PM10 REDESIGNATION REQUEST

AND MAINTENANCE PLAN FOR THE

TELLURIDE AREA

Adopted by the Colorado
Air Quality Control Commission
March 16, 2000

AIR POLLUTION CONTROL DIVISION
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SECTION 1. INTRODUCTION

The Town of Telluride, the Town of Mountain Village, San Miguel County, and the State of Colorado request redesignation to an "attainment" status for the Telluride PM10 nonattainment area. The Telluride area has been designated as nonattainment for the National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of ten microns or less (PM10) since 1990, and the area is presently demonstrating attainment with the PM10 NAAQS. The Maintenance Plan section of this document will demonstrate that the area will be able to maintain the NAAQS through the year 2012. The benefits of redesignation to attainment status include:

1. Areas redesignated to attainment lose the stigma associated with nonattainment of the NAAQS.

2. Areas redesignated to attainment do not become "serious" nonattainment areas even if a violation of the NAAQS occurs. This means that specific control measures can be applied to address a violation without going through a rigorous federal process, where serious areas must implement mandatory control measures and be subject to numerous administrative activities.

3. Prevention of Significant Deterioration (PSD) permitting requirements replace New Source Review (NSR) permitting requirements for new and modified major stationary sources. These permitting requirements are important for large industrial facilities that are not currently located, nor likely to locate, in the Telluride area.

This Redesignation Request and Maintenance Plan is designed to document and ensure continuing attainment of the NAAQS for PM10 in the Telluride area. This document is intended to comply with requirements of the federal Clean Air Act (CAA), and with relevant procedures and policies of the United States Environmental Protection Agency (EPA).

A. BACKGROUND

1. PM10 National Ambient Air Quality Standard

In 1971, the EPA set NAAQS for several air pollutants, including total suspended particulates (TSP), defined as particles with an aerodynamic diameter of less than 40 microns. In 1987, the EPA changed the TSP

standard to the PM10 NAAQS. The current PM10 NAAQS allow for a maximum annual average of 50 micrograms per cubic meter (ug/m^3) and a 24-hour average of 150 ug/m^3. The 24-hour PM10 NAAQS 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 PM10, 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 EPA 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 ug/m^3 is equal to or less than one (based on 3-year average), and the annual arithmetic mean concentration is less than or equal to 50 ug/m^3 (based on 3-year average), 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 ug/m^3 and a 24-hour average of 150 ug/m^3. The 24-hour standard may not be exceeded more than three times over any three year period. Air quality measurements in the Telluride area satisfy this requirement, as shown in Section 2., "Attainment of the Standard".

2. Health and Welfare Effects of PM10

Particulate matter is the term given to tiny particles of solid or semi-solid material suspended in the atmosphere, and PM10 is inhaleable particulate matter 10 micrometers in diameter and smaller. In the Telluride area, PM10 is created from re-entrained road dust, carbon black (from automobile and diesel engines) and soot (from fireplaces and woodstoves). PM10 from these combustion 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. Telluride Nonattainment Area Classification History

Because of observed problems with air particles, monitoring of total suspended particulates (TSP) began in 1973, and continued through 1987. In 1987, based on relatively high TSP levels, the Telluride area was designated as a "Group I" area for PM10. Telluride was then designated a "moderate" nonattainment area in 1990 pursuant to section 107(d)(4)(B) of the CAA.

4. Telluride/Mt. Village/San Miguel County Attainment/Maintenance Area Boundaries

The boundary for the Telluride/Mt. Village/San Miguel County PM10 attainment/maintenance area is defined as follows:

The area begins at the intersection of Colorado State Highway 145 and the Telluride service area boundary, as it existed in 1991. A legal description of the western edge of the attainment/maintenance area until it meets Remine Creek is contained in Appendix A. At Remine Creek, the attainment/maintenance boundary follows the service area boundary for 9.65 miles to the eastern edge of the area, continuing to follow the 9,200 foot contour line. The boundary then intersects Bear Creek. Here the attainment/maintenance boundary diverges from the service area boundary (9,200 foot contour line). The attainment/maintenance boundary continues in a west, southwest direction for 0.92 miles from the intersection of the 9,200 foot contour line and Bear Creek to the top of ski lift number 9 in the Telluride Ski Area at an elevation of about 11,900 feet. The boundary then shifts and runs in a north-westerly

direction for 0.83 miles from the top of lift 9 to the top of lift 7, which is located at an elevation of 10,490 feet. From the top of lift 7, the boundary continues in a north-westerly direction for 0.5 miles to the intersection of lift 3 with the 10,000 foot contour line. The boundary follows the 10,000 foot contour line in a south, south-west direction for 3.2 miles, until it intersects Skunk Creek. Here the boundary diverges from the 10,000 foot contour line and follows Skunk Creek in a northerly direction for 2.25 miles. At the intersection of Skunk Creek and Colorado State Highway 145, the boundary leaves the creek and follows Highway 145 in a northerly direction until it meets the service area boundary as it existed prior to changes adopted in 1991.

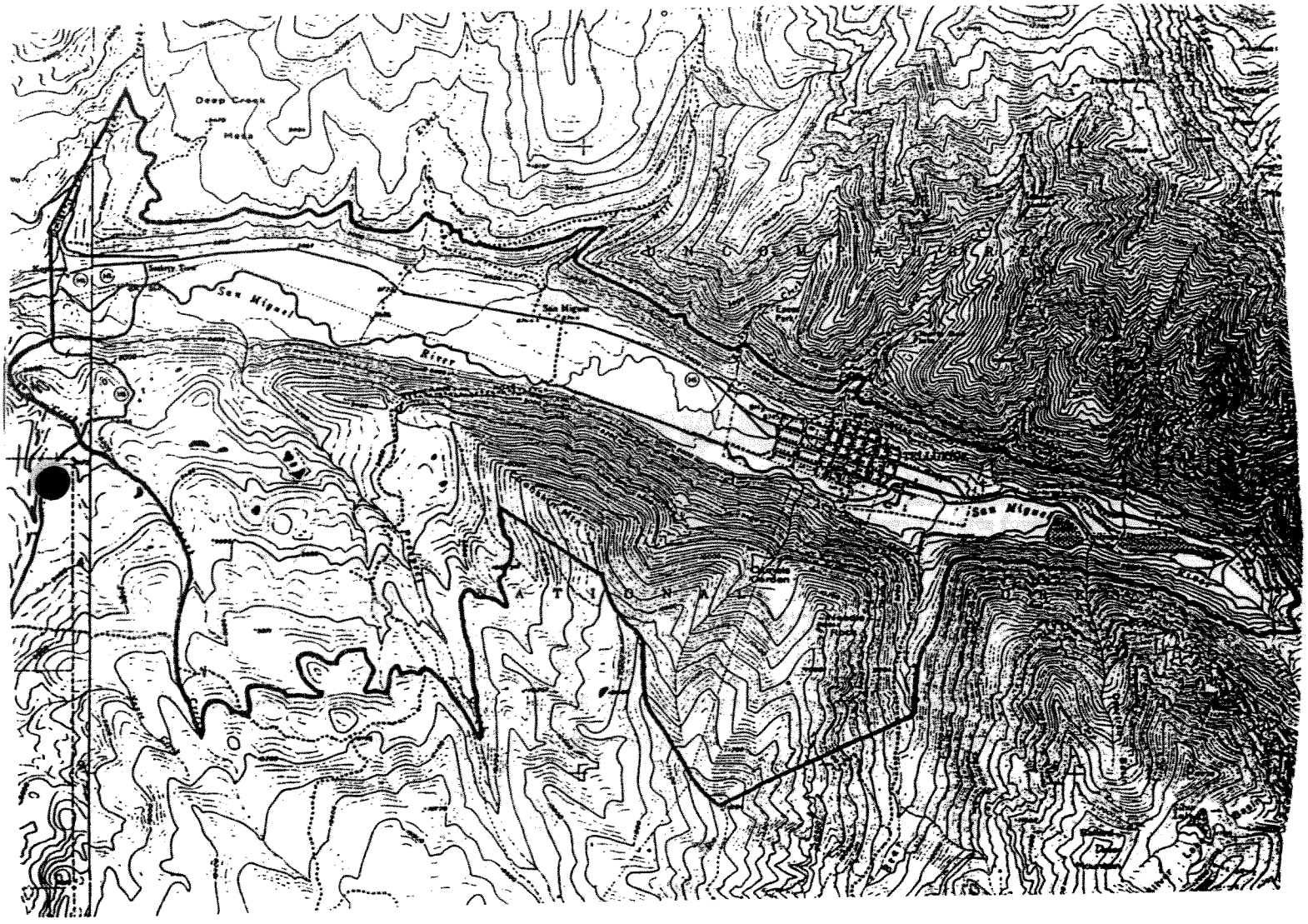
This area essentially includes the Town of Telluride, the Town of Mountain Village, and portions of San Miguel County, which are within the Telluride airshed. A map illustrating the area boundary is shown in Figure 1.

B. ORGANIZATIONS INVOLVED IN PREPARING AND APPROVING THIS PLAN

Preparation of this PM10 Redesignation Request/Maintenance Plan was a cooperative effort of the towns of Telluride and Mountain Village, San Miguel County, and the Air Pollution Control APCD (APCD) of the Colorado Department of Public Health and Environment. The document was approved by the Telluride Town Council in February 2000, the Mountain Village Town Council in February 2000, the San Miguel County Board of Commissioners in February 2000, and the Colorado Air Quality Control Commission (AQCC) on March 16, 2000. The EPA, through its regional office in Denver, provided policy advice and technical assistance, and is responsible for final approval of this redesignation request and maintenance plan.

Figure 1.

Map of the Telluride/Mt. Village/San Miguel County Attainment/Maintenance Area



C. REQUIREMENTS FOR REDESIGNATION

Section 107(d)(3)(D) and (E) of the CAA defines the five required components of a redesignation request and maintenance plan. These components and their descriptions follow:

- Attainment of the Standard

The State must show that the area is attaining the PM10 NAAQS. This demonstration must be based on monitoring data representative of the location of the expected maximum concentrations of PM10 in the nonattainment area.

- State Implementation Plan (SIP) Approval

The State must demonstrate that it has a fully approved State Implementation Plan (SIP) Element for Telluride under Section 110(k) of the CAA.

- 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 CAA. Section 110 describes general requirements of SIPs, while Part D pertains to requirements applicable to nonattainment areas.

- Maintenance Plan

The State must have a fully approved maintenance plan that meets the requirements of Section 175A of the CAA. This plan must provide for the maintenance of the NAAQS for at least 10 years following redesignation, and the plan must contain a contingency plan that describes potential control measures that could be implemented to ensure continued maintenance of the PM10 NAAQS.

SECTION 2. ATTAINMENT OF THE PM10 STANDARDS

The State of Colorado requests that the EPA redesignate the Telluride nonattainment area to attainment status with respect to the NAAQS for PM10. The following information demonstrates, as required by Section 107(d)(3)(E) of the CAA, that the Telluride area has attained the PM10 NAAQS. This is based on quality assured monitoring data representative of the location of expected maximum concentrations of PM10 in the area.

A. TELLURIDE HISTORICAL PERSPECTIVE

Monitoring for total suspended particulates (TSP) in Telluride began in March 1975 at the Sheridan Hotel. The monitor exceeded the 24-hour NAAQS of 260 ug/m^3 and/or the annual NAAQS of 75 ug/m^3 every year from 1976 through 1986. The historic TSP levels designated Telluride as a "Group I" area for the new PM10 standards, which were promulgated by the EPA in 1987. "Group I" locations were those areas estimated to have a greater than 95 percent probability of exceeding the new PM10 standards. TSP monitoring was discontinued on March 11, 1987 as PM10 monitoring was underway.

Monitoring for PM10 began at the Sheridan Hotel in September 1985, and was discontinued in June 1990 when the site was moved to the 333 W. Colorado location. Both the Sheridan Hotel and the 333 W. Colorado locations were classified as middle-scale sites; a middle-scale site is designed to represent an area from 100 meters to 0.5 kilometers. The monitors have operated on various sampling schedules in Telluride, but everyday sampling has occurred since December 1988.

The following illustrates all of the State particulate monitoring efforts that have occurred in the Telluride area.

- Total Suspended Particulates (TSP) Sheridan Hotel - March 1976 through March 1987.
- PM10 Sheridan Hotel - September 1985 through June 1990.
- PM10 Mtn. Village/Ski Area - December 1985 through December 1986.
- PM10 Society Turn - December 1985 through December 1986.
- PM10 333 W. Colorado - March 1990 to the present.
- PM10 Coonskin Parking Lot - September 1, 1995 through November 6, 1995.

The following table shows the quarterly data completeness for the 333 W. Colorado monitoring site. The table lists the number of samples actually obtained divided by the number of scheduled samples, and the resulting percentage of data recovery. The longest period of quarters with 75 percent data recovery is from the third quarter 1992 through the fourth quarter 1993. If the data from the Coonskin Parking Lot is included in the 1995 data then there have been eleven quarters with 75 percent data recovery. However, the comparability of data from the two locations is in doubt.

Data Completeness at the 333 W. Colorado Blvd. Monitoring Site

Year	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Overall
90	17/18 (n/a)	75/91 (82%)	74/92 (80%)	77/92 (84%)	243/293 (83%)
91	78/90 (87%)	78/91 (86%)	57/92 (62%)	76/92 (83%)	289/365 (79%)
92	85/91 (93%)	66/91 (73%)	81/92 (88%)	76/92 (83%)	308/366 (84%)
93	80/90 (89%)	80/91 (88%)	87/92 (95%)	83/92 (90%)	330/365 (90%)
94	45/90 (50%)	74/91 (81%)	79/92 (86%)	83/92 (90%)	281/365 (77%)
95	82/90 (91%)	79/91 (87%)	66/92 (72%)*	46/92 (50%)*	273/365 (75%)
96	81/91 (89%)	87/91 (96%)	75/92 (82%)	78/92 (85%)	321/366 (88%)
97	81/90 (90%)	65/91 (71%)	68/92 (74%)	83/92 (90)	297/365 (81%)
98	85/90 (93%)	74/91 (81%)	79/92 (86%)	78/92 (85)	316/365 (85%)

* Between September 13, 1995 through November 7, 1995 the samplers were moved to the Coonskin Parking Lot while the roof of the 333 W. Colorado Building was being resurfaced.

The next table lists the maximum, second maximum, yearly estimated exceedances, 3-year average of estimated exceedances, and the annual average. The annual average for those years with any quarterly data recovery less than 75 percent is shown in parentheses.

PM10 Monitoring Data from the 333 W. Colorado Blvd. Monitoring Site

Year	Maximum Conc. ug/m3	2nd Maximum Conc. ug/m3	Yearly Estimated Exceedances	3-year Average Estimated Exceedances	Annual Average Conc. ug/m3
90	118	97	0.0	n/a	(38)
91	107	107	0.0	n/a	(36)
92	107	91	0.0	0.00	(38)
93	135	126	0.0	0.00	39
94	153	127	0.0	0.00	(34)
95	119	103	0.0	0.00	(35)
96	107	105	0.0	0.00	25
97	96	80	0.0	0.00	(25)
98	70	65	0.0	0.00	24

B. MAXIMUM CONCENTRATION MONITORING

As illustrated in Section 6.B.1. of this document, some of the highest levels of PM10 emissions occur in the Town of Telluride - 1,285 pounds per day (grids 2A-2D). This is where a great amount of residential, commercial, and pedestrian activities occur, and it is the area where the dispersion of pollutants is likely to be the most problematic due to temperature inversions and pollutant-trapping topography. The APCD's monitoring site is located in the center of this high emission and concentration area, and it is believed to be representative of maximum PM10 concentrations. Emissions in the Town of Mountain Village slightly exceed Telluride's - 1,524 pounds per day (grids 10-12). However, the dispersion of pollutants is believed to be much better in the Mountain Village area due to terrain features, and private monitoring conducted by the Town of Mountain Village indicates much lower concentrations when compared to concentrations in Telluride.

C. TELLURIDE DESIGN VALUE

The "design value" is the critical air quality value from which the maintenance plan is based. The design value, and the day on which it was measured, are utilized to develop emission inventories and serves as a baseline for modeling ambient concentrations into the future. PM10 values are discussed in terms of the 24-hour PM10 NAAQS, rather than the annual NAAQS, because the 24-hour NAAQS is the standard of concern and the annual NAAQS has never been exceeded. The selection of this design value utilized EPA's table look-up method from EPA's "PM10 SIP Development Guideline" document. Based on the number of samples collected during the 1996 - 1998 period (934), the third highest concentration is the design value, according to this guidance. The three highest concentrations measured during the period 1996-98 are:

107 ug/m^3 - 1/19/96
105 ug/m^3 - 3/15/96
101 ug/m^3 - 11/11/96

Therefore, the design value for this redesignation request and maintenance plan is 101 ug/m^3. A concentration of 224 ug/m^3 was measured on 3/31/99 - this concentration is the result of a naturally occurring high wind event and is not included in the calculation of the design value.

SECTION 3. STATE IMPLEMENTATION PLAN APPROVAL

The following presents a brief summary of the development and the approval of the Telluride PM10 nonattainment SIP Element.

A. 1988 SIP ELEMENT

The first PM10 SIP Element was adopted by the Colorado AQCC in July 1988, and the emission controls included road paving and coal/woodburning restrictions. EPA Region VIII intended to approve the SIP Element, though it eventually was rejected once the Clean Air Act was amended in 1990 and new, more stringent requirements were in place.

B. 1993 SIP ELEMENT

A new Telluride SIP Element was adopted by the AQCC in January 1993 and supplemented in November 1993. The control measures included the paving and woodburning measures from the 1988 SIP Element and new road paving contingency measures. EPA partially/conditionally approved the SIP Element on September 19, 1994 (59 FR 47807).

C. 1994 AND 1995 SIP ELEMENT REVISIONS

The Telluride SIP Element was revised by the AQCC in October 1994 and again in August of 1995. These revisions consisted of updating the technical and administrative information and the adoption of new street sanding requirements to satisfy the conditions of EPA's September 1994 action. EPA provided full approval of the Telluride SIP Element on October 4, 1996 (61 FR 51784).

SECTION 4. PERMANENT AND ENFORCEABLE IMPROVEMENT IN AIR QUALITY

The State must demonstrate, based on Section 107(d)(3)(E) of the CAA, that the improvement in air quality leading to attainment of the PM10 NAAQS and the redesignation request is based on permanent and enforceable measures, and that the reductions are not the result of temporary reductions in emissions or unusually favorable meteorology.

A. OVERVIEW

It is reasonable to attribute the attainment of the PM10 NAAQS in the Telluride area to emission reductions that are permanent and enforceable. These emission reductions are the result of local, State, and federal actions, not economic factors or unusual meteorology.

Economic conditions are clearly not responsible for improved ambient levels in the Telluride nonattainment area. It is assumed that growth in population, employment, and traffic increase PM10 emissions and the potential for elevated PM10 concentrations. Information obtained for the Town of Telluride shows that the Town's population increased by approximately 12 percent annually between 1990 and 1994, employment in the Town increased by approximately 15 percent for the period 1989 through 1993, and vehicle-miles-traveled increased by approximately 14 to 19 percent for the nonattainment area between 1991 and 1995, and by about five percent annually for the Town from 1993 through 1995. During this period of growth, attainment of the PM10 NAAQS was demonstrated, and very few concentrations above 100 ug/m^3 were measured.

Favorable meteorology is also an unlikely reason why the area's PM10 concentrations are below the NAAQS. Although winter and spring meteorological conditions are highly variable in mountain settings, there is no evidence to suggest that meteorological conditions experienced in the 1990's have not been "typical" (though it is difficult to make concrete conclusions based on short-term meteorological records). Because there has not been a violation of the PM10 NAAQs in Telluride since the NAAQS were promulgated in 1987, and because there has only been two concentrations since 1987 that have exceeded the 24-hour PM10 NAAQS (153 ug/m^3 in 1994 and 224 ug/m^3 in 1999), the APCD concludes that the good air quality in the Telluride area is the result of the implementation of emission reduction measures, not meteorological fluctuations.

B. CONTROL MEASURES

The following control measures resulted in the area's attainment of the PM10 NAAQS, and these measures should ensure continued maintenance of the PM10 NAAQS through the year 2012, which is the duration of the maintenance period.

1. Woodburning Emission Controls

The State has adopted emission standards (which mirror federal standards) for all new woodburning stoves and fireplace inserts sold in Colorado. AQCC Regulation No. 4 contains the emission standards, which, over time, will continue to reduce the growth in PM10 emissions and other pollutants from woodburning when older woodburning devices are replaced by newer devices.

The Town of Telluride and San Miguel County have adopted wood and coal burning emission reduction measures which 1) require the installation of cleaner-burning devices in existing dwellings which have pre-existing solid fuel burning devices, 2) prohibit solid fuel burning devices in new construction, 3) ban coal burning, and 4) limit the total number of fireplaces and woodstoves in the nonattainment area.

These wood and coal burning controls were adopted and implemented throughout the 1980's and early 1990's, and they were approved by EPA in 1994.

2. Street Sanding Controls

There is a requirement that any user that applies street sanding material in the Telluride attainment/maintenance area must use materials containing less than two percent fines. This strategy was adopted in 1994 and approved by EPA in 1996, and it is defined in detail in Section II.C. of the "State Implementation Plan-Specific Regulations for Nonattainment - Attainment/Maintenance Areas (Local Elements).

3. Control of Emissions from Stationary Sources

Although there are no stationary sources located in the Telluride attainment/maintenance area, the State's comprehensive permit rules will limit emissions from any new source that may, in the future, locate in the area. These rules include: 1) Regulation No. 3, "Air Pollution Emission Notices, Construction Permits and Fees,

Operating Permits, and Including the Prevention of Significant Deterioration," 2) the "Common Provisions" regulation, and 3) Regulation No. 6, "Standards of Performance for New Stationary Sources."

The Common Provisions, and Parts A and B of Regulation No. 3, are already included in the approved SIP. Regulation No. 6, and part C of Regulation No. 3, implement the federal standards of performance for new stationary sources and the federal operating permit program. The maintenance plan makes no changes to these regulations. This reference to Regulation No. 6 and part C of Regulation No. 3 shall not be construed to mean that these regulations are included in the SIP.

As indicated above, emissions from new or modified major stationary sources emissions of PM10 are controlled under Regulation No. 3's nonattainment-area new source review (NSR) permitting requirements. The NSR provisions require all new and modified major stationary sources to apply emission control equipment that achieves the "lowest achievable emission rate" (LAER) and to obtain emission offsets from other stationary sources of PM10. Once this redesignation request and maintenance plan has been approved by the EPA, the prevention of significant deterioration (PSD) permitting requirements become effective. The PSD requirements are a relaxation from the NSR requirements, as LAER becomes the less stringent "best available control technology" (BACT), and offsets are not required. The application of these provisions is highly unlikely in a mountain resort like the Telluride area.

4. Federal Motor Vehicle Emission Control Program

The FMVECP has reduced PM10 emissions through a continuing process of requiring diesel engine manufacturers to produce new vehicles that meet tighter and tighter emission standards. As older, higher emitting diesel vehicles are replaced with newer vehicles, PM10 emissions in the Telluride area will be reduced.

5. Voluntary and State-Only Measures

In addition to the mandatory control measures discussed above, there are numerous measures that result in the reduction of PM10 emissions that are not classified as "federally enforceable" control measures. These strategies are considered to be voluntary local initiatives and State-only requirements and are intended to reduce congestion and PM10 emissions. Some notable examples include:

- **Street Sweeping -** The Towns of Telluride and Mountain Village have, during recent years, sporadically swept certain streets throughout the winter and spring, but not according to specified schedules or frequencies. Both towns have committed to improve the winter and spring street sweeping, as follows. The Town of Telluride will sweep a defined section of Colorado Avenue, using vacuum sweepers, once after each street sanding event, weather, temperature, and road conditions permitting. The Town of Mountain Village will sweep defined sections of Mtn. Village Boulevard, Russell Drive, Double Eagle Drive, and Adams Ranch Road, using broom sweepers, once after each street sanding event, weather, temperature, and road conditions permitting. The sweeping/cleaning will be conducted on a voluntary basis.

- **Use of Chemical Deicers -** The Town of Telluride has been using chemical deicers in lieu of street sand on West Colorado Avenue from the intersection with Highway 145 to the intersection with Mahoney Drive throughout winter/spring snow/ice control season.

- **Paving** - The Towns of Mountain Village and Telluride have agreed to eliminate or pave unpaved roadways in order to reduce PM_{10} emissions. The Town of Mountain Village will pave all of its remaining unpaved roads by December 2004. The Town of Telluride eliminated 800 linear feet (l.f.) of unpaved road in 1996 (covered by playing fields at the high school), and paved 6,480 l.f. in 1998. The Town of Mountain Village plans to eliminate a 120 space gravel parking lot in the village core and pave a 160 space parking lot at Meadow Run in 1999.

- **Transit -** The Town of Telluride's, Town of Mountain Village's, and San Miguel County's transit systems, which provides bus service for the area's residents, tourists, commuters, and skiers.

- **Storm Run Off -** The Town of Telluride's "Street Scape" plan which will improve storm water run-off and reduce erosion and mud and dirt track-out onto paved street.

- **Control of Emissions from Unpaved Roads through Paving and Stabilization** - Any owner or operator responsible for the construction or maintenance of any existing or new unpaved roadway which has vehicle traffic exceeding 200 vehicles per day in the attainment/maintenance area and surrounding areas must stabilize the roadway in order to minimize fugitive dust emissions. These State-wide requirements are defined in detail in Section III.D.2.a.(I) of the AQCC's Regulation No. 1.

Again, these strategies are considered to be State-only requirements and voluntary initiatives, and are intended to reduce congestion and PM_{10} emissions. These strategies are not intended to be federally enforceable, and PM10 emission reduction credits are not claimed in the emission inventories of Section 6.

SECTION 5. CLEAN AIR ACT SECTION 110 AND PART D REQUIREMENTS

For the purposes of redesignation, all of the requirements of CAA Section 110 and Part D applicable to the area must first be met. The requirements of Section 110 and Part D applicable to the Telluride area are already included in the SIP for Colorado and have already been approved by EPA. In particular, see EPA's full approval of the Telluride SIP Element (61 FR 51784).

SECTION 6. MAINTENANCE PLAN

A. REQUIREMENTS

Section 107(d)(3)(E) of the CAA provides that for an area to be redesignated to an attainment classification, EPA must fully approve a maintenance plan which meets the requirements of CAA Section 175A. The maintenance plan will constitute a SIP revision and must provide for maintenance of the relevant NAAQS in the area for at least ten years after redesignation. Since the requirement is for ten years after redesignation, some lead time for the EPA approval process (up to 18 months per CAA Section 107(d)(3)(D)) should be considered in establishing the maintenance year, which the State determines to be 2012. An additional requirement (Section 175A(d)) is the submittal of a SIP revision eight years after the original redesignation request/maintenance plan is approved that provides for maintenance of the NAAQS for an additional ten years following the first ten-year period. The State of Colorado commits to submit such a revised maintenance plan as required by the CAA and EPA requirements.

Section 175A further states that the plan shall contain such additional control measures as necessary to ensure maintenance. All current nonattainment area control measures shall remain in place, except for the most stringent NSR stationary source permitting requirements (see Section 4.B.3.). The maintenance plan shall contain a contingency plan to ensure the prompt correction of any unforeseen violation of the PM10 NAAQS. Failure to maintain the NAAQS and triggering of the contingency plan will not necessitate a revision of the SIP Element, unless required by the EPA Administrator, as stated in CAA Section 175A(d).

The provisions that are addressed in this maintenance plan include emission inventories (for a base year and a future year), a maintenance demonstration, an emission budget, an approved monitoring network, verification of continued attainment, and a contingency plan.

B. EMISSION INVENTORIES

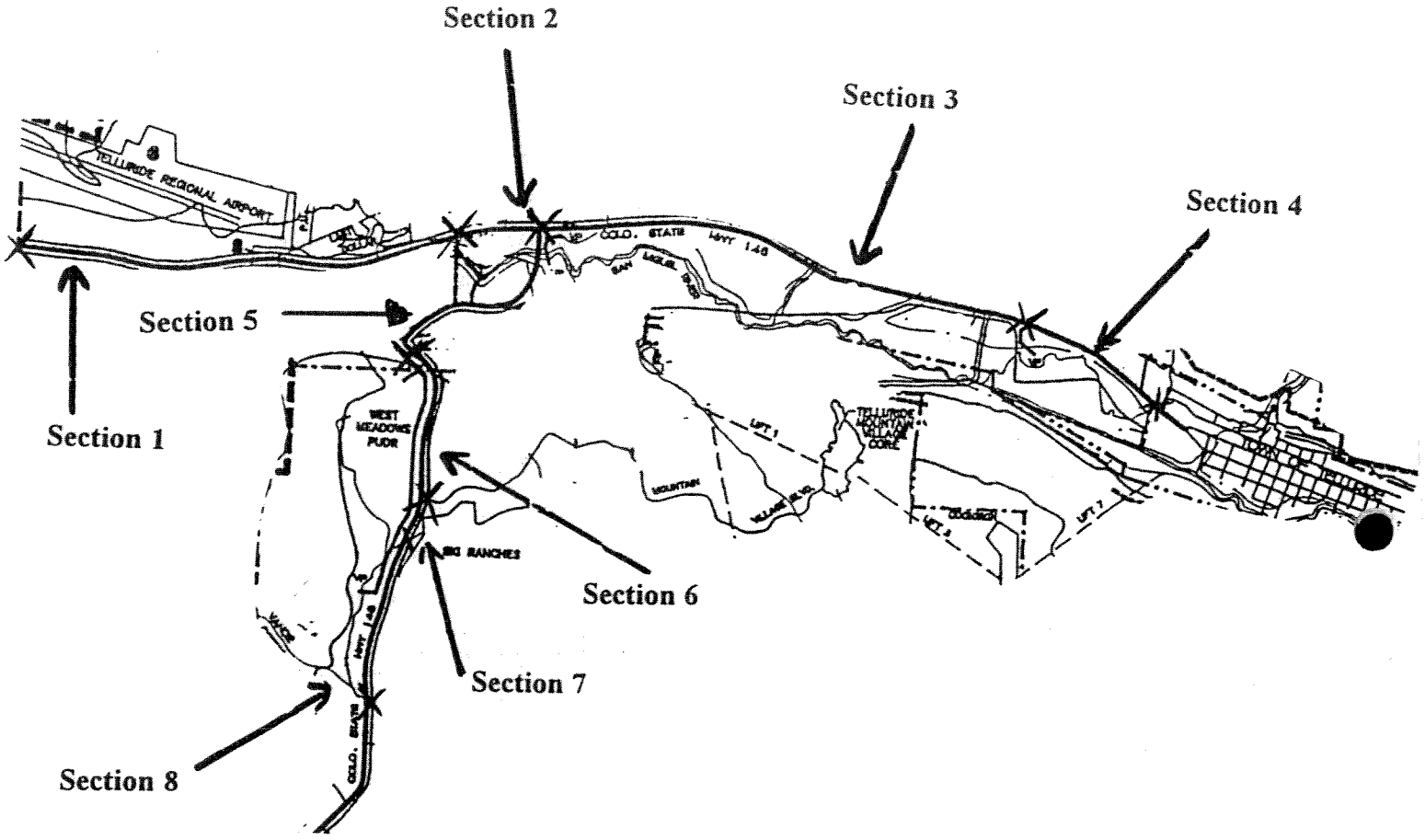
The following presents emission inventories for the 1996 attainment year and the 2012 maintenance year for the Telluride/Mt. Village/San Miguel County attainment/maintenance area. These inventories reflect the base and projected conditions in the Telluride area, and take credit for the mandatory emission control measures that have been adopted as part of this redesignation request and maintenance plan (see Section 4.). All emission estimates were prepared by using EPA-approved methods and assigned to geographic grids. There are eight grids

that cover highway segments, and 15 grids that cover collector and local roads and the other emission categories. The following maps illustrate these grids.

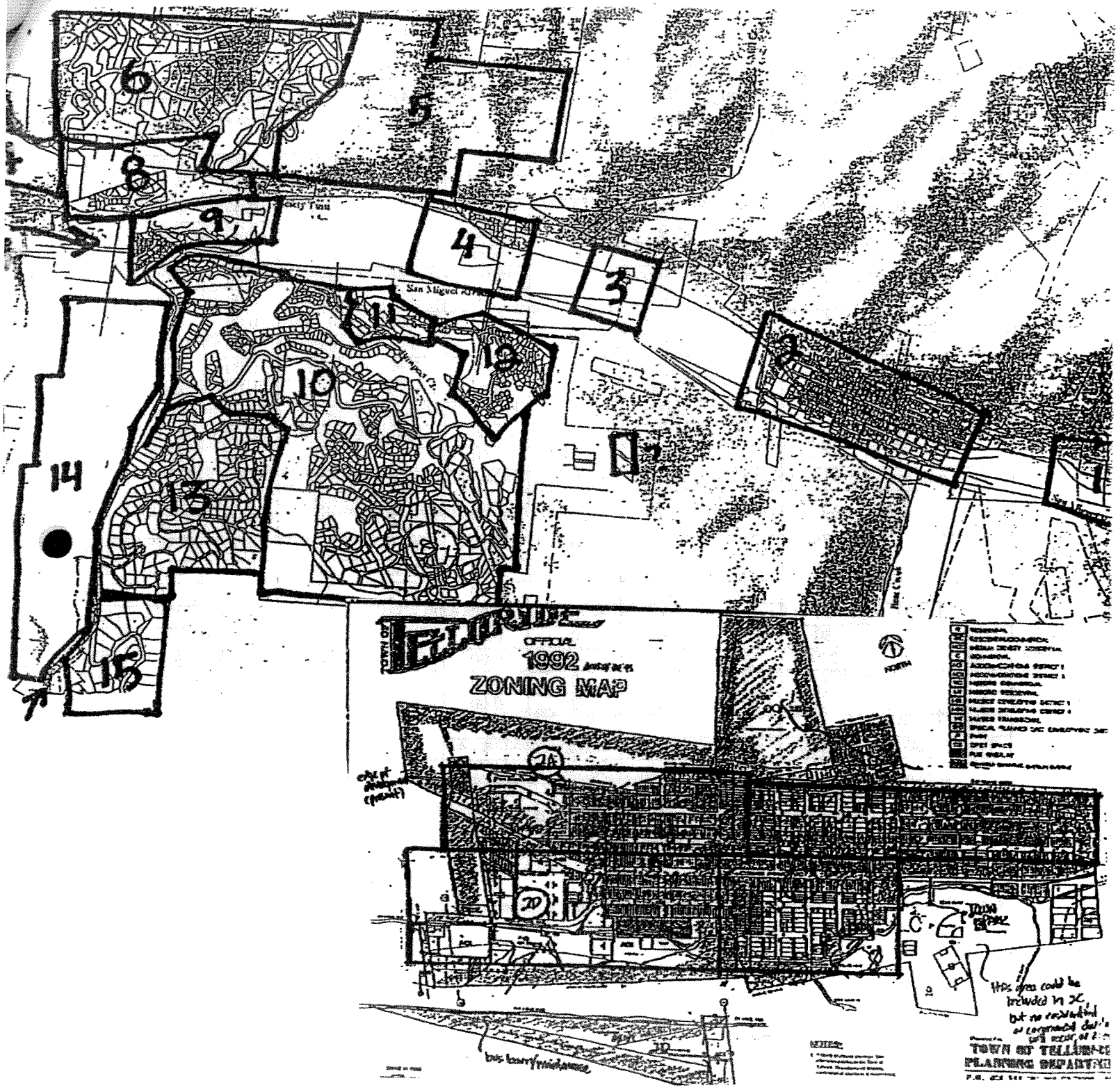
1. 1996 Emission Inventory

This inventory includes emission estimates for woodburning (fireplaces and wood stoves), restaurants, aircraft, a stationary source, mobile exhaust, and re-entrained dust from paved and unpaved roads. The mobile source inventories have been updated to reflect 1) the latest traffic estimates, 2) revised emission factors and methods for determining paved road emissions (including the accounting of street sand specifications), and 3) the road paving that has occurred in the area. The woodburning and restaurant emissions include the latest device counts, emission factors , and usage/activity information. The stationary source emissions are the same as documented in the 1995 PM10 Nonattainment Area SIP Element (a cement batch plant that is not in the attainment/maintenance area but nearby in the emission inventory area). The aircraft and mobile exhaust emissions are based on emissions determined in the Telluride PM10 Nonattainment Area SIP Element. Detailed explanations of the methods used to determine these emissions may be found in the supporting technical documents.

Telluride PM10 Emission Inventory Grid System for Highways



Telluride PM10 Emission Inventory Grid System for Other Roadways and Area Sources



Telluride PM10 Redesignation Request and Maintenance Plan, Adopted by the AQCC March 2000

1996 PM10 Emission Inventory for the
Telluride/Mountain Village/San Miguel County Attainment/Maintenance Area
(lbs./day)

Grid	High-ways	Paved Coll. Roads	Paved Local Roads*	Dirt Roads	Vehicle Exhaust **	Aircraft	Restau-rants	Wood Stoves	Fire-Places	Station. Source ***	Total
1	751	0	0	0	0	0.00	0.00	0.00	0.00	0.00	751
2	94	0	0	0	0	0.00	0.00	0.00	0.00	0.00	94
3	840	0	0	0	0	0.00	0.00	0.00	0.00	0.00	840
4	568	0	0	0	0	0.00	0.00	0.00	0.00	0.00	568
5	93	0	0	0	0	0.00	0.00	0.00	0.00	0.00	93
6	741	0	0	0	0	0.00	0.00	0.00	0.00	0.00	741
7	167	0	0	0	0	0.00	0.00	0.00	0.00	0.00	167
8	313	0	0	0	0	0.00	0.00	0.00	0.00	0.00	313
1	0	19	0	0	0	0.00	0.00	0.00	0.00	0.00	19
2A	0	53	24	80	0	0.00	0.00	8.53	0.00	0.00	165.53
2B	0	0	66	148	0	0.00	0.00	12.35	0.00	0.00	226.35
2C	0	102	102	277	0	0.00	68.62	4.90	0.06	0.00	554.58
2D	0	104	77	122	0	0.00	24.02	11.76	0.00	0.00	338.78
3	0	0	1	0	0	0.00	0.00	1.96	0.00	0.00	1
4	0	0	5	0	0	0.00	0.00	6.86	1.03	0.00	12.89
5	0	0	0	0	0	0.00	0.00	0.00	0.00	0	0
06	0	0	13	0	0	0.00	0.00	0.29	0.06	0	13.35
07	0	77	0	0	0	9.47	0.00	0.00	0.00	0	86.47
08	0	11	0	0	0	0.00	0.00	0.98	0.61	48.00	60.59
09	0	0	59	0	0	0.00	0.00	0.00	0.00	0	59
10	0	55	14	1057	0	0.00	3.43	0.29	8.50	0	1138.22
11	0	80	20	0	0	0.00	3.43	0.00	0.00	0	100
12	0	217	54	0	0	0.00	13.72	0.00	1.21	0	285.93
13	0	0	31	0	0	0.00	0.00	4.80	3.77	0	39.57
14	0	0	0	0	0	0.00	0.00	0.00	0.00	0	0
15	0	0	0	0	0	0.00	0.00	0.30	0.00	0	0.3
Total	**3567**	**718**	**466**	**1684**	**18**	**9**	**113**	**53**	**16**	**48**	**6692**

* Includes asphalt and chip-seal roads.

** Vehicle exhaust were not gridded, though emissions are directly proportional to VMT.

*** This source, a concrete batch plant, is located west of the inventory area and assigned to grid 8 for representation.

Note: Two decimal places indicate that there are emissions in these grids, but does not imply this level of accuracy.

2. 2012 Emission Inventory

The following table presents the 2012 daily emission estimates for each source category in pounds per winter day. As indicated above, this inventory reflects the projected conditions in the Telluride area, and take credit for the mandatory emission control measures that have been adopted as part of this redesignation request and maintenance plan.

The woodburning emissions do not increase from 1996 levels because local control measures have capped emissions (in fact, emissions may go down in the future as permits for woodburning devices are retired). The local woodburning control measures are described in Section 4.B.1 of this document and are included in the SIP. Aircraft and restaurant emissions are increased to 2012 levels based on a county population growth rate of 60.5 percent between 1996 and 2012.

The mobile source emissions are increased by annual, compounded rates of two percent in the Mountain Village and three percent in the rest of the area based on projected, long-term growth in average daily traffic from 1996 to 2012. The two percent annual growth rate, compounded for 16 years results in a 37.3 percent increase in emissions (1.02^{16}). The three percent annual growth rate, compounded for 16 years results in a 60.5 percent increase in emissions (1.03^{16}). Auto exhaust is capped at 1996 levels.

Detailed information on the growth rates and all emission calculations may be found in Technical Support Document.

Because 1996 PM10 emissions for all source categories remain flat or grow at a constant rate to 2012 levels, no interim year emissions were included in this maintenance plan. Projected emissions for the year 2012 are higher than for any year prior to 2012. Therefore, the demonstration of maintenance of the PM10 NAAQS for 2012 is adequate to demonstrate maintenance for all years before 2012.

2012 PM10 Emission Inventory for the Telluride/Mountain Village/San Miguel County Attainment/Maintenance Area
(lbs./day)

Grid	High-ways	Paved Coll. Roads	Paved Local Roads*	Dirt Roads	Vehicle Exhaust **	Aircraft ***	Restau-rants	Wood Stoves	Fire-Places	Station. Source ****	Total
1	1205	0	0	0	0	0.00	0.00	0.00	0.00	0.00	1136
2	151	0	0	0	0	0.00	0.00	0.00	0.00	0.00	151
3	1348	0	0	0	0	0.00	0.00	0.00	0.00	0.00	1348
4	912	0	0	0	0	0.00	0.00	0.00	0.00	0.00	912
5	149	0	0	0	0	0.00	0.00	0.00	0.00	0.00	149
6	1189	0	0	0	0	0.00	0.00	0.00	0.00	0.00	1189
7	268	0	0	0	0	0.00	0.00	0.00	0.00	0.00	268
8	502	0	0	0	0	0.00	0.00	0.00	0.00	0.00	502
1	0	30	0	0	0	0.00	0.00	0.00	0.00	0.00	30
2A	0	85	39	128	0	0.00	0.00	8.53	0.00	0.00	260.53
2B	0	0	106	238	0	0.00	0.00	12.35	0.00	0.00	356.35
2C	0	164	164	445	0	0.00	110.14	4.90	0.06	0.00	888.1
2D	0	167	124	196	0	0.00	38.55	11.67	0.00	0.00	537.22
3	0	0	2	0	0	0.00	0.00	1.96	0.00	0.00	3.96
4	0	0	8	0	0	0.00	0.00	6.86	1.03	0.00	15.89
5	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0
6	0	0	21	0	0	0.00	0.00	0.29	0.06	0.00	21.35
7	0	124	0	0	0	15.20	0.00	0.00	0.00	0.00	139.2
8	0	18	0	0	0	0.00	0.00	0.98	0.61	48.00	67.59
9	0	0	95	0	0	0.00	0.00	0.00	0.00	0.00	95
10	0	76	19	1451	0	0.00	5.51	0.29	8.50	0.00	1560.3
11	0	110	27	0	0	0.00	5.51	0.00	0.00	0.00	142.51
12	0	298	74	0	0	0.00	22.02	0.00	1.21	0.00	395.23
13	0	0	50	0	0	0.00	0.00	4.80	3.77	0.00	58.57
14	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0
15	0	0	0	0	0	0.00	0.00	0.00	0.30	0.00	0.3
Total	**5724**	**1072**	**729**	**2458**	**18**	**15**	**182**	**53**	**16**	**48**	**10315**

* Includes asphalt and chip-seal roads.

** Vehicle exhaust were not gridded, though emissions are directly proportional to VMT.

*** This source, a concrete batch plant, is located west of the inventory area and assigned to grid 8 for representation.

Note: Two decimal places indicate that there are emissions in these grids, but does not imply this level of accuracy.

C. MAINTENANCE DEMONSTRATION

In order for this redesignation request to be complete and approvable, the CAA requires that the maintenance plan provide for maintenance of the PM10 NAAQS for at least 10 years following EPA's approval of the plan. As stated earlier in this document, attainment of the 24-hour and annual PM_{10} NAAQS has been demonstrated in the Telluride area, and this maintenance demonstration will demonstrate continued attainment, or "maintenance" , of the 24-hour NAAQS through the year 2012. Because there have never been exceedances of the annual standard in Telluride, an analysis for maintenance of the annual standard was not prepared. Protection of the 24-hour standard should be sufficient to protect the annual standard since the 24-hour standard has always been the standard of concern.

Data presented throughout this document are utilized to demonstrate maintenance of the PM10 NAAQS for the Telluride area. Chemical Mass Balance (CMB) data are used to generally identify the sources of emissions that influence ambient PM10 concentrations. The 1996 emission inventory is used to further refine this CMB-source identification. This information is then used to apportion the design day concentration (see Section 2.C.), which becomes the basis for the "roll forward" modeling. The apportioned design day concentration is then projected, or rolled forward, into the future based on the changes that occur in the emissions inventory from 1996 to 2012. If this 2012 projection is below the 24-hour PM10 NAAQS of 150 ug/m^3, then maintenance is demonstrated. As demonstrated below, the 2012 maintenance concentration for the Telluride/Mountain Village/San Miguel County attainment/maintenance area is **147 ug/m^3**.

The following presents CMB roll-forward methodology that was used to calculate the 2012 maintenance concentration. First, CMB data for select concentrations that occurred in 1994, 1995, and 1996 are presented below. The source apportionments from each of these days were averaged to develop a design day apportionment for use in the roll-forward modeling. Many concentrations that occurred prior to 1994 underwent CMB analyses, but the results are not utilized here because the control measures adopted as part of the nonattainment SIP Element had not been fully implemented. Also, a number of higher concentration filters were analyzed, but the CMB modeling did not meet diagnostic criteria. These concentrations are: 127 ug/m^3, 3/22/94; 153 ug/m^3, 4/13/94; 103 ug/m^3, 3/15/95; 107 ug/m^3, 1/19/96; 105 ug/m^3, 3/15/96; and 87 ug/m^3, 3/21/96 (detailed information on the CMB modeling can be found in the Technical Support Document). Second, the roll-forward modeling, which utilized the CMB and emissions data (which accounts for growth as well as controls) contained in this section, is presented below.

1. CMB Source Apportionments

333 W. Colorado Avenue Monitoring Site

Date	PM10 (ug/m^3)	Geological Material (%)	Vegetative Burning (%)	Ammonium Nitrate (%)	Ammonium Sulfate (%)	Mobile Source (%)	Unknown (%)	Valid CMB?
3/15/94	123	98	0	0	0	1	1	Y
3/16/95	119	77	11	1	0	2	10	Y
11/16/95	67	85	17	1	0	0	3	Y
11/17/95	67	88	12	1	0	0	1	Y
11/19/95	86	86	13	1	0	0	4	Y
11/21/95	95	89	14	1	0	0	4	Y
11/22/95	67	69	16	1	0	0	13	Y
12/23/95	66	71	28	1	0	0	0	Y
12/24/95	81	77	21	1	1	0	0	Y
12/25/95	69	71	27	1	1	0	0	Y
12/29/96	79	76	20	1	0	0	3	Y
2/16/96	54	79	20	1	1	1	1	Y
2/24/96	52	85	11	1	2	1	1	Y
3/11/96	89	73	10	1	1	1	15	Y
Average	**80 ug/m^3**	**80%**	**16%**	**1%**	**0%**	**0%**	**4%**	**101%**

Geological = Sources rich in crustal elements, such as street sand, soil, road dust, cement batch plant emissions.
Vegetative Burning = Carbon-rich sources such as woodburning and restaurants.
Ammonium Nitrate = NH_4NO_3 formed in the atmosphere from NO_x and NH_3.
Ammonium Sulfate = $(NH_4)_2SO_4$ formed in the atmosphere from SO_2 and NH_3.
Mobile Source = Auto, truck, and aircraft exhaust.

* Details regarding these CMB results can be found in the Technical Support Document to this plan.

2. Roll-forward Analysis

Normalize the Average CMB Apportionments to 100%:

80% + 16% + 1% + 0% + 0% + 4% = 101%
100 / 101 = 0.99

80% x 0.99 =	79%
16% x 0.99 =	16%
1% x 0.99 =	1%
0% x 0.99 =	0%
0% x 0.99 =	0%
4% x 0.99 =	4%
	100%

Subtract the Background Concentration from the Design Value Concentration:

The background concentration is subtracted from the design day concentration of 101 ug/m^3 (see Section 2.C.) because the background concentration would remain if all emissions in the emissions inventory were reduced to zero. A background PM10 concentration of 8 ug/m^3 is assumed to occur on any given day in the area, as described in the August 1995 SIP Element.

Design Day Concentration:	101 ug/m^3
Background Concentration:	- 8 ug/m^3
	93 ug/m^3

Apportion the Design Day Concentration with the Normalized CMB Apportionments:

Geologic:	93 x 0.79 =	73.47 ug/m^3
Vegetative Burning:	93 x 0.16 =	14.88 ug/m^3
Ammonium Nitrate:	93 x 0.01 =	0.93 ug/m^3
Ammonium Sulfate:	93 x 0.00 =	0.00 ug/m^3
Mobile Source:	93 x 0.00 =	0.00 ug/m^3
Unknown:	93 x 0.04 =	3.72 ug/m^3
		93.00 ug/m^3

Percent Changes in Emissions between 1996 and 2012 (these percents will be used to roll-forward the CMB apportionments to the year 2012)

Highways, Paved/Unpaved Roads, and the Cement Batch Plant: emissions increase by 3548 lbs./day, or **54.7%**
Woodburning and Restaurants: emissions increase by 69 lbs./day, or **37.9%**
Vehicle and Aircraft Exhaust: emissions increase by 6 lbs./day, or **22.2%**

Roll-forward Apportionments to 2012 by the Percent Changes in Emissions from 1996 to 2012

Geologic: Re-entrained fugitive dust from highways, paved roads, unpaved roads and stationary sources are assumed to contribute all geologic emissions that resulted in 73.47 ug/m^3 of PM10. This concentration will change by the percent change in emissions from these sources.

73.47 ug/m^3 x 1.547 = **113.66 ug/m^3**

Vegetative Burning: Woodburning and restaurants are assumed to contribute all vegetative burning emissions that resulted in 14.88 ug/m^3 of PM10. This concentration will change by the percent change in emissions from these sources.

14.88 ug/m^3 x 1.379 = **20.52 ug/m^3**

Ammonium Nitrate: Unknown sources contributed emissions that resulted in 0.93 ug/m^3 of secondary PM10. It is assumed that this concentration remains constant because no emissions can be assigned to this category.

0.93 ug/m^3 x 1.000 = **0.93 ug/m^3**

Unknown: Unknown sources contributed emissions that resulted in 3.72 ug/m^3 of PM10. To be conservative, it is assumed that this concentration will change by the percent change in mobile and aircraft exhaust emissions. (This assumption is made because vehicle and aircraft exhaust emissions were virtually undetectable in the CMB analyses, not because there were no exhaust emissions, but probably because the CMB model has difficulty distinguishing exhaust from other sources.)

3.72 ug/m^3 x 1.222 = **4.55 ug/m^3**

Total of Apportionments in 2012 Plus the Background Concentration Results in the Maintenance Demonstration

113.66 + 20.52 + 0.93 + 4.55 + 8 = **146.73 ug/m^3**

D. EMISSION BUDGET

Federal "transportation conformity" regulations provide for the use of mobile source emission budgets in making conformity determinations in the area. The emission budget serves as a ceiling on mobile source emissions that federally funded or approved transportation projects must comply or "conform" with.

This maintenance plan establishes an emission budget for the area of 10,001 lbs./day for 2012 and beyond for the modeling area. This budget is the total of the 2012 mobile source PM10 emissions presented in B.2. above, which includes emissions from vehicle exhaust, highways, paved collector roads, paved local roads, and dirt roads. This budget has been adopted in the AQCC's "Ambient Air Quality Standards for the State of Colorado" regulation.

E. MONITORING NETWORK/VERIFICATION OF CONTINUED ATTAINMENT

The APCD has monitored ambient PM10 concentrations in the Telluride area since 1986. The APCD has operated, and will continue to operate, the Telluride PM10 monitoring network in full accordance with the federal provisions of 40 CFR Part 58 and the EPA-approved Colorado Monitoring SIP Element. The APCD will also analyze the monitoring data to verify continued attainment of the PM10 NAAQS. This information will provide the necessary information to determine whether the Telluride area continues to attain the PM10 NAAQS. Detailed information regarding the State's monitoring efforts and historical monitoring data can be found in Section 2. of this document.

F. CONTINGENCY PLAN

Section 175(A)(d) of the CAA requires that the maintenance plan contain contingency provisions to assure that the State will promptly correct any violation of the PM10 NAAQS that may occur after the redesignation of the area to attainment. EPA's redesignation guidance 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 contingency measures are adopted expediently once the need is 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.

1. Tracking

The tracking plan for the Telluride area will consist of monitoring and analyzing PM10 concentrations. In accordance with 40 CFR Part 58, Colorado will continue to operate and maintain the Telluride PM10 monitoring network.

2. Trigger and Response

Triggering of the contingency plan does not automatically require a revision of the SIP nor is the area necessarily redesignated once again to nonattainment. Instead, the State will normally have an appropriate time-frame to correct the violation with implementation of one or more adopted contingency measures. In the event that violations continue to occur, additional contingency measures will be adopted until the violations are corrected.

Upon notification of a PM10 NAAQS exceedance, the APCD and local government staff in the Telluride area will develop appropriate contingency measure(s) intended to prevent or correct a violation of the PM10 standard. Information about historical exceedances of the standard, the meteorological conditions related to the recent exceedance(s), and the most recent estimates of growth and emissions will be reviewed. The possibility that an exceptional event occurred will also be evaluated. (Notification to EPA, and to the local governments in the Telluride area, of any exceedance will generally occur within 30 days, but no later than 45 days.) This process will be completed within six months of the exceedance notification. If a violation of the PM10 NAAQS has occurred, a public hearing process at the State and local level will begin. If the AQCC agrees that the implementation of local measures will prevent further exceedances or violations, the AQCC may endorse or approve of the local measures without adopting State requirements. If, however, the AQCC finds locally adopted contingency measures to be inadequate, the AQCC will adopt State enforceable measures as deemed necessary to prevent additional

exceedances or violations. Contingency measures will be adopted and fully implemented within one year of a PM10 NAAQS violation. Any State-enforceable measures will become part of the next revised maintenance plan, submitted to the Colorado Legislature and EPA for approval.

3. Potential Contingency Measures

The APCD and local government staff may choose one or more of the following contingency measures to recommend to local officials and the AQCC for consideration. Contingency measures will be selected that quickly bring the area back into compliance with the PM10 NAAQS and that specifically meet the needs of the Telluride area. It is likely that no 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.

- Transportation control measures designed to reduce vehicle miles traveled
- Increased street sweeping requirements
- Additional road paving requirements
- More stringent street sand specifications
- Voluntary or mandatory woodburning curtailment or bans
- Bans on all woodburning
- Expanded use of alternative de-icers
- Re-establishing new source review permitting requirements for stationary sources
- Other emission control measures appropriate for the area based on the consideration of cost-effectiveness, PM10 emission reduction potential, economic and social considerations, or other factors that the State deems appropriate.

G. SUBSEQUENT MAINTENANCE PLAN REVISIONS

As stated above, it is required that a maintenance plan revision be submitted to the EPA eight years after the original redesignation request/maintenance plan is approved. This revision is to provide for maintenance of the NAAQS for an additional ten years following the first ten-year period. A maintenance plan revision will be submitted to EPA no later than December 31, 2008. This implies that staff work and all public hearings will be completed by November 1, 2007, and Colorado Legislative review and approval is completed by June 1, 2008.