commerce Contract

15. Presentation of Resolution No. 93-06-35. A Resolution of the Mayor and Board of Aldermen Authorizing Submittal of Application to the Arizona Supreme Court for Funds

16. EXECUTIVE SESSION: Pursuant to A.R.S. Statutes, Section 38-431.03
    a. Personnel Matters
    b. Financial Matters

17. Approval of Payment of City Demands, Nos. 5926 through 6084 and 6089 through 6275

18. Approval of Minutes of Meetings held April 7, April 19, April 26, May 5, and May 10, 1993

19. Future Agenda Items

20. Adjournment

Approved by:

Mayor

City Clerk

CITY CLERK'S NOTE:
POSTED BY: Olma DATE 6/7
CITY HALL LOBBY, BULLETIN BOARD,
SANTA CRUZ CO. COURTHOUSE, U. S. POST OFFICE, TIME 4:30

SANTA CRUZ COUNTY RESOLUTION

Exhibit B same as Section 4.2

BOARD OF SUPERVISORS
SANTA CRUZ COUNTY

CAMILO AHUMADA
District 1

ROBERT DAMON
District 2

RONALD R. MORRISS
District 3

CERTIFICATE

I certify that I am the duly appointed, qualified, and acting County Clerk of the County of Santa Cruz, Arizona; that as such, I have in my possession all of the resolutions as adopted by the Board of the County of Santa Cruz, Arizona; that the attached is a true and correct copy of the Resolution No. 1993-27, which was presented to the County Board on the 26th day of May, 1993, as it appears in my records.

May 27, 1993
Date

Frances DeCillis
Clerk of the Board

2150 N. Congress Drive Nogales, Arizona 85621 (602) 281-4695

RESOLUTION NO. 1993-27

A RESOLUTION OF THE BOARD OF SUPERVISORS OF SANTA CRUZ COUNTY, ARIZONA, STATING THE BOARD'S INTENT TO IMPLEMENT REASONABLY AVAILABLE CONTROL MEASURES TO REDUCE LEVELS OF PARTICULATE MATTER PM10 POLLUTION.

WHEREAS, the Nogales area of Santa Cruz County experiences air pollution of small particulate matter at levels above standards set by the U.S. Environmental Protection Agency; and

WHEREAS, the Arizona Department of Environmental Quality is preparing the State Implementation Plan for the Nogales PM10 Nonattainment Area in cooperation with the City of Nogales, Santa Cruz County and the Arizona Department of Transportation that includes measures to be implemented by the above parties for purposes of reducing emissions of particulates,

NOW, THEREFORE BE IT RESOLVED by the Chairman and County Board of Supervisors of Santa Cruz County as follows:

Section 1. That the County Board of Supervisors adopts the Final State Implementation Plan for the Nogales PM10 Nonattainment Area [Plan] herewith attached as Exhibit A (A full text of the [Plan] is on file in the Clerk of the Board's Office).

Section 2. That the County Board of Supervisors agrees to proceed with a good faith effort to implement reasonably available control measures identified in Exhibit B and as presented in Section 4.2 of the [Plan], identified as Santa Cruz County RACM.

Section 3. That the County Board of Supervisors commits to fully implement the measures as expeditiously practicable prior to December 10, 1993, with the funding sources identified, recognizing that available funding may depend upon programs or processes of various county, state, and federal agencies.

Section 4. That the County Board of Supervisors commits to annual reporting to the Arizona Department of Environmental Quality on the progress of implementing such commitments.

Section 5. That the County Board of Supervisors agrees to consider modifications of funding or actions toward implementation, if necessary. Additional measures, as appropriate, may be considered during the continuing planning process if implementation does not achieve progress toward reducing emissions, as required by the Clean Air Act.

PASSED AND ADOPTED BY THE CHAIRMAN AND COUNTY BOARD OF SUPERVISORS OF SANTA CRUZ COUNTY, ARIZONA THIS 26TH DAY OF MAY, 1993.

SIGNED AND ATTESTED TO THE 26TH DAY OF MAY, 1993.

CAMILO AHUMADA, CHAIRMAN

RONALD R. MORRISS, VICE-CHAIRMAN

ROBERT DAMON, MEMBER

ATTEST:

Frances DeCillis
Clerk of the Board

APPROVED AS TO FORM:

M. Jan Smith-Florez
County Attorney

EXHIBIT "A"

DRAFT
STATE IMPLEMENTATION PLAN
for the
NOGALES PM_{10} NONATTAINMENT AREA

Prepared by

Office of Air Quality
Arizona Department of Environmental Quality
3033 North Central, Phoenix, Arizona 85012

April, 1993

4.2 Santa Cruz County RACM

NOGALES SIP ADMINISTRATIVE AND TECHNICAL RACM DEMONSTRATION/SIP COMPLETENESS

Administrative Documentation

Number: SCC #1; see also SCC #10

Control Measure: Pave, vegetate, or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.

Target Source: Fugitive dust from trackout onto paved surfaces

Responsible Agency: Santa Cruz County Public Works Department

Ordinance/Policy/
Procedure/Operations: Ongoing operations

Implementation
schedule: Ongoing

Authority Citation: A.R.S. 11-251

Financing and Man-
power Resources: FY 92-93; total Santa Cruz County Streets and Roads budget of $1,326,000, of which $150,000 will go to chip sealing projects [approximately 20-25 miles] within the boundaries of Santa Cruz County. Streets and roads budget has been increasing approximately 3-5% per year over the last 5 years.

Technical Documentation

Committed Level of Effort: **The County commits to chip seal at least 1 mile of unpaved roads per year in the next two years within the boundaries of the PM_{10} nonattainment area. The average length of new chip sealing completed over the last five years has been approximately 2-3 miles. This includes:**

- **an IGA with Nogales to chip seal 1.5 miles of Royal Rd. and certain residential streets adjoining Royal Rd.**

Over the last five years the County has chip sealed/paved

APPENDIX M

PUBLIC PARTICIPATION AND RESPONSIVENESS SUMMARY

PUBLIC HEARING

PUBLIC HEARING PRESIDING OFFICER CERTIFICATION

I, Joseph K. Gibbs, the designated Presiding Officer, do hereby certify that the public hearing held by the Arizona Department of Environmental Quality was conducted on May 26, 1993, in the Santa Cruz County Board of Supervisors Chambers, 2150 North Congress Drive, Nogales, Arizona. The public hearing was conducted in accordance with with public notice requirements through the publication in the Nogales International dated April 21 and April 28, 1993 [**Attachment A**]. Furthermore, I do hereby certify that the public hearing was electronically recorded from the opening of the public record through concluding remarks and closing, and the audio cassette provided contains a full, true, and correct record of the above-referenced public hearing. **Attachment B** contains the written transcription of the proceedings.

Dated this 11th day of June, 1993

Joseph K. Gibbs

Joseph K. Gibbs

State of Arizona)
) ss.
County of Maricopa)

Subscribed and sworn to before me by Joseph K. Gibbs, the 11th day of June, 1993.

Sheila J. Moore

Notary Public

My commission expires:

My Commission Expires Dec. 15, 1996

ATTACHMENT A

Nogales International

268 W. View Point Dr. • P.O. Box 579 • Nogales, AZ 85628 • (602) 281-9706

April 21, 1993

Dear Legal Advertiser:

The Nogales International will start publishing twice a week beginning with the Tuesday, May 4, 1993 edition.

Therefore, in order for us to better serve your legal advertising publications, would you please include a cover letter to us indicating if your legal notice or public notice has to run once each week or can be run in consecutive publications.

Thank you for your cooperation in helping us to publish your legal notices correctly.

Sincerely,

Brendan FitzSimons
Editor & Publisher

BF:jp

AFFIDAVIT OF PUBLICATION

STATE OF ARIZONA
COUNTY OF SANTA CRUZ } **ss.**

Brendan FitzSimons being of first duly sworn, deposes and says: that he/she is Publisher of the NOGALES INTERNATIONAL, a newspaper published in the County of Santa Cruz, State of Arizona, and of general circulation in said County, State and elsewhere, and that the hereto attached legal notice

Public Notice - Public Hearing for the Nogales Area Air Pollution Control Plan

was printed and published correctly in the regular and entire issue of said NOGALES INTERNATIONAL for 2 issues; that the first publication was made on the 21 day of April, 19 93, and the last publication thereof was made on the 28 day of April, 19 93.

NOGALES INTERNATIONAL

By Brendan FitzSimons

Subscribed and sworn to before me this 28 **day of** April, 19 93

Jeanne FitzSimons

Notary Public

My commission Expires:

OFFICIAL SEAL
JEANNE FITZ SIMONS
NOTARY PUBLIC
SANTA CRUZ COUNTY
My Commission Expires September 10, 1996

bps, Inc. 9245 d

Mayor

ATTEST
sig/FERNANDO CASTRO
City Clerk

Pub: 4/28/93
Req: City of Nogales

PUBLIC NOTICE

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Public Hearing for the Nogales Area
Air Pollution Control Plan

The Arizona Department of Environmental Quality (ADEQ), City of Nogales and Santa Cruz County will hold a public hearing beginning at 10:00 a.m. Wednesday, May 26, 1993 to be held as part of a joint meeting of the Santa Cruz County Board of Supervisors and the Nogales City Council located in the chambers of the Santa Cruz County Board of Supervisors, at 2150 North Congress Drive, Nogales, Arizona. The purpose is to receive public comment on the proposed State Implementation Air Quality Plan to reduce particulate (dust) pollution from sources in the Nogales area. Afterwards, the Santa Cruz County Board of Supervisors and the Nogales City Council will consider for approval respective local commitments to maintain or implement new dust reduction strategies that will become part of the Final Plan.

The plan is designed to demonstrate that by implementing Reasonably Available Control Measures, the Nogales area could bring air pollution levels below the Federal Health Standard for particulate matter sized 10 microns or less in diameter (referred to as PM_{10}) by December 31, 1994 if not for the emissions generated in Mexico that contribute to levels in the Nogales area.

The U.S. Environmental Protection Agency has classified the Nogales Area as a PM_{10} nonattainment area, which by Federal law requires the development of a pollution control plan. The draft plan describes analysis of ambient air quality, which sources of particulate air pollutants are major contributors to the problem, and control strategies needed to bring the Nogales area into compliance with the Federal Clean Air Act.

The draft plan has been developed by ADEQ in close cooperation with officials of the City of Nogales, Santa Cruz County and the Arizona Department of Transportation.

Copies of the proposed plan will be available at the Air Quality Office of the Arizona Department of Environmental Quality (address below), beginning April 26, 1993. A copy of this document will also be available for review during regular business hours at the following locations:

Nogales Public Library
518 North Grand Avenue
Nogales, Arizona

City of Nogales
Planning & Zoning Dept.
777 North Grand Avenue
Nogales, Arizona

Santa Cruz County
Board of Supervisors Office
2150 North Congress Drive
Nogales, Arizona

All interested parties will be given a reasonable opportunity at the hearing to submit relevant evidence, data, views, and arguments, orally and in writing. All written comments must be received by 5:00 p.m., May 26, 1992 to be considered by the Department in developing the final plan. Written comments should be addressed to:

Joe Gibbs
Air Quality Planning Section
Arizona Department of Environmental Quality
3033 North Central Avenue
Phoenix, Arizona 85012

Pub: 4/21, 28/93
Req: Arizona Department of Environmental Quality

ATTACHMENT B

BOARD OF SUPERVISORS
SANTA CRUZ COUNTY

CAMILO AHUMADA
District 1

ROBERT DAMON
District 2

RONALD R. MORRISS
District 3

A G E N D A

May 26, 1993

The following items are presented for discussion and/or action if necessary:

9:30 a.m.
County Complex
Supervisors' Meeting Room

I. PLEDGE OF ALLEGIANCE

II. CALL TO THE PUBLIC

III. FLOOD CONTROL DISTRICT: Authorization for Construction Bid - Western Avenue - Concrete Channel

IV. GENERAL SESSION

A. Approval of Change Order for Concrete Apron for New Terminal Facility, Nogales International Airport
B. Projects Review
C. Health & Environment Report
D. Request to reclassify property owner to tax exempt status Pursuant to A.R.S. 42-275(B) Bruce Barth - 106-36-103
E. Request of County Attorney's Office to develop Ordinance related to damage of public property
F. Approval of Annual Data Processing Agreement with Arizona Department of Revenue
G. Tubac fireworks Application
H. Adoption of the Calabasas Park by the Probation Department for Maintenance
I. Approval of Resolution #1993-27, Air quality control measures
J. June Tax Roll Adjustments
K. Financial Report
L. Approval of Minutes: May 5 & 19, 1993
M. 690s

10:00 a.m.
Supervisors' Meeting Room

V. STATE PUBLIC HEARING: Arizona Department of Environmental Quality re: Nogales Area Air Pollution Control Plan

VI. PUBLIC HEARING: Joint meeting with Arizona Department of Environmental Quality and City of Nogales re: Nogales Area Air Pollution Control Plan

VII. ADJOURNMENT

2150 N. Congress Drive Nogales, Arizona 85621 (602) 281-4695

Board of Supervisors Office
May 26, 1993
9:30 a.m.

Board met in regular session. Present: CA, RM, RD, DM, FD and HH. Also: (sign-in sheet)

Call to the Public: Sheriff Estrada informed the Board that the state had approved $2,795 in grant funds for Victims Rights; the application had requested $15,000. Also, a meeting must be held with elected officials and staff regarding the Jail Assessment Report concerns and recommendations.

Meeting recessed to Flood Control District Board at 9:40 a.m. (RM/RD)

Flood District: Mr. Frank Krupp requested authorization to go to bid for the Western Avenue concrete channel work, which will cover 740 feet from the end of phase one. Board moved to authorize Mr. Krupp to go to bid as described. (RM/RD; c.u.) Flood District adjourned and General Session convened at 9:45 a.m. (RM/RD)

General Session: motion carried to deviate from the agenda sequence.

Financial Report: General Fund $701,607 (includes $362,014 from 1/2-cent sales tax); $885,724 to apportion. Mr. Morriss asked what the impact will be from the court decision regarding mass property appeals. Motion carried to accept the financial report, with an analysis of how much reimbursement is due the Capital Projects Fund to be presented next week (RM/RD)

Meeting recessed at 10:03 to Public Hearing.

PUBLIC HEARING, A.D.E.Q. re: Nogales Area Air Pollution Control Plan. Mr. Joe Gibbs of A.D.E.Q., Presiding Officer. Mr. Gibbs advised the audience to sign up if they wish to have formal comments incorporated into the plan. He described the size and location of the non-attainment area (depicted in the plan document) and explained the federal government's mandate under the Clean Air Act to develop a method to bring this area up to standards. The air quality was measured and strategies were developed, and an estimated 94% of the Nogales problem is identified as coming from Mexican emissions, but particulates must still be reduced. The public was invited to comment.

John Paul Vyborny of Edith Place, Nogales: Mr. Viborny expressed support for paving of unpaved roads, as he lives on a dirt road connected to Gold Hill Road and the amount of dust is tremendous, affecting his family's health. A son has asthma. The road is not well maintained by the City, not graded regularly, and no dust suppressants are put down regularly. He is in favor of paving, and therefore in favor of the plan, to improve his family's health as well as the traffic.

Robert Quihuis, of Camino Vista del Cielo, Nogales: Mr. Quihuis discussed the dust problem from Route 89 east to Canyon View Road. Last year, several residents signed a

letter making the state aware of the problem, and sent a copy to Art Cook, City of Nogales, with suggestions to alleviate the problem. Mr. Cook never answered the letter but spoke on the phone to Mr. Malensky of Tucson, and promised action. Subsequently, the state sent Mr. Cook another letter regarding the violation fine for a high-attainment pollution area. Then a new administration took over and a new Streets Superintendent said he would try dust suppressant. In order to do this, the grading would have to be as for paving. The dust suppressant was put down Friday. Many of the people who signed the letter have asthma, valley fever, etc.; the area looks like Desert Storm. Mr. Quihuis complained that the City blamed a broken hydrant last year for the lack of sprinkling, but it wasn't true.

Irasema Coronado, of Border Ecology Project: The use of EPA monitoring funds, estimated to be between $150-200,000, should be based on recommendations developed bi-nationally by Sonoran groups who understand the emissions best. Next, the Maquiladoras and Mexican "micro-industries that burn various materials could be contributing to air pollution; diesel trucks and other traffic backed up at the border probably contributes to it. The pollutants specific to Mexico must be carefully analyzed and identified. Then remediation of problems should be developed as soon as possible with a minimum of monitoring. The effects of pollution on lung function, should continue to be studied and analysis of other suspected contaminants should be made. Next, Section 815 of the Clean Air Act empowers EDA to enter into programs of monitoring and remediation with Mexico. The U.S. can take an active role in improving Mexican air quality, through improving truck traffic movement, paviang, municipal waste strategies, cleaner fuels, industrial cleanup, and other stratgeies. Finally, since EPA funds are used, we should include residents from other polluted neighborhoods, such as Douglas/Agua Preieta. ADEQ expressed willingness to develop binational collaborations. Speaking as a private citizen, Ms. Cornonado spoke about ways to cut down on dust. 800 truckloads go through the City, some of them run their motors for hours to keep refrigeration going. The trucks should be brought up to standards and have emissions tested. Sometimes five and six hours are needed to cross the border. Improving the port is not enough. All the unpaved roads are not in Sonora. Furthermore, not everyone in Sonora uses wood; mostly gas cylinders, not wood, contrary to the document. It is a 1987 document and needs to be revised. She is interested in seeing more people here involved in the democratic process.

Joe Mendoza, Vista del Cielo, Nogales: His wife and daughter suffer from allergies; he supports paving.

Mr. Gibbs closed the formal comment portion of the hearing. He informed the audience that the federal Clean Air Act requires a plan for Nogales, Arizona, dealing solely with pollution on the Arizona side. DEQ is working with the

Mexican local government in monitoring protocol, data transfer protocol, and on the Sonora side. This plan will be traded with the Sonora plan and will help justify any control measures south of the Boarder.

Ron Morriss, Board of Supervisors, asked if Douglas is also a non-attainment area; Mr. Gibbs responded affirmatively and said their Public Hearing is Friday.

Mr. Ahumada, Board of Supervisors, asked if there is a $200,000 grant to study this, and will it be used in conjunction with the plan. Mr. Gibbs said that ultimately it will be; right now they are parallel. ADEQ is conferring with the Mexican officials; there have been discussions recently on the monitoring protocol. He believes the amount is $150,000, just for Ambos Nogales. We will join forces but to avoid federal sanctions this plan must be completed by the deadline (mid-June).

The A.D.E.Q. Public Hearing closed at 10:35 and the Joint City of Nogales/Santa Cruz County meeting convened. (RM/RD)

Mr. Morriss noted the City lacked a quorum. (City representatives were Lou Jeong, Fernando Castro, Manny Ruiz, and Alderman Duke Petty. Not present: Mayor Canchola, Aldermen Kramer, Tidwell, Sesteaga, and Serino) The decision was made to proceed with the meeting to satisfy the agenda, so the County can take action on the Resolution and its responsibility is over, with the City to schedule their activity at their next meeting. Mr. Gibbs stated he didn't feel it is required by the state to have a joint hearing.

Mr. Manny Ruiz, City of Nogales Street Superintendent: A company in Yuma did a test area on Frank Reed Road and Vista del Cielo for dust suppressant. He described the details of use of the suppressant and feels it is effective. Discussion ensued regarding the spray and the City's IGA with the County for paving city roads. Mr. Quihuis and MR. Bivorny spoke of their perception of City performance in road maintenance and the need for paving.

Mr. Ahumada brought the discussion to an end saying the agenda must be adhered to. Mr. Morriss stated that on April 14 the Board of Supervisors met with ADEQ and received the draft plan of mitigation measures for the county. Some changes were made, and are represented in Exhibit "B" of the plan document, in measures 1 through 14 (no #8 is included) and he read Exhibit "B" aloud. Mr. Damon said the problems occur in his district and the county is willing to work with the City; he thinks the City's plan (dust suppressant) will not work. Mr. Morriss said the county will deal only with the county's mitigation measures.

Mr. Fernando Castro, City of Nogales, said the City has the same basic outline of measures; they have reviewed it and will present it to the Mayor and Council. He pointed out that the County's assistance in chip sealing is paid for by the City. Mr. Miller said the City could contract the work out if they wish; they are paying about half of what contracting would cost. The county by law cannot pave inside

the City without some kind of reimbursement.

Mr. Mendoza asked what health concerns there are regarding the dust suppressant, and Mr. Ruiz offered to provide him with the information.

The Joint Meeting was adjourned at 11:07 a.m. and the General Session reconvened at that time. (RM/RD)

Resolution #1993-27: The Board adopted Resolution #1993-27 as proposed. (Motion: Morriss; Second: Damon; carried unanimously)

copy resolution

Health and [illegible]

end of ADEQ portion

Nogales PM10 Air Quality Plan
PUBLIC MEETING/ORAL PROCEEDING

DATE May 26, 1993

LOCATION Santa Cruz Co. Brd. of Supvr's.

NAME	AGENCY OR ORGANIZATION	CURRENT MAILING ADDRESS	PHONE
Fred Garcia	ADOT	205 S. 17th Ave Phx AZ 85007	255-8635
WARREN SPARKS	ADOT/TPD		255-7562
EDIE SUTORKA	ADOT/TPD		255-7464
ROBERT EPLER	ADOT DISTRICT 2	P.O Box 27306, Tucson AZ 85726	620-5427
Dennis Mittelstedt	FHWA, Phoenix,	234 N. Central, Rm 330 Phoenix 85004	379-3646
John Paul Vyborny	Homeowner	3167 N. EDITH PLACES	281-4177
Robert Rojas	City of Nogales (councilman)	P. O. BOX 261 Nogales, AZ	287-6687
ROBERT R QUIHUIS	HOME OWNER	257 VISTA DEL CIELO	281-9546 ~~281-9541~~
Joe Mendoza	Home owner	222 E Camino Vista Del Cielo	761-3246
Jasemin Coronado	Citizen	2650 N Greenpl.	281-4757
Jasemin Coronado	Border Ecology Proj	Nace, Az	

Nogales PMio Air Quality Plan
PUBLIC MEETING/ORAL PROCEEDING

DATE May 26, 1993

LOCATION Santa Cruz Co Bd of Supvs.

NAME	AGENCY OR ORGANIZATION	CURRENT MAILING ADDRESS	PHONE
HUGH HOLUB	CITY OF NOGALES	777 N. GRAND	287-6571
Duke D. Petty	City of Nogales	777 N Grand	287-6521
Kathy Vandervoet	Nogales International	268 W. View Point Drive	281-9706

SPEAKER SLIP

Name: John Paul Vyborny Date: 5-26-93

Mailing Address: 3167 N. EDITH PLACE

Representing: Myself

[X] I wish to make an oral statement.
Approximate amount of time I wish to speak: _____ minutes.

[X] I have already submitted written comments.

[ ] I will submit written comments immediately after speaking.

[ ] I plan to submit written comments at a later time.

Subject: Air Quality

SPEAKER SLIP

Name: ROBERT R. QUIHUIS Date: 26 MAY 93

Mailing Address: 251 VISTA DEL CIELO

Representing: Home Owner

[ ] I wish to make an oral statement.
Approximate amount of time I wish to speak: 10 minutes.

[✓] I have already submitted written comments.

[ ] I will submit written comments immediately after speaking.

[✓] I plan to submit written comments at a later time.

Subject: DUST POLLUTION ON CAMINO VISTA DEL CIELO

SPEAKER SLIP

Name: Irasema Coronado Date: 26/5/93

Mailing Address:

Representing: Border Ecology Project

[X] I wish to make an oral statement.
Approximate amount of time I wish to speak:
10 minutes.

[ ] I have already submitted written comments.

[X] I will submit written comments immediately after speaking.

[ ] I plan to submit written comments at a later time.

Subject: PM 10 Plan

SPEAKER SLIP

Name: Irasema Coronado Date: 26/5/93

Mailing Address: 2650 N Green Pl.

Representing: myself

[X] I wish to make an oral statement.
Approximate amount of time I wish to speak:
5 minutes.

[ ] I have already submitted written comments.

[X] I will submit written comments immediately after speaking.

[ ] I plan to submit written comments at a later time.

Subject: PM 10 Plan

SPEAKER SLIP

Name: Joe Mendoza Date: 5/26/93

Mailing Address: 222 E Camino Vista Del Cielo

Representing: _____

[ ] I wish to make an oral statement.
Approximate amount of time I wish to speak:
_____ minutes.

[ ] I have already submitted written comments.

[ ] I will submit written comments immediately after speaking.

[✓] I plan to submit written comments at a later time.

Subject: Air Quality Dust Pollution

WRITTEN COMMENTS

John Paul Vyborny

Dick Kamp, Border Ecology Project

Irasema Coronado

April 27, 1993

Mr. Joe Gibbs
Air Quality Planning Section
Arizona Department of Environmental Quality
3033 North Central Avenue
Phoenix, Arizona 85012

Dear Mr. Gibbs:

I have read the Public Notice regarding the Air Pollution Control Plan for Nogales, Arizona and wish to provided you with my opinion. I have lived in a section of Vista Del Cielo which is within the city limits that connects State 89 with State 82. My house is the last house on North Edith Place. My son has asthma and my whole family suffers from allergy problems. I feel that part of our health problems comes from the fact that the streets are not paved. The dust caused by the ever increasing traffic seams to float and drift into our home as well as many of my neighbors. I am enclosing a copy of a letter we wrote to ADEQ Air Quality, Mr. Ivan J. Milensky as well as his response to the City of Nogales for your review.

It is my opinion that all dirt roads within the city limits like the road I live on should be paved in order to reduce the particulate matter and bring Nogales, Arizona closer to the required Federal levels.

Sincerely,

John Paul Vyborny
3167 North Edith Place
Nogales, Arizona 85621
(602) 281-4177

ADEQ AIR QUALITY
Mr. Ivan Milensky
4040 E. 29th St.
Tucson, Arizona

The undersigned have been informed that your office is where an appeal can be made to alleviate a very serious dust pollution problem by forcing the City of Nogales, Ariz. to abide by the law.

We live on a section of Vista Del Cielo which is the only artery connecting State 89 with State 82 4 miles north of town but within the city limits. Our houses extend from No. Edith Place at the West end to Canyon View Drive at the East end. Many complaints have been registered with the City resulting in a token water sprinkling twice last year and two this year. The latest on 13 Nov. Excuses for lack of attention have been: Lack of equipment and personnel.

Actually more traffic is generated by non-resident drivers from Patagonia Road crossing to Nogales Highway or vise versa than by residents.

When one follows another vehicle one can slow up to avoid driving in a cloud of dust but the real danger exists with on-coming traffic when one is momentarily blinded. The foliage alongside the road is white with dust.

We feel that a very legitimate reason exists for your agency to intervene and alleviate a serious problem.
A Home Improvement District for pavement is not feasable now since the developer still controls so much of the unsold lots..Asthma and allergy suffering people are the biggest victims.

Respectfully,

Robert R. Quihuis
Gloria D. Ogata
Robert R. Quihuis
257 Vista Del Cielo
Nogales, Ariz.
281-9546

I.C. Mitchell
Camino Vista del Cielo
Nog. Az.
281-4370

Mary Matz
2981 N. Victor
Nogales Az
281-0532

Barbara G. Valenzuela
2947 N. Cabalel Dr.
Nogales, AZ 85621 / Tele: 281-1639

222 E Camino Vista Del Cielo
Nogales, Arizona 85621
761-3246

Christina G. Montes
47 E. Camino Vista Del Cielo

67 N. Edith Pl
Nogales, Az 85621

cc: Mr. Dave Kempson
Phoenix, Ariz.
Brendon Fitzimmons
Nogales International
Alvin Sisk
Nogales Daily Herald
Ms Mary Macias, Mayor
City of Nogales

Angelina E. Caluetro
311 N. Edith Pl.
Nogales, Az 85621

67 N Edith Pl.
Nogales, Az 85621

281-1639

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Office of Air Quality
2005 North Central Avenue
Phoenix, Arizona 85004

Air Pollution Report No. 91074

Complainant ROBERT QUIHUIS Phone 281 - 9546

Address 257 Vista DEL CIELO.

Type: Open Burning ___ Fugitive Dust X Odors ___ Fumes ___

Emissions ___ Other ___

Source VEHICLE TRAVEL

Address ROAD Between 89 & 82 [Approx. 2 miles]

Description LITTLE NO ACTION TO DATE. //
25 MPH LIMIT. - NO ENFORCEMENT
EXCESS DUST EMISSIONS CAUSING HEALTH
& TRAFFIC HAZARD.

Received by IVAN MILENSKY Phone ___ Letter X Date 11/27/92 Time ___

Referred to IVAN MILENSKY Date 11/2

Action by Department

1. RETURN PHONE CALL AND REQUEST MORE INFO.
2. SEND RULES REGARDING DUST/PM10/FUG. DUST.
3. SEND NON ATTAINMENT / PM10 EDUCATIONAL MAT'L.
4. SEND COPY OF REPORT.
5. DRAFT LETTER REQUEST ACTION BY CITY OF NOGALES POSSIBLE NOV IF ACTION PERSISTS

Response Reference

cc: Engineering ___ NRO ___

Compliance ___ SRO ___

ADEQ/OAQ/C005 (4-87)

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

FIFE SYMINGTON, GOVERNOR
EDWARD Z. FOX, DIRECTOR

City of Nogales
Director of Public Works
1450 N. Hohokam Dr.
Nogales, Az. 85621

December 1,1992

Attn.: Art Cook

Dear Mr. Cook:

I am writing you as a follow up to our conversation today. I called to relay to you the complaints from excess fugitive dust originating from Vista Del Cielo.

You informed me that the area residents need to form an improvement district. Also, Vista Del Cielo was accepted as an unique and complete subdivision. The City has done some grading and watering, but still the dust problem persists.

Article R18-2-405 of the Air Pollution Rules addresses roadways and Streets. Continued neglect of this portion of roadway between Rt.89 and Rt.82 causes excess dust emissions and a Notice of Violation could be served.

Since the City of Nogales is located in a non-attainment area for PM-10(dust and fines) it is advantageous for a solution to the dust problem be found. Cooperation between the local residents and the City will be required. Listed below are suggestions which may aid in controlling this problem.

1. Scheduling the subject road for capitol improvement (ie. paving)

2. Consider using a dust suppressant

3. Limiting and enforcing reduced speeds

4. Organize a meeting encouraging local residents involvement

5. More frequent grading and wetting

Should you need further assistance and information please do not hesitate to call upon me. Thank you for your continued cooperation, my office number is: 628-6738.

Sincerely,

I. J. Milensky

Ivan J. Milensky, P.E.
Office of Air Quality, S.R.O.

c.D.Kempson
R.Quihuis

The Department of Environmental Quality is An Equal Opportunity Affirmative Action Employer.

Border Ecology Project

P.O. Drawer CP
Bisbee, Arizona 85603

FAX: (602) 432-7473
Phone: (602) 432-7456

Comments on PM 10 SIP Compliance: Santa Cruz County
May 26, 1993 Dick Kamp, Director Border Ecology Project

The EPA and ADEQ maintain a relatively limited view of SIP compliance requirements; that is they want to demonstrate that Nogales and other PM 10 or criteria non-attainment areas have carried out necessary control requirements to bring their region into compliance. For those in the Ambos Nogales region whose preoccupation is to develop monitoring and remediation strategies for air pollution, Border Ecology Project (BEP) would like to make the following suggestions.

1. The use of the EPA monitoring funds (estimated to be between $150 000 annually and $200 000 total) should be based on site specific recommendations to be developed binationally for the region by Sonoran groups and institutions such as the Colegio de la Frontera Norte in Nogales, Sonora or the binational Nogales Health Coalition, Grupo Comadres, Grupo Dignidad and others actively involved in assessing Nogales Sonora environmental hazards and risks. Those who understand the potential emissions best are those who are living in Nogales, Sonora.

2. There is a broad list of possible PM 10 emitters who could be creating health risks in Nogales including far more than the burning dumpsite(s) and dirt roads. Maquiladoras and Mexican "micro-industries" burning various materials could be contributing unanalyzed air toxics pollution; some potential sources may be on SEDESOL Instituto Nacional de Ecologia manifests or on SEDESOL Procuraduria Ambiental inspection reports (they often don't share them). Diesel truck and other mobile traffic backed up at the border is probably contributing substantial PM10 and hydrocarbon contamination; a recognized major pollution source in Ciudad Juarez-El Paso. It is important that a wide range of Mexican-identified sources be listed with potential contaminants that can be speciated through selective lab analysis. The identification process is especially important since PM 10 measurements are cheap; lab analysis for specific contaminants (eg. burning PVC on wire, etc. is more costly).

A corollary to the high cost of some analysis is that where remediation to a problem (i.e. a burning dump) is clearly the desired result rather than a "photograph" of known pollution--remediation strategies should be developed as quickly as possible with a minimum of monitoring.

3. The concept of studying the impacts of air pollution episodes on lung function,--though complex to implement at times--as proposed by Dr. Steven Pike and EnviroMD, is definitely worth pursuing in conjunction with general monitoring programs. It would also be worthwhile to pursue analyses of other suspected contaminants in children as sources are identified.

4. With regard to monitoring and remediation strategies: remember that Section 815 of the 1990 Clean Air Act empowers the EPA--in consultation with appropriate agencies in Mexico and the U.S. to enter into programs of monitoring and remediation with Mexico where U.S. air quality is impacted by Mexico. Although it is generally accepted that binational remediation of problems related to Mexican air pollution is a possibility--the U.S. (through unidentified sources of funding) can take an active role in improving Mexican air quality in the Ambos Nogales area. This is a seperate and interdependent route for Santa Cruz County/Ambos Nogales to pursue. Improvement of truck traffic movement, paving, municipal waste strategies, cleaner fuels, industrial cleanup, and a number of other potential remediation strategies could all be couched within the mandate of Section 815.

5. Since the EPA funds are for equipment and analysis that can be expanded to include Douglas-Agua Prieta it would behoove the Santa Cruz County/Nogales area to include concerned residents from the other "polluted" neighboring region to share strategies to monitor and remediate PM 10 and other pollution. A regional interchange between governmental and non-governmental concern and expertise will expedite the development of practical and local solutions. ADEQ has already expressed a willingness to develop creative binational collaborations to solve these problems and we strongly advocate participation from the two areas in meeting to develop strategies for Nogales that can be applied quickly to Agua Prieta-Douglas.

Sincerely

Dick Kamp
Director

RESPONSIVENESS SUMMARY

NOGALES PM_{10} NONATTAINMENT AREA PLAN

Responsiveness Summary
to
Testimory Taken at Public Hearing
and
Written Comments

John Paul Vyborny, Nogales resident living in the Vista del Cielo area

Comments: Mr. Vyborny has a son with asthma and lives on a dirt road connected to Gold Hill Road. The road is not well maintained by the City and Mr. Vyborny is in favor of paving dirt roads in Nogales.

Response: The air quality plan provides for paving the remainder of the dirt roads within Nogales City limits by January 1, 1998. During the public hearing, Mr. Manuel Ruiz, Acting Director of the Nogales Streets Department assured Mr. Vyborny that the City is committed to paving his street within that time period. The City plans to purchase a paving and milling machine to recycle asphalt. This would lower the costs of paving projects and consequently increase the number of miles paved per year. In the meantime, the City plans to use a dust palliative in the area and is currently testing the application of magnesium chloride.

Mr. Manuel Ruis has indicated that if a majority of residents want to form an improvement district and assess themselves a fee for paving roads within the Vista del Cielo area, the rate of paving in the area would improve.

Robert Quihuis, Nogales resident living in the Vista del Cielo area

Comments: Last year several residents signed a letter making the State aware of dust problems in the Vista del Cielo area. These people also want dust levels reduced in the area. [see letter in Written Comments, included with comments of Mr. Vyborny's].

Response: In response to the above referenced letter, the Arizona Department of Environmental Quality sent a letter, dated December 1, 1992, to Art Cook, former Director of Street for Nogales, and suggested the City:

1. Schedule the subject road for capital improvement;
2. Consider using a dust suppressant
3. Limit and enforce reduced speeds
4. Organize a meeting encouraging local residents' involvment
5. More frequent grading and wetting;

The response to Mr. Vyborny's comments would also apply to comments of Mr. Quihuis'.

Irasema Coronado, presenting oral and written comments of Border Ecology Project, Bisbee, Arizona

Comment: The use of EPA funds targeted to Ambos Nogales for implementation of the Border Environmental Plan for purposes of monitoring air quality in the area should be based upon recommendations developed bi-nationally with contributions by Sonoran groups who live in Nogales, Sonora.

Response: The focus of the Nogales PM_{10} SIP requirements is limited to emissions and ambient air quality levels in Nogales, Arizona. Emission inventories developed for the plan assess emissions only within the boudaries of the Nogales PM_{10} Nonattainment Area. The requirements of Section 179 [B] **[Attachment 1]** of the Clean Air Act stipulate that the SIP must demonstrate that Nogales, Arizona would have attained the National Ambient Air Quality Standard [NAAQs], if not for emissions generated in Mexico and transported across the border to affect monitored levels in Arizona.

While the SIP focuses on air quality on the Arizona side, The Border Environmental Plan is a framework to implement methods for both Mexico and the United States to share technical expertise, air quality data, and develop joint assessment and control strategies. During 1993-94, the implementation of the Border Plan in Ambos Nogales will include the development of an emission inventory in Nogales, Sonora and the siting of meteorlogical, PM_{10}/air toxics monitors on both sides of the border. **Attachment 2** presents the work plan for these activities.

The work plan is a collaboration of federal, state and local officials with technical input from Colegio del la Frontera Norte and the Arizona State University. While officials and citizens of the United States can urge Mexico to include public involvement in the process of the Border Plan, the United States cannot dictate the level of involvement of Mexican citizens.

Gary Neuroth, of the Office of Air Quality of the Arizona Department of Environmental Quality oversees the implementation of the work plan found in **Attachment 2** and welcomes local input into the planning process. Interested citizens can contact either Gary at (602) 207-2349 or Joe Gibbs at (602) 207-2378.

Comment: Emitters of PM_{10} other than dirt roads and burning dumpsites contribute to the total emissions generated in Nogales, Sonora. Emissions from maquiladoras and micro-industries, as well as the idling of diesel trucks waiting to cross the border, all may significantly contribute to the air quality problem.

Response: The work plan contained in **Attachment 2** addresses the

lack of knowledge regarding the total extent and level of contribution from various PM_{10} sources in Sonora. The Arizona Department of Environmental Quality believes that a scientific method consisting of siting monitors to measure particulates and air toxics; analyzing the chemistry of the filters on the monitors and evaluating air currents to surmise the sources of the pollutants will provide the best means of generating support for the best solutions to air quality problems in Ambos Nogales.

Comment: Studying the impacts of air pollution episodes on lung function is definitely worth pursuing.

Response: The Arizona Department of Environmental Quality believes that a framework for determining where areas of Ambos Nogales may have the highest level of air pollutants [as is the objective in **Attachment 2**] will provide a basis for any future health risk/incidence assessment.

Comment: Section 815 of the 1990 Clean Air Act empowers EPA to enter into programs of monitoring and remediation with Mexico. The U.S., can take an active role in improving air quality in Mexico.

Response: The Border Environmental Plan is being implemented pursuant to Section 815 with the goal of improving air quality in both Mexico and Arizona. Nothing prevents other bi-national contacts for such purposes.

Comment: Since EPA funds are slated for equipment and analysis that can be expanded to include Douglas-Agua Prieta, concerned citizens from that area should be included in Nogales air quality discussions.

Response: While funds implementing the Border Plan are targeted to Nogales, future federal funding is also planned for the Dougals-Agua Prieta area. In the meantime, the Douglas area, like Nogales, has developed a PM_{10} Nonattainment Area Plan with control measures for the Douglas Nonattainment area.

A regional collaboration of governmental and non-governmental concerns and expertise from both Ambos Nogales and the Douglas-Agua Prieta area may be useful and explored in the future. Such a coordinated effort would be better directed once a control strategy is determined for Sonoran emissions. Presently, to conduct a program in Agua-Prieta, similar to that targeted for Ambos Nogales under the Border Plan, may not be feasible due to limited federal funding.

Irasema Coronado, Citizen of Nogales

Comment: Over 800 produce trucks drive through Nogales, Arizona

every day. Many of the trucks are from Mexico and form long lines in order to cross the border. Some of these trucks keep their motors running to maintain refrigeration. Diesel emissions are clearly a source of air contamination. These trucks should be brought up to standards and that emissions inspections be conducted.

Response: The emission inventory accounted for diesel emissions by weighting vehicular particulate emissions by an additional 20% in urban sections of the nonattainment area where diesel engines predominate. See page 3 of **Appendix E** in the Plan document.

The expansion of lanes at the Mariposa and Grand Entrance undertaken by the U.S. Customs Service will reduce truck waiting-times. In addition, the Line Release Program will also reduce waiting times by allowing repeat haulers with good records expedited entry. See Reasonably Available Control Measures [RACM] undertaken by the U.S. Customs Service, page 69 and 70 in Section 4.5.

Currently A.R.S. § 28-955 [**Attachment 3**] authorizes law enforcement offficers to stop vehicles and assure that the engine and power mechanisms are so equipped and adjusted as to prevent the escape of excessive fumes or smoke . Also A.R.S. § 49-542. [A] [**Attachment 4**] provides that County Boards of Supervisors can request to opt into Arizona's Vehicle Emissions program with the concurrence of the Director of the Department of Environmental Quality. Santa Cruz County has not made such request.

Joe Mendoza, Nogales citizen

Comment: I support the paving program.

Response: Not applicable.

determined to have failed to attain. The Administrator may revise or supplement such determination at any time based on more complete information or analysis concerning the area's air quality as of the attainment date.

(d) CONSEQUENCES FOR FAILURE TO ATTAIN.—(1) Within 1 year after the Administrator publishes the notice under subsection (c)(2) (relating to notice of failure to attain), each State containing a nonattainment area shall submit a revision to the applicable implementation plan meeting the requirements of paragraph (2) of this subsection.

(2) The revision required under paragraph (1) shall meet the requirements of section 110 and section 172. In addition, the revision shall include such additional measures as the Administrator may reasonably prescribe, including all measures that can be feasibly implemented in the area in light of technological achievability, costs, and any nonair quality and other air quality-related health and environmental impacts.

(3) The attainment date applicable to the revision required under paragraph (1) shall be the same as provided in the provisions of section 172(a)(2), except that in applying such provisions the phrase "from the date of the notice under section 179(c)(2)" shall be substituted for the phrase "from the date such area was designated nonattainment under section 107(d)" and for the phrase "from the date of designation as nonattainment".

[¶ 2179B]

Sec. 179B. INTERNATIONAL BORDER AREAS.

(a) IMPLEMENTATION PLANS AND REVISIONS.—Notwithstanding any other provision of law, an implementation plan or plan revision required under this Act shall be approved by the Administrator if—

(1) such plan or revision meets all the requirements applicable to it under the Act other than a requirement that such plan or revision demonstrate attainment and maintenance of the relevant national ambient air quality standards by the attainment date specified under the applicable provision of this Act, or in a regulation promulgated under such provision, and

(2) the submitting State establishes to the satisfaction of the Administrator that the implementation plan of such State would be adequate to attain and maintain the relevant national ambient air quality standards by the attainment date specified under the applicable provision of this Act, or in a regulation promulgated under such provision, but for emissions emanating from outside of the United States.

(b) ATTAINMENT OF OZONE LEVELS.—Notwithstanding any other provision of law, any State that establishes to the satisfaction of the Administrator that, with respect to an ozone nonattainment area in such State, such State would have attained the national ambient air quality standard for ozone by the applicable attainment date, but for emissions emanating from outside of

the United States, shall not be subject to the provisions of section 181(a)(2) or (5) or section 185.

(c) ATTAINMENT OF CARBON MONOXIDE LEVELS.—Notwithstanding any other provision of law, any State that establishes to the satisfaction of the Administrator, with respect to a carbon monoxide nonattainment area in such State, that such State has attained the national ambient air quality standard for carbon monoxide by the applicable attainment date, but for emissions emanating from outside of the United States, shall not be subject to the provisions of section 186(b)(2) or (9).

(d) ATTAINMENT OF PM-10 LEVELS.—Notwithstanding any other provision of law, any State that establishes to the satisfaction of the Administrator that, with respect to a PM-10 nonattainment area in such State, such State would have attained the national ambient air quality standard for carbon monoxide by the applicable attainment date, but for emissions emanating from outside the United States shall not be subject to the provisions of section 188(b)(2).

Subpart 2—Additional Provisions for Ozone Nonattainment Areas

[¶ 2181]

Sec. 181. CLASSIFICATIONS AND ATTAINMENT DATES

(a) CLASSIFICATION AND ATTAINMENT DATES FOR 1989 NONATTAINMENT AREAS.—(1) Each area designated nonattainment for ozone pursuant to section 107(d) shall be classified at the time of such designation, under table 1, by operation of law, as a Marginal Area, a Moderate Area, a Serious Area, a Severe Area, or an Extreme Area based on the design value for the area. The design value shall be calculated according to the interpretation methodology issued by the Administrator most recently before the date of the enactment of the Clean Air Act Amendments of 1990. For each area classified under this subsection, the primary standard attainment date for ozone shall be as expeditiously as practicable but not later than the date provided in table 1.

TABLE 1

Area class	*Design value* [1]	*Primary standard attainment date* [2]
Marginal	0.121 up to 0.138	3 years after enactment.
Moderate	0.138 up to 0.160	6 years after enactment.
Serious	0.160 up to 0.180	9 years after enactment.
Severe	0.180 up to 0.280	15 years after enactment.
Extreme	0.280 and above	20 years after enactment.

[1] The design value is measured in parts per million (ppm).
[2] The primary standard attainment date is measured from the date of the enactment of the Clean Air Amendments of 1990.

Proposed Workplan For Nogales Area PM_{10}/HAPs Study For Federal Fiscal Years 1993, 1994

1993 2nd Quarter (January-March)

TASKS:

Develop a rough gridded emissions inventory of PM_{10} emissions in Nogales, Sonora and a list of HAP's sources and emissions on both sides of the border.

RESPONSIBILITIES:

- SEDESOL will provide available raw information on traffic volume, paved and unpaved road networks, industrial sources emissions, etc. ADEQ and SEDESOL will collaborate on emission estimates for sources lacking basic information, for example, residential emissions and small commercial operations.

- The preliminary gridded PM_{10} inventory will be jointly produced on computers at ADEQ's office. The preliminary HAPs inventory will be in the form of a list of sources, their locations and HAPs species emitted and will be prepared by ADEQ, SEDESOL, and Santa Cruz County.

NOTE: The purpose of the preliminary inventory in Sonora is to determine the location of a long term monitoring site. PM_{10} inventory refinements will be made throughout the study in parallel with efforts on the U.S. side of the border where the initial 1987 inventory prepared by Engineering Sciences, Inc. will be updated and improved. The goal is to develop comparable PM_{10} inventories on both sides of the border. For HAP's ADEQ will work with Santa Cruz County and SEDESOL to refine a list of HAPs sources and emissions throughout the study.

3rd Quarter (April-June):

TASKS:

- Review the PM_{10} emission inventory and available wind data to select the location of a long-term monitoring site in Nogales, Sonora.

- Commence operation of the long-term monitoring station for PM_{10}, HAP's, and wind in Sonora and add HAP's monitoring to the ADEQ monitoring station in the U.S.

- Select the locations for three additional wind sites.

RESPONSIBILITIES:

- ADEQ will summarize their 1992 wind data and obtain available wind field analyses from ASU.

- ADEQ and SEDESOL will select a monitoring site target area that provides similar representation as the ADEQ sampler in Nogales, U.S., that is, to measure the maximum average concentration to which the general public is exposed. SEDESOL will select the actual PM_{10}, HAP's, and wind monitoring site within the targeted area and will make arrangements for its installation and operation. ADEQ will install and calibrate the monitoring equipment and will train SEDESOL and Santa Cruz County staff responsible for their operation.

- ADEQ, SEDESOL, and Santa Cruz County will review factors affecting local air flow including information from ASU research and determine the target general location of the additional ADEQ wind sensors. SEDESOL and Santa Cruz County will select the actual sites within the targeted area and arrange for operation. ADEQ will install the instruments and train SEDESOL and Santa Cruz County staff on their operation.

- ADEQ will develop a contract for laboratory analysis of HAPS samples.

- ADEQ will repair monitoring equipment as necessary and will provide for PM_{10} analyses.

NOTE: For the long-term monitoring site, PM_{10} samples will be collected on the National every sixth day schedule and filter analyses will be performed for $Pm_{2.5}$ and $Pm_{2.5-10}$ mass, light transmittance, and chemical elements from x-ray florescence analysis. Tentatively HAPs samples will be collected on alternate PM_{10} sample days i.e. every 12th day, midnight to midnight.

4th Quarter (July-September)

TASKS:

- Draft a study plan for an intensive sampling study for the winter 93-94 season.

RESPONSIBILITIES:

- The three agencies will collaborate on a plan to establish three additional PM_{10} and two HAP's sampling sites. The plan will include sampling schedules, chemical species for analyses, identification of targeted sources and environmental risk assessment methods.

1994 1st Quarter (October-December '93)

TASKS:

- Conduct the intensive winter monitoring study. The network will have a total of five PM_{10} samplers, four HAP's, five wind sites, and possibly Carbon Monoxide, and time lapse photography provided by ADEQ.

RESPONSIBILITIES:

- SEDESOL and Santa Cruz County staff will select sites and arrange for equipment operation per the study plan for the intensive study.
- ADEQ will install the monitors and train SEDESOL and Santa Cruz County staff on operations.
- ADEQ will administer QA/QC program per study plan.
- ADEQ will perform data reduction, sample handling and analysis.

2nd Quarter (January-March)

TASKS:

- Complete winter intensive study
- Merge U.S. and Mexican gridded PM_{10} emission inventory data

RESPONSIBILITIES:

- ADEQ will merge the existing PM_{10} inventories

3rd Quarter (April-June)

TASKS:

- Compile data from intensive and long-term monitors.

RESPONSIBILITIES:

- ADEQ will compile the data and furnish it to participants.

4th Quarter (July-September)

TASKS:

- Final report drafted, reviewed, and finalized.

RESPONSIBILITIES:

- ADEQ will coordinate drafting the report with inputs and review by SEDESOL, Santa Cruz County, and ASU.

Attachment 3

ARIZONA REVISED STATUTES

1992 EDITION

Including legislation enacted through the
Second Regular and Ninth Special Sessions
of the Fortieth Legislature

VOLUME 2

Titles 18-32

THE MICHIE COMPANY
Law Publishers
Charlottesville, Virginia

f brake fluid which does
d s cifications set by the
o a pted shall:
nimum standards and
ls as will promote the
of r tor vehicles in this
r t promote uniformity
ts of the several states
l cost to the people of this
f c plying with diverse
stri tion and sale of
t is authorized to adopt
tions of the society of
y d y type brake fluid
h ecifications after
ime as the department
ection of the public safety.
e fl l shall be distributed
ard r the safety of the
nd the public.
abel on each container of
iar with the standards
he partment.
of any brake fluid which
s and specifications set by

f th standards, specifica
in subsection A of this
ublish them once in a
ion ithin the state, and
ite such publication, in
1 and 41-1032, no person
hich does not meet the
ati s adopted by the

of this section, "brake
dium through which force
ake in the brake system

motor-driven cycles
uth ized to require an
any notor-driven cycle
hich will not comply with
andard set forth in § 28-9
ed r constructed as to
le erformance in actual
refuse to register or may
egistration of any vehicle
n en he determines that
t c ply with the provisions

operate on any highway
th section in the event
ved he brake equipment
ehicle.

warning devices
ehi when operated
ppe with a horn in good
of emitting sound audible
fro a distance of not less
t n horn or other warning
rea nably loud or harsh
er of a motor vehicle shall
to insure safe operation
h horn but shall not
he upon a highway.
be equipped with nor shall
hicle any siren, whistle or
per itted in this section.

C. It is permissible but not required that any vehicle be equipped with a theft alarm signal device which is so arranged that it cannot be used by the driver as an ordinary warning signal.

D. Any authorized emergency vehicle may be equipped with a siren, whistle or bell, capable of emitting sound audible under normal conditions from a distance of not less than five hundred feet and of a type approved by the department, but the siren shall not be used except when the vehicle is operated in response to an emergency call or in the immediate pursuit of an actual or suspected violator of the law or when necessary to serve a civil traffic complaint, in which latter events the driver of the vehicle shall sound the siren when reasonably necessary to warn pedestrians and other drivers of the approach thereof. 1983

28-955. Mufflers; prevention of noise and air pollution

A. Every motor vehicle shall at all times be equipped with a muffler in good working order and in constant operation to prevent excessive or unusual noise, and no person shall use a muffler cut-out, bypass or similar device upon a motor vehicle on a highway.

B. The engine and power mechanism of every motor vehicle shall be so equipped and adjusted as to prevent the escape of excessive fumes or smoke.

C. Beginning with motor vehicles and motor vehicle engines of the 1968 model year, motor vehicles and motor vehicle engines shall be equipped with emissions control devices that meet the standards established by the director of environmental quality. 1991

28-955.01. Motorcycles; noise level equipment; unauthorized equipment

A. A person shall not operate or as owner permit the operation of a motorcycle in this state which is not equipped with the manufacturer's original muffler or other original noise reduction equipment or with a replacement muffler or replacement noise reduction equipment capable of reducing the noise levels below the maximum operating noise levels established by the department of transportation pursuant to § 28-955.02.

B. A person shall not use a muffler cutout, bypass or similar device upon a motorcycle operated in this state. 1983

28-955.02. Department of transportation to establish motorcycle noise levels

The department of transportation shall establish by rule and regulation maximum operating noise levels for motorcycles operated in this state. The rules and regulations shall provide for varying maximum operational noise levels for motorcycles, categorized by year of manufacture and speed of operation of the motorcycle. The regulations shall be based upon noise reduction levels achieved by reasonable and prudent operation of a motorcycle and proper maintenance of the noise reduction equipment. 1980

28-955.03. Exemption for racing motorcycles; definition

A. The provisions of §§ 28-955.01 and 28-955.02 shall not apply to a racing motorcycle operated in a racing event or in facilities used for racing events.

B. "Racing motorcycle" means a motorcycle intended by the manufacturer to be operated at facilities used for racing events or a motorcycle which has been modified by the owner to be operated at facilities used for racing events. 1980

28-956. Mirrors

Every motor vehicle which is so constructed or loaded as to obstruct the driver's view to the rear thereof from the driver's position shall be equipped with a mirror so located as to reflect to the driver a view of the highway for a distance of at least two hundred feet to the rear of the vehicle. 1955

28-957. Wipers on windshields required; exception

A. The windshield on every motor vehicle shall be equipped with a device for cleaning rain, snow or other moisture from the windshield, which device shall be so constructed as to be controlled or operated by the driver of the vehicle.

B. Every windshield wiper upon a motor vehicle shall be maintained in good working order.

C. The provisions of this section do not apply to golf carts. 1982

28-957.01. Windshields required

Every passenger vehicle, other than a motorcycle and golf cart, and every motor truck or truck tractor, except fire trucks, fire engines or other fire apparatus, whether publicly or privately owned, shall be equipped with an adequate windshield. This section shall not apply to implements of husbandry or antique, classic or horseless carriage automobiles when not originally equipped with a windshield. 1977

28-958. Restrictions as to tire equipment

A. Every solid rubber tire on a vehicle shall have rubber on its entire traction surface at least one inch thick above the edge of the flange of the entire periphery.

B. No tire on a vehicle moved on a highway shall have on its periphery any block, stud, flange, cleat or spike or any other protuberance of any material other than rubber which projects beyond the tread of the traction surface of the tire, except that it shall be permissible to use farm machinery with tires having protuberances which will not injure the highway, and except also that it shall be permissible to use tire chains of reasonable proportions upon any vehicle when required for safety because of snow, ice or other conditions tending to cause a vehicle to skid.

C. It is permissible from October 1 to May 1 to use pneumatic tires containing metal-type studs of tungsten carbide or other suitable material and which are so inserted or constructed that under no conditions will the number of studs or the percentage of metal in contact with the roadway exceed three percent of the total tire area in contact with the roadway.

D. The director and local authorities in their respective jurisdictions may in their discretion issue special permits authorizing the operation upon a highway of traction engines or tractors having movable tracks with transverse corrugations upon the periphery of the movable tracks or farm tractors or other farm machinery, the operation of which upon a highway would otherwise be prohibited under this chapter. 1973

28-958.01. Rear fender splash guards

A. A person shall not operate a truck, trailer, semitrailer or bus upon the highways of this state unless such vehicle is equipped with rear fender splash guards which shall comply with the specifications provided in this section. The splash guards shall be so attached as to prevent the splashing of mud or water

As a private citizen, I take this opportunity to suggest a way to cut down on dust in the air in this community.

It is a fact that over 800 truckloads of produce trucks drive through this community on a daily basis (p. 11). Many of the trucks are from Mexico and form long lines in order to cross the border. Some of the trucks have their motors running for hours, in order to keep their refrigerated boxes on.

Clearly, diesel fuel is a source of air contamination. A study conducted in El Paso, Texas revealed that diesel was a major contributor to air pollution in that city.

I would suggest that these trucks be brought up to standards and that emissions inspections be conducted. Reducing the idling time of diesel-powered vehicular traffic at border entrances is not enough.

Not all the unpaved streets are in Nogales, Sonora. Next to the truck stop on the Tucson-Nogales Highway, there is a road that is heavily used and is unpaved.

State Implementation Plan solely addresses air quality issues on the Arizona side of the border, while the IBEP, establishes a mechanism to those issues south of the border. (p.9). This is clearly, inadequate because solution must be binational in nature and must include the input of the local citizens. Moreover, if the Mexican emissions are a source of the problem why not work with them to find binational solutions to binational problems.

Proposed SEDESOL and ADEQ collaboration should include examining the trucks emissions.

1987 Engineering Science document methodologies, wood burning is not as prevalent, use of gas is the norm. Fig. 2 is not very clear, how was this information obtained.

Again, the trucks coming through need to be monitored and traffic flows must be improved.

Attachment 4

ARIZONA LAWS RELATING TO ENVIRONMENTAL QUALITY

1992 EDITION

Reprinted from
Arizona Revised Statutes
(Included are portions of Titles 28, 41, 42, 44, 45
and all of Title 49)

Copies of this pamphlet are available at the
Office of the State Bar of Arizona
363 North First Avenue
Phoenix, Arizona 85003
Phone: (602) 340-7314

THE MICHIE COMPANY
Charlottesville, Virginia
1992

t a cost less than the cost
shment and operation of

or ntract for the estab-
a prototype inspection fa-
spection of motor vehicle
m contract for the es-
of ch facility with any
geable in the field of mo-
g if such contract can be
in e cost of the depart-
per ion of such facility.
town and school district
Maricopa and Pima coun-
iss ns control as soon as
ive ounty inspection fa-
The department of envi-
ration with the various
in ection of such vehi-
ll ist disrupt service to
failing to meet standards
d, to bring such vehicles
and rds established pur-
-95 and shall be rein-
Such adjustments and re-
gency owning the vehicle,
ts ay be made, without
h spection facility.
or school district operat-
or more motor vehicles
abl h and operate a self-
cil es, providing stan-
9-4 or at their own op
ied by the department of
e inspection of the mot
rm nt. Units of govern-
in ection as authorized
cle 3.
es may also conduct, on a
ins ections of privately
ith he permission of the
ents to such vehicles to
with the standards estab-
47 nd 28-955. If more
qu d, facility personnel
s for necessary repairs to

irc nental quality may,
ect n facilities, arrange
state and political subdi-
d outside or inside Mari-

irc mental quality may
equest, of fleets of three
cles in setting up self-in-
veh les. All costs of such
ll at the sole expense
1986

on fund; composition;
xp ditures; exemp-

vehicle inspection fund

ere by the legislature.
iva grants or donations
grantor or donor.
e United States by grant
te any vehicle inspec-

cle inspection fund shall
cent for the purposes of:

1. Purchasing an interest in lands, buildings, fixtures and equipment for inspection facilities.

2. Receiving, matching and expending funds from the United States.

3. Operation of inspection facilities, including staff and training of staff personnel for such facilities.

4. Payment of contractual fees for the establishment and operation of facilities to carry out the provisions of this article.

C. The director of the department of administration shall approve properly certified claims submitted by the department of environmental quality for reimbursement of expenditures in the administration or enforcement of the provisions of this article. When such claims for reimbursement are approved by the director of the department of administration and transmitted to the state treasurer, he shall transfer the amounts claimed to the department of environmental quality.

D. No monies in the vehicle inspection fund shall revert to the general fund, and such monies shall be exempt from the provisions of § 35-190, relating to lapsing of appropriations. 1986

ARTICLE 5. ANNUAL EMISSIONS INSPECTION OF MOTOR VEHICLES

49-541. Definitions

In this article, unless the context otherwise requires:

1. "Certificate of inspection" means a serially numbered device or symbol, as may be prescribed by the director, indicating that a vehicle has been inspected pursuant to the provisions of section 49-546 and has passed inspection.

2. "Certificate of waiver" means a serially numbered device or symbol, as may be prescribed by the director, indicating that the requirement of passing reinspection has been waived for a vehicle pursuant to the provisions of this article.

3. "Conditioning mode" means either a fast idle test condition or a loaded test condition.

4. "Curb idle test condition" means an exhaust emissions test conducted with the engine of a vehicle running at the manufacturer's specified idle speed plus or minus one hundred revolutions per minute but without pressure exerted on the accelerator.

5. "Emissions inspection station permit" means a certificate issued by the director authorizing the holder to perform vehicular inspections pursuant to this article.

6. "Fast idle test condition" means an exhaust emissions test conducted with the engine of the vehicle running under an accelerated condition to an extent prescribed by the director.

7. "Fleet emissions inspection station" means any inspection facility operated under a permit issued to a qualified fleet owner or lessee as determined by the director.

8. "Golf cart" means a motor vehicle which has not less than three wheels in contact with the ground, has an unladen weight less than thirteen hundred pounds, is designed to be and is operated at not more than fifteen miles an hour and is designed to carry golf equipment and persons.

9. "Gross weight" has the meaning prescribed in section 28-206.

10. "Independent contractor" means any person, business firm, partnership or corporation with whom the director may enter into an agreement providing for the construction, equipment, maintenance, personnel, management and operation of official emissions inspection stations pursuant to section 49-545.

11. "Loaded test condition" means an exhaust emissions test conducted at cruise or transient conditions as prescribed by the director.

12. "Official emissions inspection station" means an inspection facility, other than a fleet emissions inspection station, whether placed in a permanent structure or in a mobile unit for conveyance among various locations within this state, for the purpose of conducting emissions inspections of all vehicles required to be inspected pursuant to this article.

13. "Tampering" means removing, defeating or altering an emissions control device which was installed at the time a vehicle was manufactured.

14. "Vehicle" means any automobile, truck, truck tractor, motor bus or self-propelled or motor-driven vehicle registered or to be registered in this state and used upon the public highways of this state for the purpose of transporting persons or property, except implements of husbandry, road rollers or road machinery temporarily operated upon the highway.

15. "Vehicle emissions control area" means an area which has been designated by the administrator of the environmental protection agency, acting pursuant to section 107 of the clean air act, 42 United States Code section 7401 et seq., as exceeding national primary or secondary ambient air standards for the pollutant of carbon monoxide or ozone and designated as such in the state implementation plan submitted to the environmental protection agency, except that vehicle emissions control area does not include the one thousand two hundred eighty-eight square mile area which the environmental protection agency determined should be redesignated as an attainment area as printed in the federal register, volume 48, number 216, Monday, November 7, 1983, page 51161. 1992

49-542. Annual emissions inspection program; powers and duties of director; administration; periodic inspection; minimum standards and rules; limitation on repair costs; exception

A. The director shall administer a comprehensive annual emissions inspection program which shall require the inspection of vehicles in this state pursuant to this article and applicable administrative rules. Such inspection is required in counties with a population in excess of three hundred fifty thousand persons only in vehicle emissions control areas of the county, for those vehicles owned by a person who is subject to section 15-1444 or 15-1627 and for those vehicles registered outside of a vehicle emissions control area but used to commute to the driver's principal place of employment located within a vehicle emissions control area. Inspection in other counties of the state shall commence upon application by a county board of supervisors for participation in such inspection program, subject to approval by the director. In all counties with a population of three hundred fifty thousand or fewer persons, the director shall as conditions dictate provide for testing to determine the effect of vehicle related pollution on ambient air quality in all communities with a metropolitan area population of twenty thousand persons or more. If such testing detects the violation of state ambient air quality standards by vehicle related pollution, the director shall forward a full report of such violation to the president of the senate, the speaker of the house of representatives and the governor.