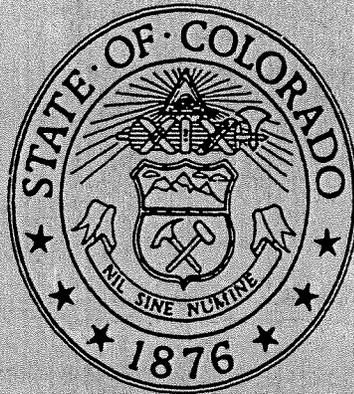


**PM-10 REDESIGNATION REQUEST  
AND MAINTENANCE PLAN FOR THE  
CANON CITY/FREMONT COUNTY, COLORADO  
NONATTAINMENT AREA**



**ADOPTED BY THE COLORADO  
AIR QUALITY CONTROL COMMISSION  
OCTOBER 17, 1996**

**AIR POLLUTION CONTROL DIVISION  
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# Cañon City/Fremont County PM<sub>10</sub> Redesignation Request & Maintenance Plan-Revised September 1996

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## SECTION I: INTRODUCTION

The State of Colorado and Cañon City/Fremont County request redesignation to "attainment" status for the criteria pollutant PM<sub>10</sub>. Since air quality monitoring began in the 1970's, the area had one 24-hour exceedance of the PM<sub>10</sub> National Ambient Air Quality Standard (NAAQS) in 1988, and none since. As the Maintenance Plan section of this document will demonstrate, the Cañon City/Fremont County area will be able to maintain the NAAQS well beyond the required 10 years after redesignation, and into the year 2015.

The benefits of redesignation to attainment status include the facts that:

1. Areas designated "attainment" lose or avoid the stigma associated with nonattainment of the national air standards.
2. Approval of highway projects and Federal monies for them is much easier to obtain since conformity tests are less stringent for attainment areas.
3. Areas redesignated to "attainment" do not become "serious" nonattainment areas even a NAAQS violation occurs. This means that less stringent control measures (from the area's potential contingency measures) can be applied to address a violation, instead of mandatory control measures necessary for "serious" nonattainment areas.
4. Most importantly, Prevention of Significant Deterioration (PSD) permitting requirements replace those of nonattainment area New Source Review (NSR) for new major stationary sources and those that wish to modify their facility or operations in the area.

Under nonattainment area NSR a new or modified major stationary source is one that emits 100 tons or more per year of PM<sub>10</sub>. Major sources are subject to Lowest Achievable Emission Rates (LAER) standards; must obtain emissions offsets, and must be certified in compliance. NSR also requires that sources seeking to build or modify conduct an economic analysis of alternative sites, production processes and control techniques and to demonstrate that the benefits of the proposed source significantly outweigh environmental and social costs. Further, LAER standards do not allow consideration of costs to sources in choosing controls.

Under PSD standards, major sources are those that emit 250 tons or more of PM<sub>10</sub> per year. They are subject to less stringent impact analyses and best available control technologies (BACT), instead of LAER, in addition to monitoring and other requirements. The BACT regime does allow sources to consider the economics of control options.

This Redesignation Request and Maintenance Plan is designed to document and ensure continuing attainment of the NAAQS for particulate matter with an aerodynamic diameter of ten microns or less (PM<sub>10</sub>) in the Cañon City/Fremont County Nonattainment Area (NAA). The Plan is intended to comply with requirements of the Federal Clean Air Act, as amended in 1990 (1990 CAAA),

and with relevant procedures and policies of the United States Environmental Protection Agency.

## A. BACKGROUND

### 1. PM<sub>10</sub> National Ambient Air Quality Standard

In 1971, the USEPA set national ambient air quality standards for several air pollutants, including total suspended particulates (TSP), defined as particles with an aerodynamic diameter of less than 40 microns. In 1987, the USEPA changed the TSP standard to a PM<sub>10</sub> standard. The current national standards allow for a maximum annual average of 50 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) and a 24-hour average of 150  $\mu\text{g}/\text{m}^3$ . The 24-hour standard may not be exceeded more than three times over any three year period.

There are both primary and secondary air quality standards. The primary standards are set to protect human health, with a margin of safety to protect the more sensitive persons in the population, such as the very young, elderly and the ill. Secondary standards are set to protect property, materials, aesthetic values and general welfare. For PM<sub>10</sub>, the national primary and secondary standards are the same. The numerical levels of the standards are subject to change, based on new scientific evidence summarized in air quality criteria documents. Although the criteria and the standards are under review by USEPA at this time, the particulate matter standard has not changed since 1987.

As stated in the Code of Federal Regulations (40 CFR Part 50.6),  
*The standards are attained when the expected number of days per calendar year with a 24-hour average concentration above 150  $\mu\text{g}/\text{m}^3$  is equal to or less than one, and the annual arithmetic mean concentration is less than or equal to 50  $\mu\text{g}/\text{m}^3$ , as determined by Appendix K.*

In general, demonstrating attainment requires collecting representative air monitoring data and using approved measuring instruments and procedures, with adequate quality assurance and quality control. The three most recent years are examined, during which the average annual number of exceedances must be less than or equal to one. The standard allows for a maximum annual average of 50 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) and a 24-hour average of 150  $\mu\text{g}/\text{m}^3$ . The 24-hour standard may not be exceeded more than three times over any three year period. Air quality measurements in the Cañon City/Fremont County NAA satisfy this requirement, as shown in Section II, "Attainment of the Standard".

## 2. Health and Welfare Effects of PM<sub>10</sub>

Particulate matter is the term given to tiny particles of solid or semi-solid material suspended in the atmosphere. PM<sub>10</sub> is inhaleable particulate matter 10 micrometers in diameter and smaller. PM<sub>10</sub> is created from reentrained road dust and incomplete combustion. It is found in fly ash (from power plants), carbon black (from automobiles and diesel engines) and soot (from fireplaces and woodstoves). PM<sub>10</sub> from these sources contains a large percentage of elemental and organic carbon, which contributes to atmospheric haze and to health problems.

Epidemiological studies and laboratory studies of humans and animals indicate that fine particles can be inhaled deeply into the respiratory system, resulting in aggravation of existing respiratory and heart diseases, damage to lung tissue, impairment of breathing and respiratory functions, alterations to the body's physical and immune system defenses, and even premature death. Many fine particles are also composed of compounds that are known or suspected human carcinogens. People most sensitive to particulate matter are the elderly, children, and those with chronic lung disease, cardiovascular disease, influenza, and asthma.

The welfare effects of particulate air pollution are wide-spread. Because of the potential for extremely long-range transport of fine particles it is thought that no place on earth is free of particulate pollution generated by urban and rural sources. Chemical and photo-chemical reactions involving the particles may occur in the air, or once they have been deposited on environmental media or structures. Such soiling and acid deposition cause visibility degradation, climate changes, and damage to crops, natural vegetation, water bodies, and aquatic life. In addition, sculpture and architecture may be damaged or destroyed by particulate soiling and acid deposition--both of which have been detected in the most remote areas of the world.

## 3. Cañon City/Fremont County Attainment History

Because of observed problems with air particles, monitoring of total suspended particulates (TSP) began in 1975, and continued through 1987. That year, based on relatively high TSP levels, the Cañon City area was designated as a "Group I" nonattainment area for PM<sub>10</sub>. Cañon City was redesignated a "moderate" nonattainment area pursuant to section 107(d)(4)(B) of the Clean Air Act, as amended in 1990 (1990 CAAA). Continued monitoring since 1987 has indicated that one exceedance of the 24-hour NAAQS for PM<sub>10</sub> occurred in May of 1988. Monitoring in the eight years since that time has shown that no additional exceedance has occurred.

4. Cañon City/Fremont County Attainment/Maintenance Area Boundaries

The Cañon City/Fremont County Attainment/Maintenance Area boundaries are defined by the Colorado Air Quality Control Commission (AQCC) as follows:

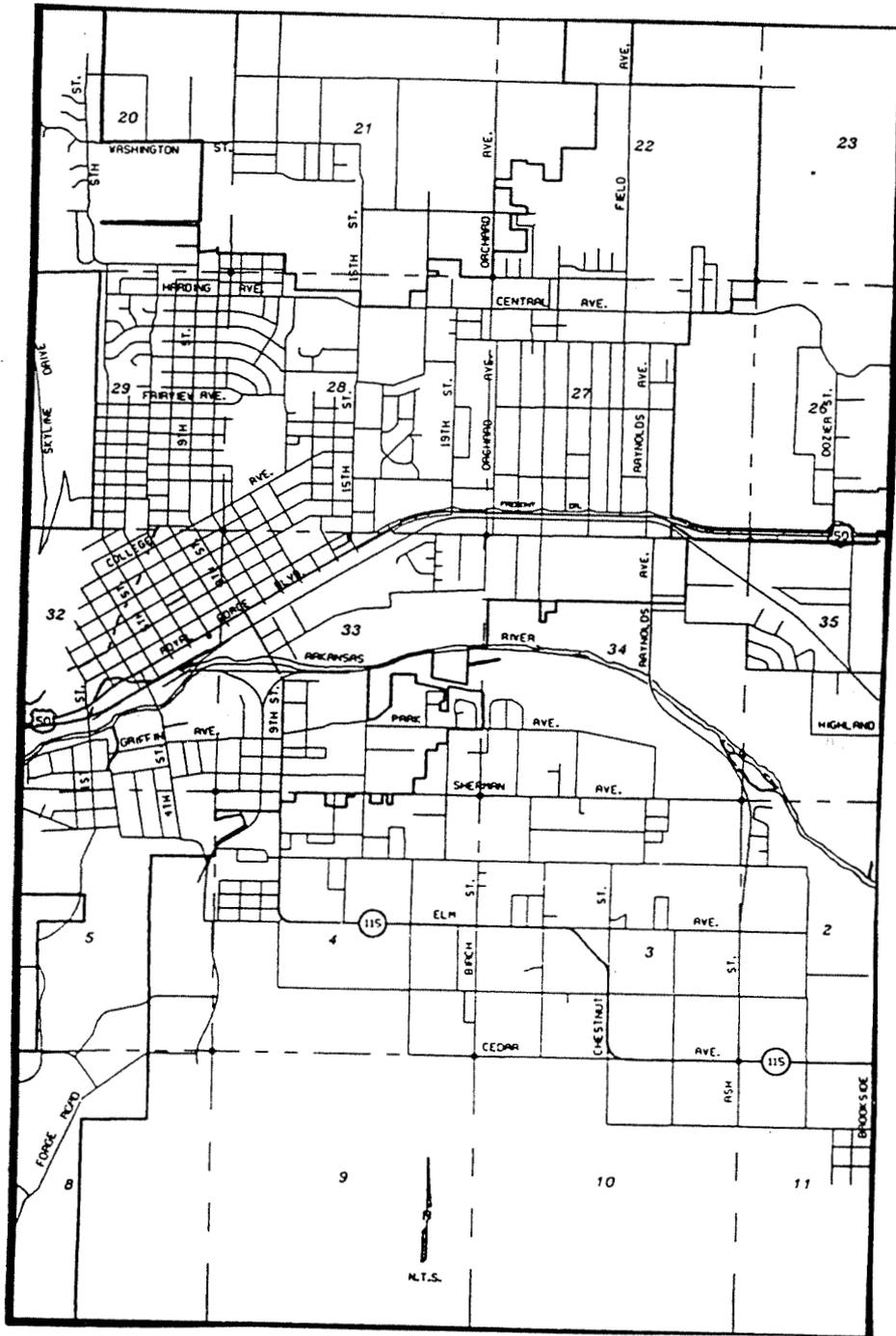
*Township 18 S - Range 70 W, all of sections 21, 22, 27, 28, 33, and 34; the E 1 / 2 , NENW, NESW, SENW, SESW quarters of sections 20, 29, 32; and the W1/2 of sections 23, 26 and 35;*

*Township 19S, Range 70W, all of sections 3, 4, 9, 10; E1/2, NENW, NESW, SENW, SESW quarters of sections 5 and 8; W1/2 sections 2 and 11.*

This area essentially includes the city of Cañon City and its suburbs. However, the nearby cities of Florence and Williamsburg are excluded. Please see the map on the next page.

Cañon City/Fremont County Attainment/Maintenance Area

insert map



## B. ORGANIZATIONS INVOLVED IN PREPARING AND APPROVING PLAN

Preparation of this PM<sub>10</sub> Redesignation Request/Maintenance Plan was a cooperative effort of the Air Pollution Control APCD (APCD) of the Colorado Department of Public Health and Environment and the City of Cañon City, which represents local government and citizen interests. The plan was then approved by the Cañon City Council Public Works Committee on August 13, 1996, and approved and adopted by the Colorado Air Quality Control Commission October 17, 1996. The Colorado State Legislature will review and approve/amend/disapprove the Plan through a review process established by SB 95-110. The USEPA, through its regional office in Denver, provided policy advice and technical assistance, and is responsible for final approval of the Redesignation Request and Maintenance Plan.

## C. REQUIREMENTS FOR REDESIGNATION

Section 107(d)(3)(E) of the 1990 CAAA defines the five required components of a redesignation request. They are:

- Attainment of the Standard

The state must show that the area is attaining the NAAQS for PM<sub>10</sub>. This demonstration must be based on monitoring data representative of the location of the expected peak concentrations of PM<sub>10</sub> in the nonattainment area.

- State Implementation Plan (SIP) Approval

The state must demonstrate that it has a fully approved SIP under Section 110(k) of the 1990 CAAA.

- Permanent and Enforceable Improvement in Air Quality

The state must demonstrate that the improvement in air quality leading to redesignation is due to permanent and federally enforceable emissions reductions.

- Section 110 and Part D Requirements

The state must meet all requirements of Section 110 and Part D of the 1990 CAAA. Section 110 describes general requirements of State Implementation Plans while Part D pertains to general requirements applicable to all nonattainment areas.

- Maintenance Plan

The state must have a fully approved maintenance plan that meets the requirements of section 175A of the 1990 CAAA. This plan must provide for the maintenance of the NAAQS for at least 10 years following redesignation. The plan must contain contingency measures that could be implemented to ensure continued maintenance of the PM<sub>10</sub> NAAQS.

The Maintenance Plan, developed as part of this redesignation request, will become part of the Colorado State Implementation Plan upon approval by the USEPA. Therefore, the Maintenance Plan must include all elements required under section 175A of the 1990 CAAA. The plan must provide for the maintenance of the NAAQS for at least ten years following USEPA approval of the redesignation request. In addition, the plan must contain contingency measures that may be necessary to ensure maintenance of the NAAQS during the ten year period. As part of the SIP revision process, the AQCC must hold a public hearing to receive and address public comment on the Maintenance Plan.

#### **D. PROPOSED SCHEDULE OF MAINTENANCE PLAN ADOPTION AND APPROVAL**

The Maintenance Plan is expected to be approved by the USEPA in 1998 based on the proposed schedule as follows:

- February 1995 -- APCD Recommendation to Cañon City
- July, 1996 -- APCD Requests AQCC Schedule Public Hearing
- August 13, 1996 – Local Hearing by the Cañon City Council's Public Works Committee Discussed, negotiated, revised, and approved by the City October, 1996.

- October, 1996 -- AQCC Public Hearing and Approval
- November, 1996 -- Submission to Colorado General Assembly (Legislative Legal Council)
- June, 1997 -- Governor's Endorsement
- June, 1997 -- Submission to USEPA for Redesignation
- December 1998 -- Formal USEPA approval.

## SECTION II. ATTAINMENT OF THE PM<sub>10</sub> STANDARD

### A. PM<sub>10</sub> Sources

The Cañon City PM<sub>10</sub> emission inventories indicate that re-entrained geologic dust from paved and unpaved roads is the dominant source of emissions in the Cañon City area--approximately 80 percent. Stationary sources contribute 2 percent of PM<sub>10</sub> emissions, based on actual emissions, and woodburning contributes 7 percent. (It should be noted that the Division used stationary source *allowable* emissions for all calculations in demonstrating attainment and maintenance of the NAAQS in this request/plan. Allowable emissions equal 8 percent, and result in more conservative analyses.)

### B. PM<sub>10</sub> Monitoring in Cañon City

Since December of 1987 PM<sub>10</sub> in Cañon City has been monitored from the roof of the County Courthouse at 615 Macon Street, using Sierra Anderson (SA) 321-B reference samplers. From 1987 to November, 1995, one sample was collected on an every-day basis from this maximum concentration siting. Since November of 1995, the scheme has been changed to collected one sample every sixth day, based on 40 CFR, Part 58 *long term selective sampling* provisions. The monitoring site is approved by USEPA and is a State and Local Air Monitoring Station (SLAMS), as shown in the Cañon City Element of the SIP. Samples are collected in accordance with EPA requirements in 40 CFR, Part 58, Subpart B.

The APCD used data from four consecutive years to demonstrate attainment of the PM<sub>10</sub> NAAQS. The data were recovered from the years 1992, 1993, 1994, and 1995; data recovery rates were 94%, 88%, 91%, and 92%, respectively, thus exceeding USEPA's requirement of at least a 75% data recovery rate. See Appendix B for the AIRS Data Completeness Report.

Only one exceedance of the 24-hour NAAQS as been recorded since monitoring began. The exceedance (172  $\mu\text{g}/\text{m}^3$ ) occurred May 6, 1988, during a high wind episode. A request to classify this value as related to an exceptional event was submitted to USEPA that year, but was never declared an exceptional event by USEPA. Thus, the high measurement was never removed from the database. Since the 1988 date, no exceedance of the 24-hour PM<sub>10</sub> standard, and no violation of the annual PM<sub>10</sub> standard has been recorded in Cañon City. Table II-1 below contains recent Cañon City PM<sub>10</sub> monitoring data from the EPA Aerometric Information Retrieval System (AIRS):

TABLE II-1 -- AIRS DATA FOR Cañon CITY PM <sub>10</sub> MONITORING YEARS 1992 through First Qtr. 1996			
Year	Annual Maximum ( $\mu\text{g}/\text{m}^3$ )	Annual average ( $\mu\text{g}/\text{m}^3$ )	24-Hour, and Annual NAAQS ( $\mu\text{g}/\text{m}^3$ )
1992	78	21	150, 50
1993	77	19	150, 50
1994	78	20	150, 50
1995	65	17.7	150, 50
1996 (1st quarter)	46	18.5	150, 50

For all periods 0.00 exceedances were/are expected, thus demonstrating attainment for more than the required number of years. Officially, the years 1993, 1994 and 1995 are used to demonstrate attainment, as per EPA guidance<sup>1</sup>.

### C. Cañon City Stationary Sources Emission Inventory

Actual stationary sources emissions were compiled from Air Pollution Emission Notices (APENs) for the years 1995 and 1996 and are given in Table II -2 below. Allowable emissions are also provided in Table II-2. It is important to note that all stationary sources in the Cañon City/Fremont County area are *minor* for permitting purposes, i.e., they emit fewer than 100 tons per year of PM<sub>10</sub>, and are responsible for only 2 percent of total PM<sub>10</sub> emissions in the area.

Allowable emission totals are provided for the sake of comparison in this section, and for reference in Section VI (Maintenance Plan). Calculations to derive the PM<sub>10</sub> allowable emissions are shown in Appendix C. Appendix D explains differences between the 1991 and current (1996) list of Cañon City stationary sources.

**Table II-2**  
**Cañon City PM<sub>10</sub> Redesignation Actual & Allowable Emissions from Stationary Point Sources**

AIRS ID	NAME OF SOURCE	Actual PM <sub>10</sub> (Lbs/day)	Allowable PM <sub>10</sub> (Lbs/day)	SOURCE OF INFO.*
430003	West Plains Energy (formerly Southern Colorado Power)	5.18	309.3699	C
430004	Colorado State Penitentiary	1.76	147.9452	U
430007	Fremont Paving	0.0019	6.1918	C
430012	Adience (formerly Colo. Refractories)	8.53	43.8356	U
430015	Valco	14.69	21.9178	U
430017	DFC Ceramics	5.49	16.4384	U
430023	St. Thomas Moore Hospital	0.28	1.7534	C
430036	Florence Asphalt (portable)	2.13	7.5616	P
430038	Holt Dixon Funeral Home	0.0036	0.0038	P
430046	Fremont Paving	9.79	10.9589	U
430074	Humane Society (began operating 1994)	0.20	0.5260	C
430088	J & J Materials	73.94	136.9315	C
	<b>Total Emissions</b>	<b>122 Lbs/day</b>	<b>703.43 Lbs/day</b>	

NA – Not Available

\* Source: P = specified allowable in the Permit  
 U = Unchanged 1991 SIP value  
 C = Calculated by PTE (potential to emit)

*Actual* stationary source emissions of PM<sub>10</sub> for 1995 and 1996 amounted to 122 pounds per day. This amount is roughly 2 percent of total PM<sub>10</sub> emissions in the area, assuming that total PM<sub>10</sub> emissions in the Cañon City/Fremont County area averaged 6,400 pounds per day in 1995 and 1996. This amount (6,400 lbs/day) is a reasonable assumption based on the Design Day Emissions Table II-3, which shows 6,339.19 lbs./day for 1994, and 6,478 lbs./day for 1997.

## D. Cañon City Wood and Coal Burning Sources Emission Inventories

Cañon City officials provided a population growth factor of 1.5% per year out to the year 2015. This growth factor was determined from projections used by the city for its Water System Improvement Plan as developed by The Engineering Co.<sup>2</sup> The 1.5 percent per year was used to grow the 1991 SIP coal burning and woodburning categories (fireplaces and woodstoves), so that for 1994 the categories' design day emissions were:

Fireplaces:	96.94 pounds/day
Woodstoves:	364.93 lbs./day
Coal burning:	25.31 lbs./day

as shown in Table II-3. (The table also provides design day emissions for the other PM<sub>10</sub> source categories for 1990, 1994, 1997, and 2015, to demonstrate maintenance in addition to attainment.)

## E. Cañon City Mobile Sources Emission Inventory

Average daily traffic (ADT) and vehicle miles traveled are known to grow at a faster rate than the population growth rate in Colorado communities. For the years 1990-1997, a 1 percent per year factor has historically been used to calculate VMT growth projections. Previously calculated inventories (for 1990, 1994 and 1997) have been allowed to stand in this document. However, for the year 2015, the APCD used new projected ADT counts and a 2.5 percent per year growth rate provided by the Colorado Department of Transportation (CDOT). The growth rate was given by CDOT for US Highway 50 inside the Cañon City nonattainment area. US 50 bisects the Cañon City community as the major thoroughfare through town. The projected growth in ADT for Cañon City is 2.5% per year<sup>3</sup>, which is higher than the population growth rate for the area. The ratio of population growth to traffic growth is consistent with that for other Colorado communities. The ADT growth rate of 2.5%/year was calculated using a linear regression. The ADT growth rate is equal to the emissions growth rate.

Table II-3

Design Day Emissions for Cañon City for 1990, 1994, 1997 and 2015  
pounds/day

Year	Auto	Fireplaces	Woodstoves	Coal	Stationary Sources	Total
1990	4789.21	98.09	377.34	25.63	317.81	5608.08
1994	4980.78	96.94	364.93	25.31	871.23	6339.19
1997	5130.20	96.09	355.93	25.07	871.23	6478.52
2015	7438.79	122.03	452.03	31.84	703.43	8748.12

Note: Calculations for Table II-3 categories appear in Appendix E.

The total design day projected inventory for 2015 is 8,748.12 pounds per day, which is well below the NAAQS of 9,372 pounds per day, as will be discussed in Section VI, *The Maintenance Plan*.

### SECTION III. STATE IMPLEMENTATION PLAN APPROVAL

The current Cañon City Element of the Colorado State Implementation Plan for PM<sub>10</sub> (SIP) was approved by the USEPA in the Federal Register on December 23, 1993 (58 FR 68036). On December 14, 1994 (59 FR 64332), the USEPA published a Direct Final Rule to approve the contingency measures submitted by the State of Colorado as a revision to the Cañon City Element.

## SECTION IV. PERMANENT AND ENFORCEABLE IMPROVEMENT IN AIR QUALITY

The APCD attributes consistently low ambient PM<sub>10</sub> air quality levels in the Cañon City/Fremont County Area permanent and enforceable emission reductions, as well as to voluntary efforts. Improvements are largely result of regulations and controls implemented by the State of Colorado and by the Federal government. These include Colorado Air Quality Control Commission Regulations; the Colorado Air Pollution Prevention & Control Act; and the Federal Clean Air Act as amended.

Economic conditions are clearly not responsible for improved ambient levels in the Cañon City/Fremont County Area. It is assumed that Cañon City/Fremont County's population growth and increased employment and traffic would increase PM<sub>10</sub> emissions, and potentially increase ambient levels of PM<sub>10</sub>. However, as demonstrated, PM<sub>10</sub> emissions have decreased steadily since 1988.

Permanent and enforceable measures include the following AQCC Regulations:

*No. 1, Particulates, Smokes, Carbon Monoxide and Sulfur Oxides;*

*No. 3, Air Pollution Emission Notices, Construction Permits and Fees, Operating Permits, and including, the Prevention of Significant Deterioration;*

*No. 4, New Wood Stoves and the Use of Certain Wood Burning Appliances During High Pollution Days.*

The State has continued to enhance its permit and control programs, while providing a strong enforcement presence. Thus, PM<sub>10</sub> emissions have been reduced, and PM<sub>10</sub> levels have remained below the NAAQS since 1988.

## SECTION V. CLEAN AIR ACT SECTION 110 AND PART D REQUIREMENTS

### A. SECTION 110

Section 110(a)(2) contains general requirements for nonattainment plans. The Cañon City PM<sub>10</sub> nonattainment SIP Element was fully approved by USEPA December 23, 1993, meeting the Section 110(a)(2) requirements.

### B. PART D Clean Air Act (as Amended)

The Cañon City/Fremont County PM<sub>10</sub> NAA is designated as a moderate nonattainment area, and therefore the State is required to meet the applicable portions of subpart 1 of Part D (sections 172<sup>(e)</sup> and 176), as well as the specific PM<sub>10</sub> provisions in subpart 4 of Part D (sections 188 and 189).

In addition, Cañon City has voluntarily reduced the amount of sand applied in the Area during snow storms, using material that meets specific durability and cleanliness requirements; and have increased the frequency and efficiency of street cleaning and sand removal during winter.

#### 1. Section 172c Requirements

Section 172(c)(1) requires the implementation of all reasonably available control measures. However, in the case of the Cañon City/Fremont County area, no control measures were necessary to attain the NAAQS since there had not been an exceedance since 1988. Thus, no provisions were necessary to satisfy section 172(c)(1).

Section 172(c)(2) lists requirements for a demonstration of reasonable further progress (RFP). Because the Cañon City/Fremont County NAA is already demonstrating attainment, the State believes that the RFP requirement has been met.

Section 172(c)(3) requires an emissions inventory as part of an area's attainment demonstration. The emissions inventory requirement has been met by the submission and approval with this action of the 1994 attainment year inventory for the Cañon City/Fremont County NAA (see Section VI., Table 3).

Section 172(c)(5) requires the development of a New Source Review (NSR) Program. Colorado has had a NSR program in place since 1972, and the revisions required by the 1990 CAAA were approved by the USEPA August 18, 1994 (59 FR 42506). *NOTE: the requirements of the Part D new source review program will be replaced by its EPA-approved prevention of significant deterioration (PSD) program, once the area has been redesignated to attainment by the EPA.*

Section 172(c)(9) requires that contingency measures be developed should an area fail to attain the NAAQS or meet the RFP requirement. Contingency measures have been adopted as part of the PM<sub>10</sub> nonattainment SIP Element and State regulation, and a contingency plan is included in the maintenance plan.

## **2. Section 176 Requirements**

Section 176(c) of the 1990 CAAA requires the State to revise its SIP to establish criteria and procedures to ensure that Federal actions, before they are taken, conform to the air quality planning goals in the applicable State SIP. Colorado is presently developing its conformity criteria and procedures, and does not anticipate their approval by EPA prior to final approval of this redesignation request. The USEPA has determined that if a State does not have conformity procedures in place at the time it submits a redesignation request, it must meet the 176(c) requirement to follow EPA's conformity regulations. This State of Colorado commits to follow these regulations.

## **3. Section 188 Requirements**

Section 188(c)(1) requires that the attainment date of an area designated a moderate PM<sub>10</sub> nonattainment area under section 107(d)(4) will not extend beyond December 31, 1994. The Cañon City/Fremont County NAA has demonstrated in the 1993 EPA-approved SIP Element, as well as through ambient air quality data, that the December 31, 1994 attainment deadline has been met.

## **4. Section 189 Requirements**

Section 189(a)(1)(A) requires that any implementation plan for a PM<sub>10</sub> nonattainment area include a permit program meeting the requirements of sections 172(c)(5) and 173. As was discussed above, the USEPA approved Colorado's NSR requirements August 18, 1994 (59 FR 42506) This program was recognized in the current Cañon City/Fremont County SIP Element; therefore, this requirement has been met.

Section 189(a)(1)(B) requires that any implementation plan for a  $PM_{10}$  nonattainment area demonstrate that the plan will provide for attainment by the applicable attainment date. Because the Cañon City/Fremont County SIP Element demonstrates that the NAA attained the standard by 1994, this requirement is fulfilled.

Section 189(a)(2)(B) requires that 18 months after an area has been designated nonattainment under section 107(d)(4), an implementation plan must be submitted. Because the Cañon City/Fremont County NAA was designated nonattainment under section 107(d)(4) and the SIP Element was submitted to USEPA on April 9, 1992, this requirement has been met.

## SECTION VI. MAINTENANCE PLAN

Section 107(d)(3)(E) of the 1990 CAAA stipulates that for an area to be redesignated, EPA must fully approve a maintenance plan which meets the requirements of Section 175A. According to section 175A(c), pending approval of the maintenance plan and the redesignation request, all applicable nonattainment area requirements shall remain in place.

Section 175A defines the general framework of a maintenance plan. The maintenance plan constitutes a SIP revision and must provide for maintenance of the relevant NAAQS in the area for at least ten years after redesignation. Section 175A also requires that the plan contain such additional control measures as necessary to ensure maintenance.

The maintenance plan must contain such contingency measures as the USEPA deems necessary to ensure prompt correction of any violation of the NAAQS. Failure to maintain the NAAQS and triggering of the contingency plan will not necessitate a revision of the SIP unless required by the Administrator (section 175A(d)).

Based on the USEPA guidance provided in the September 4, 1992 "Calcagni memo," the core provisions necessary to ensure maintenance of the relevant NAAQS in an area seeking redesignation from nonattainment to attainment are:

- A. an attainment inventory,
- B. a maintenance demonstration,
- C. a monitoring network,
- D. verification of continued attainment, and
- E. a contingency plan.

A September 14, 1995 memo from USEPA Region 8 outlines three "low hurdle options", for rural PM<sub>10</sub> nonattainment areas, by which the State may complete the necessary technical analyses for the 10-year maintenance plan. Because the Cañon City/Fremont County area qualifies as a rural PM<sub>10</sub> nonattainment area and meets the criteria delineated in the September 14, 1995 memo, the State has used a modified version of Option 3, the attainment extension approach. This approach requires that the original analyses used to demonstrate attainment of the NAAQS be used to project the maintenance year. If the resultant maintenance year value is below the standard, then the area is considered able to maintain the NAAQS. The approach is allowed in areas where recent monitoring data suggest that original projections

are still "on track," and that monitored values are less than 85 percent of the respective standard. Annual  $PM_{10}$  maximums in recent years have been only as high as  $78 \mu\text{g}/\text{m}^3$ , which is 52 percent of the NAAQS. (See Table II-1).

## A. Attainment Inventory

The attainment inventory was provided in Section II of this document, *Attainment of the  $PM_{10}$  Standard*.

## B. Maintenance Demonstration

For the maintenance demonstration, the APCD projected emissions forward to represent future emission inventories, using growth estimates that result in an environmentally conservative approach. That is, they likely overestimate future emissions. Stationary source emissions were calculated by using "allowables"—that is, the maximum allowed by permit. "Allowables" are nearly always higher than actual emissions, especially over time. The wood and coal burning inventories were projected to increase at the population growth rate of 1.5%/year from 1997 to 2015. This is environmentally conservative since the 1991 SIP shows a slight decrease in emissions from these categories from 1990 to 1997<sup>4</sup> despite population growth projections. In addition, coal- and wood burning emissions were projected to increase at the rate of population growth, when a slight decrease in the ratio is in fact expected.<sup>1</sup> Using these conservative growth assumptions will help to ensure that Cañon City does not violate the NAAQS in the future.

### 1. Stationary Sources

Stationary sources are permitted based primarily on their function. The potential to emit (PTE) is determined from permitted parameters, such as, operating hours, capacity to emit total suspended particulate matter (TSP) or  $PM_{10}$ , and other emission factors. The amount of either  $PM_{10}$  or total particulate matter produced is not always reflected in a permit. In those cases the allowable amount of  $PM_{10}$  was calculated, using either PTE factors, or a ratio of TSP to  $PM_{10}$  emissions. When calculations were employed to derive the  $PM_{10}$  emissions, worst-case conditions were assumed.<sup>5</sup> All sources requiring calculations to set allowable emissions are shown in Appendix B. Table II-2 (shows the nonattainment area point sources

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and a summary of their emissions in pounds per day (lbs./day).

## 2. Wood and Coal Burning

The 1997 maintenance inventory was multiplied by 27 percent (18 years X 1.5%/year = 27%) to grow the coal- and wood burning categories to the year 2015. The results are 32, 122, and 452 lbs./day for coal burning, fireplaces and woodstoves, respectively. The results are shown in Table II-3, in the Summary section below, and compared with the base year, attainment year and maintenance year inventories.

## 3. Mobile Sources

The 1997 mobile source projection from the 1991 SIP was multiplied by 45 percent (18 years x 2.5%/year = 45%) to grow the category to the year 2015. The result is 7,439 lbs/day, for the mobile source category, as shown in Table II-3 of the Summary section below, where it is compared with the base year, attainment year and maintenance year inventories.

Applying major thoroughfare traffic growth projections throughout Cañon City is an environmentally conservative approach since ADT does not tend to grow uniformly in cities. The ADT on major streets and highways usually grows faster than that of local and collector streets. Part of the increased traffic volume on US 50 is from through-traffic, most of which does not affect local streets. Additionally, emissions from automobiles account for 84 percent of PM<sub>10</sub> emissions in Cañon City. Growing this, the largest source category of emissions, results in an inventory that is conservative overall.

## 4. Summary of Emissions by Source Category

Table II-3 summarizes the emission inventories for the 1990 base year, 1994 attainment year, the 1997 maintenance year projections and year 2015 projections. The design day values, which represent "worst case" scenarios derived from real-world conditions, were modeled to determine whether maintenance of the NAAQS will continue into the future. The source categories identified in the original 1991 emission inventory process are shown. Total emissions for the Cañon City area are projected to be 8,133 lbs/day in the year 2015. This is well below the amount that could translate into a PM<sub>10</sub> NAAQS exceedance. (If emissions were to reach 9,372 lbs./day, the 24-hour standard might be exceeded.) Because of the environmentally conservative approach taken by APCD, the 8,133 lbs/day figure appears

likely to prove an overestimate. Therefore, the NAAQS should easily be protected through 2015 in the Cañon City area.

Table II-3

Design Day Emissions for Cañon City for 1990, 1994, 1997 and 2015  
pounds/day

Year	Auto	Fireplaces	Woodstoves	Coal	Stationary Sources	Total
1990	4789.21	98.09	377.34	25.63	317.81	5608.08
1994	4980.78	96.94	364.93	25.31	871.23	6339.19
1997	5130.20	96.09	355.93	25.07	871.23	6478.52
2015	7438.79	122.03	452.03	31.84	703.43	8748.12

Table II-4 (below) relates the NAAQS concentration of  $150 \mu\text{g}/\text{m}^3$  to design day projected emissions for 1994, 1997 and 2015. Emissions were estimated using projected growth factors, as explained above. The concentrations in Table 3 were determined using a "Rollforward" technique as shown in Equation 1.

$$\frac{ddc - bkc}{dde} = \frac{X}{Pe} \quad \text{Equation 1}$$

Where: ddc = design day concentration ( $93 \mu\text{g}/\text{m}^3$  on December 27, 1989)

bkc = background concentration ( $8 \mu\text{g}/\text{m}^3$ )<sup>6</sup>

dde = 1989 design day emissions (5610 Lbs/day)

Pe = projected emissions inventories

X = resulting concentration

Equation 1 presents the ratio of the anthropogenic emissions to the 1989 design day emissions. The background concentration should be added back into X, which is the predicted "worst case" ambient concentration, in order to account for all the  $\text{PM}_{10}$  in the Cañon City area. For example, for 1994:

$$\frac{1989ddc}{1989dde} = \frac{X}{1994Pe}$$

Example 1

OR

$$\frac{93 - 8 \mu\text{g}/\text{m}^3}{5,610 \text{ Lbs}/\text{day}} = \frac{X}{6,339 \text{ Lbs}/\text{day}}$$

$$X = 96 + 8 = 104 \mu\text{g}/\text{m}^3$$

As Table II-4 reflects, without any further reduction in emissions over what is anticipated to occur (141  $\mu\text{g}/\text{m}^3$  worst case day) with normal growth and using the maximum allowable point source emissions, Cañon City will remain below the NAAQS for  $\text{PM}_{10}$  through 2015.

Table II-4  
Design Day Emissions as They Relate to the NAAQS  
in the Cañon City Nonattainment Area

	Design Day Emissions (lbs/day)	Concentrations Including Background ( $\mu\text{g}/\text{m}^3$ )
1990	5,608	93
1994	6,339	112
1997	6,479	114
2015	8,748	141
<b>NAAQS</b>	<b>9,372*</b>	<b>150</b>

\*The emissions calculated for the NAAQS in the 1991 SIP were incorrect at 9,907 Lbs/day. The amount is actually 9,372 Lbs/day due to anthropogenic causes. One must calculate by first subtracting the Cañon City background concentrations of  $\text{PM}_{10}$  from design day and NAAQS concentrations on each side of the equation. This provides the  $\text{PM}_{10}$  concentrations due solely to anthropogenic  $\text{PM}_{10}$  emissions for the proper equation, as follows in Equation 2 and Example 2:

$$\frac{ddc - bkc}{dde} = \frac{NAAQSc - bkc}{X} \quad \text{Equation 2}$$

Where: ddc = design day concentration ( $93 \mu\text{g}/\text{m}^3$  on December 27, 1989)

bkc = background concentration ( $8 \mu\text{g}/\text{m}^3$ )<sup>6</sup>

dde = 1989 design day emissions (5610 Lbs/day)

NAAQS = National Ambient Air Quality Standard for 24 hour  $\text{PM}_{10}$  of  $150 \mu\text{g}/\text{m}^3$

X = projected concentration

$$\frac{93 - 8 \mu\text{g}/\text{m}^3}{5,610 \text{ Lbs}/\text{day}} = \frac{150 - 8 \mu\text{g}/\text{m}^3}{X} \quad \text{Example 2}$$

$$X = 9,372 \text{ Lbs}/\text{day}$$

## C. Monitoring Network

The Cañon City monitoring network is described in Section II, *Attainment of the PM<sub>10</sub> Standard*. The network and methodologies will continue to operate as described, unless change becomes appropriate under provisions of 40 CFR Part 58. The Colorado APCD commits to continue to operate the monitoring network in Cañon City in accordance with 40 CFR Part 58.

## D. Verification of Continued Attainment

The APCD will analyze annually the three most recent consecutive years to verify continued attainment of the PM<sub>10</sub> NAAQS, in accordance with 40 CFR 50, Appendix K. In accordance with Title II, Section 319, of the 1990 CAAA requirements, as interpreted in 40 CFR Part 58.26, the APCD will continue to monitor for PM<sub>10</sub> in Cañon City and submit the data to the USEPA in an annual report by July 1st of each year for data collected from January 1st to December 31st of the previous year. This information, along with the annual reports for the previous two years, will provide the necessary information to determine whether the Cañon City/Fremont County area continues to attain the PM<sub>10</sub> NAAQS.

In addition, the APCD will provide periodic inventory reviews for the redesignated area every three years using the latest emissions factors, models and methodologies. The State will begin providing such reviews to USEPA for the year 2000, and continue through the year 2015. Submittal will be on the first of October one year following the inventory year. In compiling the inventory reviews, the State will review assumptions made for the purposes of the maintenance demonstration concerning growth of VMT, population, households, industrial employment and mobile source emissions factors for the entire maintenance period. If any of these assumptions appear to have changed substantially, the State will re-project emissions for the maintenance period to determine the effect on the future inventories in comparison to the baseline inventories. Should an assumption or set of assumptions appear to require adjustment, the State will endeavor to discover (and provide to USEPA) the reason, in addition to providing any adjustment.

## VII. Contingency Plan

Note that contingency provisions (street sweeping measures) contained in the *State Implementation Plan-Specific Regulations for Nonattainment Areas (Local Elements)* rule will remain applicable while the Cañon City/Fremont County area remains "nonattainment" for PM<sub>10</sub>, but will become

obsolete upon redesignation to attainment. Upon redesignation, the State will revise the SIP-specific regulation to remove those contingency measures.

Section 175(A)(d) of the 1990 CAAA requires that maintenance plan revisions submitted under this section contain such contingency provisions as necessary to assure that the state will promptly correct any violation of the ambient standard that may occur after the redesignation to attainment. The "Calcagni" guidance memo notes that the state is not required to have fully adopted contingency measures that will take effect without further action by the state. However, the contingency plan should ensure that the contingency measures are adopted expediently once they are triggered. The primary elements of the contingency plan involve the tracking and triggering mechanisms to determine when contingency measures would be needed and a process for implementing appropriate control measures.

## **A. Tracking**

The tracking plan for the Cañon City/Fremont County area will consist of 1) continued ambient monitoring for PM<sub>10</sub>; 2) inventory updates; and 3) the periodic inventory reviews. In accordance with 40 CFR Part 58, Colorado will continue to operate and maintain the ambient PM<sub>10</sub> monitor at the Fremont County Courthouse. All applicable quality assurance and quality control measures, and record keeping practices will continue in order to demonstrate continued maintenance of the NAAQS.

## **B. Triggers and Responses**

### **1. First Exceedance**

Upon the observation of an exceedance of the PM<sub>10</sub> 24-hour NAAQS the Division will within 90 days institute daily sampling of the particulate matter monitor, and maintain this schedule for four calendar quarters, and until PM<sub>10</sub> levels are reduced to levels that allow selective sampling, as per 40 CFR, Part 58.13. (Note that increases in sampling frequencies can also be triggered by elevated PM<sub>10</sub> levels that do not break the 24-hour standard, as per 40 CFR, Part 58.13. The State will continue to enforce these provisions.)

Section 175(A)(d) of the CAAA requires that contingency provisions must ensure that the state will promptly correct any violation of the standard that occurs after redesignation. The State will begin contingency measure processes upon an official USEPA determination that a violation of the PM<sub>10</sub> NAAQS has occurred. Such determination will be based on USEPA and APCD analyses of quarterly and annual

monitoring data; calculations of expected exceedances as per 40 CFR, Part 50, Appendix K; and the assessment of any observed exceedances.<sup>7</sup> Contingency measure processes include the following:

## 2. Violation

1. In cooperation with Cañon City, Fremont County and other interested parties and agencies, the APCD will convene a contingency plan subcommittee within one month of official USEPA determination of a PM<sub>10</sub> NAAQS violation in the Cañon City/Fremont County area.

2. The subcommittee will identify the cause(s) of the exceedances within one month of convening, EPA and APCD information, reviewing historical exceedances, meteorological conditions related to the recent exceedances, and the most recent estimates of growth and emissions. (Note that the APCD and USEPA, and presumably Cañon City and Fremont County, will have been looking into the origins of any PM<sub>10</sub> exceedances for several months prior to the subcommittee formation.) The committee will also evaluate the possibility that an exceptional or natural event occurred. Assuming that the exceedances are believed to be anthropogenic, the subcommittee would proceed to Step 3.

3. The subcommittee will select appropriate measures from the potential contingency measures list (below) to prevent further exceedances of the PM<sub>10</sub> NAAQS.

4. The APCD will then request a rulemaking hearing by the AQCC to adopt the contingency measures selected by the subcommittee. The Division will also request that the measures be adopted by the Cañon City Council and Fremont County Commission.

The AQCC hearing process is typically completed in three months. The rules would be published in the Colorado Register on the 10th of the month either one or two months following adoption, and effective 20 days after that.

Thus, it is estimated that within ten months after a violation, as determined and officially noticed by USEPA, the selected contingency measures would become effective. Note: The contingency measures will not be immediately submitted to EPA as a revision to the maintenance plan; thus the State requirement to submit adopted measures to the Colorado Legislature for review is not applicable until such measures are to be submitted to EPA for approval. If appropriate, the contingency measures would become part of the next revised SIP (revisions are required by the CAAA every 10 years). Revised plans would be

submitted to EPA after review by the Colorado Legislature.

Example Timeline for Responses to Violation

<b>Dec. 15</b> Official Violation notice (EPA)	<b>Jan. 17</b> Subcomm- ittee forms	<b>Feb. 17</b> Exceedance Causes Identified	<b>Mar. 17</b> Select Contingency Measures	<b>May 17</b> APCD Requests Rulemaking
<hr/>				
<b>Aug. 17</b> Public Hearing/ Adoption by AQCC	<b>Sept. 10 (or) Oct. 10</b> Contingency Rules Published in Colorado Register	<b>Sept. 30 (or) Oct. 30</b> Contingency Rules Effective		
<hr/>				

**3. Potential Contingency Measures**

The PM<sub>10</sub> subcommittee may choose and recommend for adoption one or more of the contingency measures listed below. Other measures, as yet unidentified, could be selected as well or instead of those listed:

- Street sweeping requirements
- Road paving requirements
- Street Sand Specifications
- Woodburning Curtailment
- Use of De-icers
- Re-establishing New Source Review Permitting Requirements for Stationary Sources
- Other Measures as Appropriate.

It is unlikely that Federal or State monies will be available to fund the implementation of the selected contingency measure(s). Most, if not all, of the costs will be borne by local citizens and governments, local industries, and State government agencies.

## VIII. RULE CHANGES

The AQCC's *Ambient Air Standards for the State of Colorado* regulation is revised to classify the Cañon City nonattainment area as an attainment/maintenance area for PM<sub>10</sub> upon full USEPA approval of the maintenance plan. In addition, the APCD will recommend that the AQCC adopt a new mobile sources emissions budget of 7,439 lbs./day<sup>a</sup> for 1997 and beyond for Cañon City in its *Ambient Air Standards* rule. The new emissions budget is designed to accommodate projected PM<sub>10</sub> emissions growth through the year 2015.

## IX. SUBSEQUENT MAINTENANCE PLAN REVISIONS

As noted above, it is required that a maintenance plan revision be submitted to the USEPA eight years after the original redesignation request/maintenance plan is approved. The revision is to provide for maintenance of the NAAQS for an additional ten years following the first ten-year period. This document (redesignation request/maintenance plan) is unusual in that it projects that Cañon City/Fremont County will maintain the NAAQS through the year 2015. Nevertheless, the State of Colorado commits to submit a revised maintenance plan in 2006, as required by the CAAA and USEPA regulations.

## X. REFERENCES

2. Saulmon, Robert W. City Engineer for Cañon City. Correspondence to Manisha Blair, APCD. February 5, 1996; and The Engineering Company, Fort Collins, Colorado. *Water System Improvement Plan for Cañon City*. December, 1992.
3. Gerstle, George. Colorado Department of Transportation. Facsimile letter and ADT data to Manisha Blair, APCD. February 15, 1996.
4. Colorado Department of Health. *Colorado State Implementation Plan for PM<sub>10</sub> Cañon City Element*. December 19, 1991.
5. Finiol, Gary. Colorado Air Pollution Control APCD. Personal communication with Pat McGraw, Colorado Air Pollution Control APCD. May 30, 1996.
6. Arnold, Steve, APCD. Memorandum to Bob Graves, APCD, November 20, 1991.
7. These include provisions to reduce the potential for overestimating the number of expected exceedances at subpart 3.1 of Appendix K. Telephone conversation between Lisa Silva and Vicki Stamper, USEPA Region 8, Sept. 20, 1996.
8. Agreed to by Colorado Department of Transportation and APCD, conversation with Lisa Silva, July 17, 1996.

## Appendix A

### Acronyms and Abbreviations

ADT	average daily traffic
AIR	Automobile Inspection and Readjustment Program
AIRS	Aerometric Information Retrieval System
APCD	Air Pollution Control APCD (Colorado)
AQCC	Air Quality Control Commission (Colorado)
BACT	best available control technology
bkc	background concentration
CAA	Clean Air Act
CFR	Code of Federal Regulations
CDPHE	Colorado Department of Public Health and Environment
CO <sub>2</sub>	carbon dioxide
COHb	carboxyhemoglobin
dd	design day (also ddc - design day concentration and dde - design day emissions)
EPA	Environmental Protection Agency
FR	Federal Register
FY	fiscal year
g	grams
LAER	lowest achievable emission rate
Lbs/day	pounds per day
ug/m <sup>3</sup>	micrograms per cubic meter
NAA	nonattainment area
NAAQS	National Ambient Air Quality Standard
NSR	new source review
PM <sub>10</sub>	particulate matter of a size 10 microns or less
PPM	parts per million
PSD	prevention of significant deterioration
QA	quality assurance
SIP	State Implementation Plan
s/L	silt loading
SLAMS	State and Local Air Monitoring Stations
TPD	Tons per day
TPY	Tons per year
TS	Technical Services
TSP	Total suspended particulates
USEPA	United States Environmental Protection Agency
VMT	vehicle miles traveled

## Appendix B

EPA Aerometric Information Retrieval System Information for all stationary sources in the nonattainment area.

(This extensive printout material is on file with the AQCC office.)

## Appendix C

### Calculations of Point Source Emissions to Determine PM<sub>10</sub> Emissions

Calculations to determine PM<sub>10</sub> emissions for those sources requiring calculations. Two methods to derive the PM<sub>10</sub> allowable emissions were used. Calculations are determined either by the sources Potential to Emit (PTE) or by ratio of PM<sub>10</sub> to TSP emissions.

#### West Plains Energy 0430003

Boiler 1 is rated at  $249 \times 10^6$  BTU/hr with a limit of 0.12Lb. TSP/ $10^6$  BTU. Boiler 2 is rated at  $306 \times 10^6$  BTU/hr with a limit of 0.113 Lb. TSP/hr. The facility operates 8760 hours/yr, so:

boiler 1

$0.12 \text{ Lb. TSP}/10^6 \text{ BTU} \times 249 \times 10^6 \text{ BTU/hr} \times 8760 \text{ hr/yr} \times 1 \text{ ton}/2000 \text{ Lbs.} = 130.87 \text{ tons TSP/yr}$

boiler 2

$0.113 \text{ Lb. TSP}/10^6 \text{ BTU} \times 306 \times 10^6 \text{ BTU/hr} \times 8760 \text{ hr/yr} \times 1 \text{ ton}/2000 \text{ Lbs.} = 151.45 \text{ tons TSP/yr}$

The ratio of the Emission Factors (EF) for PM<sub>10</sub>/TSP is 0.2

Total TSP tons/yr is 282.32, therefore:

$282.32 \text{ tons TSP/yr} \times 0.2 = 56.46 \text{ tons PM}_{10}/\text{yr allowable}$

#### Fremont Paving 0430007

The permitted limit is 50,000 tons/yr asphalt production. Control efficiency is 99%. EF for PM<sub>10</sub> is 4.5 Lbs. PM<sub>10</sub>/ton asphalt. Therefore:

$50,000 \text{ tons/yr} \times 4.5 \text{ Lbs. PM}_{10}/\text{ton} \times 1 \text{ ton}/2000 \text{ Lbs.} \times .01 = 1.13 \text{ tons PM}_{10}/\text{yr allowable}$

#### Saint Thomas Moore Hospital 0430023

Permit limits specify waste burned as 8000 BTU/lb and 800,000 BTU/hr. This means 100 Lbs. waste/hr can be burned. Assuming an 8-hour day, every day yields:

$100 \text{ lb/hr} \times 8 \text{ hr/day} \times 365 \text{ days/yr} \times 1 \text{ ton}/2000 \text{ Lbs.} = 146 \text{ tons/yr waste burned}$   
EF for PM<sub>10</sub> is 4.4 Lbs. PM<sub>10</sub>/ton so:

$146 \text{ tons/yr} \times 4.4 \text{ Lbs. PM}_{10}/\text{ton} \times 1 \text{ ton}/2000 \text{ Lbs.} = 0.32 \text{ tons PM}_{10}/\text{yr allowable}$

#### Fremont Correctional Inst. 0430029

2 boilers present, each with a capacity of 0.39 tons/hr coal usages. Total coal usage capacity is therefore 0.78 tons/hr. Assuming an 8760 hours/yr operation with an EF of 6.2 Lbs. PM<sub>10</sub>/ton yields:

$0.78 \text{ tons/hr} \times 8760 \text{ hr/yr} \times 6.2 \text{ Lbs. PM}_{10}/\text{ton} \times 1 \text{ ton}/2000 \text{ Lbs.} = 21.2 \text{ tons PM}_{10}/\text{yr allowable}$

#### Fremont Co. 0430052

Permit limits production of sand and gravel to 24,000 tons/yr. EF is 0.06 Lb. PM<sub>10</sub>/ton. Therefore:

$24,000 \text{ tons/yr} \times 0.06 \text{ Lb. PM}_{10}/\text{ton} \times 1 \text{ ton}/2000 \text{ Lbs.} = 0.72 \text{ tons PM}_{10}/\text{yr allowable}$

#### Humane Society 0430074

The permit specifies 32.5 tons/yr waste incinerations. EF is 5.92 Lbs. PM<sub>10</sub>/ton. Therefore:

$$32.5 \text{ tons/yr} \times 5.92 \text{ Lbs. PM}_{10}/\text{ton} \times 1 \text{ ton}/2000 \text{ Lbs.} = 0.096 \text{ tons PM}_{10}/\text{yr allowable}$$

**Summit Brick 0430075**

The permit specifies 70,000 tons/yr production. No EF available. 20,000 tons actual production resulting in 0.81 tons PM<sub>10</sub>/yr is known. Ratio of actual production to permitted production = 20,000/70,000 is 0.286. Dividing 0.81 by factor of 0.286 yields expected allowable for 70,000 tons production of 2.83 tons PM<sub>10</sub>.

**Cotter Corp. 0430079**

Design capacity is 1.2 tons/hr. Assume operation of 8760 hours/yr. EF is 11.27 Lbs. TSP/ton. This yields:

$$1.2 \text{ tons/hr} \times 8760 \text{ hours/yr} \times 11.27 \text{ Lbs. TSP/ton} \times 1 \text{ ton}/2000 \text{ Lbs.} = 59.24 \text{ tons TSP/yr allowable.}$$

Ratio of PM<sub>10</sub>/TSP is 0.5 so:

$$59.24 \text{ tons TSP/yr} \times 0.5 = 29.6 \text{ tons PM}_{10}/\text{yr allowable}$$

**J & J Materials 0430088**

The permit specifies 70,000 tons/yr production. EF is 0.714 Lb. PM<sub>10</sub>/ton. Therefore:

$$70,000 \text{ tons/yr} \times 0.714 \text{ Lb. PM}_{10}/\text{ton} \times 1 \text{ ton}/2000 \text{ Lbs.} = 24.99 \text{ tons PM}_{10}/\text{yr allowable}$$

Appendix D

Cañon City Stationary Source List Changes

The following sources, listed in the 1991 SIP, were removed from the stationary source list because they were recently found to be OUTSIDE the nonattainment area.

<u>AIRS ID #</u>	<u>Source</u>	<u>PM<sub>10</sub> (TPY)</u>	<u>SOURCE of Info</u>
0430021	Cotter Corp.	28.0	U In 1991 SIP
0430034	Sniders Aggregate	22.0	U In 1991 SIP
0430050	Colorado Quarries	21.0	U In 1991 SIP

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# 0430035 Denver Rio Grande Railroad ceased its ballast loading (stationary source) operations in 1996, according to APCD Field Inspectors.

The following sources were ADDED to the stationary source list in 1996:

<u>AIRS ID #</u>	
0430036	Florence Asphalt, a portable source.
0430038	Holt Dixon Funeral Home
0430007	Fremont Paving (a second point source--same company)
0430074	Humane Society, began operations in 1994.
0430088	J&J Materials. This surface mining operation is actually outside the nonattainment area, but was included in the list because its PM <sub>10</sub> emissions (at 73.94 pounds per day) are by far the highest in the Cañon City Quadrangle.

The following name changes occurred:

- #0430003 West Plains Energy was formerly known as Southern Colorado Power.
- #0430012 Adience was formerly known as Colorado Refractories.

## Appendix E

### Equations and Sample Calculations for Table II-3

The 1990, 1994 and 1997 Design Day emissions are from the 1991 Cañon City SIP. The SIP used a growth projection of 1% per year for mobile sources from 1990 through 1997. Cañon City officials provided a population growth estimate of 1.5%/year (0.015 in the equation below). This estimate is used to project the wood and coal burning categories to 2015. CDOT has since provided average daily traffic growth projections from 1991 through 2015 that show a 2.5% growth per year. However, SIP projections through 1997 have been allowed to stand, and the new CDOT growth projections are used from 1997 through 2015. The calculations for 1997 to 2015 are shown below for each category:

Woodburning in woodstoves and fireplaces and coal burning use equation 1 to project the 1997 emissions to 2015.

#### Equation 1

$$1997 \text{ RH} \times \left(1 + \left(\frac{0.015}{\text{Year}} \times 18\text{years}\right)\right) = 2015 \text{ Projected RH Emissions}$$

Where: RH = Residential Heating (wood and coal) source emissions in Lbs/day

#### Example Calculation using Equation 1

1997 Woodstove Emissions = 355.93 Lbs/day

$$355.93 \text{ Lbs/day} \times 1.27 = 452.03 \text{ Lbs/day in 2015}$$

All mobile source categories, including reentrained dust from paved and unpaved roads and the MOPAR or mobile particulate model emissions (tailpipe, brake wear and tire wear), use equation 2 to project the 1997 emissions to 2015.

#### Equation 2

$$1997 \text{ AE} \times \left(1 + \left(\frac{0.025}{\text{Year}} \times 18\text{years}\right)\right) = 2015 \text{ Projected AE Emissions}$$

Where: AE = Automotive source Emissions in Lbs/day

#### Example Calculation using Equation 2

1997 auto emissions = 5230.20 Lbs/day  $\times$  1.45 = 7583.79 Lbs/day in 2015