

6.0 CONTROL MEASURES

In order to redesignate Yuma to attainment, Clean Air Act Section 107(d)(3)(E)(iii) requires that the Administrator must determine that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of control measures. The Administrator must also fully approve a Maintenance Plan that meets the requirements of Section 175A. Section 175A requires that the Maintenance Plan contain such additional control measures as may be necessary to ensure maintenance for at least 10 years after redesignation.

6.1 Attainment Demonstration Control Measures

Prior to the Clean Air Act Amendments of 1990, Yuma was categorized as a Group I PM₁₀ nonattainment area with a 95 percent or higher probability of exceeding the standards for particulate matter. The two largest source categories at that time were agricultural burning and unpaved roads. The 1990 Amendments designated all Group I areas by operation of law as moderate PM₁₀ nonattainment areas. The Act required moderate PM₁₀ nonattainment area plans for such areas to include provisions to ensure implementation of reasonably available control measures (RACMs) by December 10, 1993, to achieve attainment by December 31, 1994. RACM and RACT were not required, however, for sources that did not contribute significantly to violations of the 24-hour or annual PM₁₀ NAAQS, or if additional controls on the sources would not have expedited attainment of the NAAQS. Section 189(e) of the Act required implementation of RACM for major stationary sources of gaseous precursors of PM₁₀, except where EPA determined that such sources did not contribute significantly to PM₁₀ levels above the standard.

6.2 Adopted Attainment Control Measures

ADEQ originally began working with the Yuma area stakeholders in 1991 to identify the significant sources of PM₁₀ emissions in the Yuma area. The stakeholders included Federal, state, and local agencies; the Irrigation Districts and the Yuma County Water Users' Association; and the Indian tribes in the area. ADEQ and the stakeholders identified the measures that were needed to control these emissions that could be implemented in the Yuma area by December 10, 1993. The initial SIP designed to bring Yuma into attainment was submitted to EPA November 15, 1991.

Chapters 5 and 6 of the 1991 SIP explained the determination that in order to reduce Yuma's PM₁₀ design value of 52 µg/m³ to 50 µg/m³ or less, an emission reduction of six per cent from the 1990 emission inventory, equivalent to 405.6 tons per year (TPY), would be required by 1994. Chapter 3 of the 1991 SIP explained that a 1.1% emission reduction from the 1990 baseline, 67.5 TPY, would be achieved through two measures: (1) conversion of agricultural land to residential use at the rate of approximately 1% per year from 1987-2000, and (2) projected County paving projects. Yuma County's projected paving rate was 5 miles per year of unpaved roads or unpaved parking lots and stabilization of an additional five miles of unpaved roadways per year. Additional control measures were required for the remaining 5% reduction from the 1990 PM₁₀ baseline. Reduction of traffic on unpaved Irrigation District roads achieved in 1991 through improved weed control operations had already reduced Vehicle Miles Traveled (VMT) by an estimated 25,478 or 32% of the 80,000 VMT reduction needed, resulting in 17.47 TPY in

emission reductions in 1991, as discussed on Page 47. Table 6.0 on page 48 of the 1991 SIP listed 16 RACMs considered to achieve attainment by 1994, noted that not all had been adopted, and identified the selected attainment demonstration measures. Control of dust from storage piles was RACM already included in the base case, and Table 6.0 did not list the estimated emission reductions from this measure. The other adopted RACMs were estimated to result by the end of 1994 in 403.6 TPY reductions with an additional non-creditable reduction of 3.8 TPY from a reduced tillage demonstration project, slightly more than the total tonnage reduction needed. Table 6.1 on page 49 of the 1991 SIP listed measures selected and modeled to maintain the PM₁₀ standard through the year 2000, with slightly increased reductions from the covered haul truck and rerouted traffic RACMs and significantly greater reductions from the reduced traffic on unpaved roads RACM.

In a letter dated May 14, 1992, EPA stated that deficiencies in the 1991 SIP prevented approval but did not list the deficiencies. A copy of this letter appears in **Appendix J**. ADEQ and Yuma stakeholders developed a revised SIP that was submitted to EPA in July, 1994. EPA's Completeness Determination letter for this SIP is also in **Appendix J**. The 1991 SIP listed in Table 4.1 on pages 28-29 one RACM that had been modeled in the base case (#14 Control dust from storage piles), eight newly adopted RACMs, a reduced tillage demonstration project that was not creditable, and four RACMs that were not adopted. The Executive Summary and Table 4.0 of the 1994 SIP stated that the revised emissions reductions were estimated at 599.8 TPY in 1994, which was 52.6% or 206.8 TPY beyond what was required to demonstrate attainment. Table 4.2 showed projected emissions for 2000. By 2000, emissions reductions were projected to be 459.7 TPY, which was 69.2% or 188 tons beyond what was required to demonstrate maintenance through the year 2000. Table 6.1 of the 2006 Maintenance Plan lists the RACMs in the 1994 SIP selected to achieve attainment by 1994. Table 6.1 estimated that these control measures would result in a PM₁₀ emissions reduction amounting to 599.8 tons in 1994.

Table 6-1. Reasonably Available Control Measures (RACMs) Adopted in the Yuma Moderate PM₁₀ Nonattainment 1991 and 1994 SIPs

Reasonable Available Control Measure	Total Units In Inventory	Total Units Treated	Treatment Efficiency	Estimated Uncontrolled Emissions Tons/ Year	Estimated Reduction Tons/Year
Control of dust from storage piles (modeled as RACM in the Base Case)	See Tables 6.0 and 6.1 in 1991 SIP; Tables 2 and 3 in 1994 SIP	See Tables 6.0 and 6.1 in 1991 SIP; Tables 2 and 3 in 1994 SIP	See Tables 6.0 and 6.1 in 1991 SIP; Tables 2 and 3 in 1994 SIP	See Tables 6.0 and 6.1 in 1991 SIP; Tables 2 and 3 in 1994 SIP	See Tables 6.0 and 6.1 in 1991 SIP; Tables 2 and 3 in 1994 SIP
Yuma County Open Burning Permit Program	27, 923 acres	17,958 acres		455.6	293.0
Pave Unpaved Roads	254 miles	10 miles	0.9	2,063.1	73.1
Stabilize Unpaved Roads		18.3 miles	0.6		88.9
Reduce Traffic on Unpaved Roads	400 miles Irrigation Districts; 250 miles public roads	200 miles	0.4	292.1	54.6
Pave Parking Areas	33 parking lots	20 parking lots	0.9	60.4	31.1
Stabilize Parking Areas		13 parking lots	0.5		11.9
Travel Reduction Strategies	337,000 vehicle miles traveled (VMT)	50,000 VMT reduction	1.0	105.0	14.9
Cover Haul Trucks	Data not available	80% compliance rate	0.8	16.8	13.4
Temporary Sources of Dust on Paved Roads	Data not available	Data not available	0.8	16.8	13.4
Dust Control Plans for Construction Land Clearing	500 acres	48 acres	0.9	60.0	5.4
Control Dust on Open Land	10,000 acres	10 acres	0.9	116.8	0.1
Total Estimated Emissions Reduction (beyond Base Case)					599.8

SOURCE: *Final State Implementation Plan Revision for the Yuma PM₁₀ Nonattainment Area, July 1994, pp. 28-29 and cited Tables from 1991 and 1994 SIPs.*

A comparison of the control measures contained in the 1991 SIP and the 1994 update to the SIP displayed in Table 4.0 of the 1994 SIP appears below, with additional information, in Table 6.2.

Table 6-2. Comparison of Commitments to Reasonably Available Control Measures Adopted in 1991 and 1994 by the Implementing Agencies in the Yuma Moderate PM₁₀ Nonattainment Area

RACM DESCRIPTION	1991 COMMITMENTS	1994 COMMITMENTS	CHANGE
Control of dust from storage piles	Modeled in the Base Case	No change	None
Pave or chemically stabilize unpaved roads	Pave: 5 miles/year	Pave: 43.05 miles	Pave: +39.05 miles
	Chemically stabilize: 5 miles/year	Chemically stabilize: 18.3 miles. U.S. Army Yuma Proving Grounds and Immigration and Naturalization Service also stabilized roads	Chemically stabilize: +15.36
Provide for traffic rerouting or rapid clean up of temporary (and not readily preventable) sources of dust on erosion runoff, mud/dirt carryout areas, material spills, skid control sand). Delineate who is responsible for cleanup	Somerton: ¼ mile farmland trackout elimination by 12/31/93	Somerton: 6 hours	Somerton: +6 hours
	City of Yuma: No credit claimed	Yuma: 45 minutes	Yuma: +45 minutes
	Yuma County: No credit claimed	Yuma County: 6 hours	Yuma County: +6 hours
Require dust control plans for construction or land clearing projects	Not adopted	Annual average number of projects: 48	+48 projects
Pave or stabilize unpaved parking areas	Pave: Not adopted	Pave: 20 parking lots 366.5 acres	Pave: +20 parking lots +366.5 acres
	Chemically stabilize: Not adopted	Chemically stabilize: 13 parking lots 15.4 acres	Chemically stabilize +13 parking lots; +15.4 acres

RACM DESCRIPTION	1991 COMMITMENTS	1994 COMMITMENTS	CHANGE
Reduce traffic on unpaved roads through use of speed bumps, low speed limits, barricades, ticketing trespassers to encourage use of paved roads, and use of fish for weed control instead of heavy equipment	Irrigation District roads: Reduced authorized use of 38,370 VMT by 25,478 VMT (17.47 TPY) in 1991; Commit to further reduce 54,522 VMT unauthorized use; 54.6 TPY	No change to total reduction goal of 80,000 VMT by 1994 on Irrigation District roads; City of Yuma added barricades;	No change
Require haul trucks to be covered	Number of haul trucks compliance target: 80%; 13.4 TPY by 1994	Resolutions adopted 11/5/91 by Somerton to enforce Arizona Administrative Code R18-2-406 starting 1992 (later renumbered R18-2-606); by City of Yuma 11/4/91 and 6/15/94; and Yuma County 11/6/91 to promote compliance with A.R.S. § 28-1873 . * City of Yuma Ordinance No. 2638 requires haul trucks to be covered. Number of haul trucks estimated at 52,665	No change
Control dust on open land and require curbing and pave or stabilize (chemically or with vegetation) shoulders or paved roads	No commitment	10 acres MCAS MOU	+10 acres + 0.1 TPY
Enforce policies and procedures that will have the effect of reducing vehicle miles traveled (VMT) in the nonattainment area	Annual VMT reduction: No commitment	Marine Corps Air Station bicycle path to City of Yuma and required carpooling Annual VMT reduction: 50,000	Annual VMT reduction: +50, 000 +14.9 TPY

*Copies of City of Somerton Resolution No. 405 (1991); City of Yuma Resolution Nos. 2682 (1991) and 2800(1994); and Yuma County Resolution Nos. 91-38 and 91-52; and A.R.S. § 28-1098 (formerly numbered §28-1873) appear in **Appendix H** for information purposes.

6.3 Implemented Attainment Control Measures

Details of these measures implemented 1994-2001 are explained in the combined Local Government Agencies Annual RACM Reporting Form in **Appendix G**. A detailed list of the area source reasonable available control measures (RACMs) implemented in the Yuma area and the PM₁₀ emission reductions attributed to each RACM for 2000 through 2004 is provided in Table 6-3. General descriptions of implemented measures and total emission reductions achieved from each category of control measure appear in narrative form below. One of the outcomes of the stakeholder process during the 1991–1994 timeframe was the formation of an air quality advisory group made up of ADEQ and Yuma area stakeholders. The purposes of the group were to track the effectiveness of the 1991 PM₁₀ plan and the 1994 plan update, to analyze the results of implementing the control measures in the plan, and to recommend additional control measures as necessary and appropriate.

6.3.1 Control of Dust From Storage Piles

Both the 1991 and 1994 SIPs list this strategy as one that was modeled as Reasonable Available Control Measure (RACM) in the Base Case, but the SIPs do not contain any details about this measure. ADEQ has been unable to quantify emission reductions from this RACM included in the Base Case.

6.3.2 Yuma County Open Burning Permit Program

In 1998, ADEQ proposed adding Appendix C to its 1996-2000 Delegation Agreement with Yuma County to delegate the authority to perform open burning management activities throughout Yuma County. Apparently Appendix C was not finalized. Effective March 12, 2002, ADEQ entered into a Memorandum of Understanding (MOU) with the Yuma County Department of Health Services pursuant to A.R.S. § 49-501.E. and § 38-101, copies of which are in **Appendix H** for information purposes. The MOU will be renewed every five years. Under this MOU, the Yuma County Rural Metro Fire Department (Rural Metro) administers this open burning permit program following the Arizona Guidelines for Open Burning and using ADEQ permit application forms and procedural guidelines. Any individual who wishes to conduct an open burn in Yuma County must first obtain a permit from Rural Metro. Issued permits contain conditions allowing burning only when atmospheric conditions allow the dispersion of smoke and PM₁₀ resulting from the open burn. This program is in effect countywide and also reduces emissions that would otherwise contribute to poor air quality within the air quality planning area. A copy of this MOU and the Guidelines, still in effect, appear in **Appendix H** for information purposes.

Table 6.3 discloses that significant PM₁₀ reductions in the Yuma area has been achieved through the open burning permit program selected in the 1994 SIP on page 32. Wheat was being grown and burned on 27,923 acres in the Yuma Nonattainment Area in 1986, the latest year for which data were available for modeling from the Bureau of Land Management and U.S. Department of Agriculture. Of this amount, Yuma stakeholders agreed that the open burning permit program for Yuma would limit the maximum acreage of wheat that could be burned in any one year to 9773 acres. Consequently, emissions from open burning were decreased by **293.0 TPY** by 1994 and emissions have dropped even further in subsequent years, as explained below.

Rural Metro began keeping records in 1998 on permits issued and acreage burned, and it is still administering this open burning program in 2006. The agricultural stakeholders in the Yuma area have informed ADEQ that as a result of the residential and commercial development that has occurred in the Yuma Valley since 1994, fewer and agricultural fields remain to be burned.

ADEQ issued open burn acreage permits for fewer than 6500 acres per year during the period 1994-1996. Rural Metro furnished ADEQ with a report that Rural Metro issued permits for fewer than 9,000 acres each year for the period 1998-2004. Three Rural Metro employees operate the program. In 2005, Rural Metro issued permits to burn a total of 3,080 acres. The total acreage permitted for open burns in 2005 is substantially lower than the cap of 9,773 acres. The ADEQ and Rural Metro open burn acreage reports appear in **Appendix H**.

The City of Yuma informed ADEQ that it issued burn permits for only 20.5 acres of brush and weeds to be burned in 1998 within its jurisdiction. It issued burn permits for 220 acres of plants, plant material, tree trimmings, and weeds to be burned in 1999. As the information from Rural Metro and the City of Yuma attests, particulate matter from open burning has diminished substantially since 1991.

The Yuma County Open Burning Permit Program has been fully implemented. Less than 3500 acres have been burned the last two years, 6473 fewer acres burned than the 9773 acre cap agreed to in the 1994 SIP. Emission reductions from this program 2000-2005 have averaged **309 TPY**.

6.3.3 Unpaved Roads

The second largest source category of PM₁₀ reduction has been achieved from control measures applied to unpaved roads. These roads are under the jurisdictions of the City of Yuma, City of Somerton, Yuma County; the local Irrigation Districts; the Yuma County Water Users' Association (YCWUA); and the Marine Corps Air Station (MCAS) in Yuma. According to the 1991 SIP, Irrigation Districts have jurisdiction over 400 miles of unpaved roads and 250 miles of unpaved roads existed in Yuma County in addition to the canal roads. Yuma County requires developers to pave all new private roads upon rezoning.

Two principal canals in the nonattainment area are used for water delivery, the East Main Canal and the West Main Canal. There are service roads on either side of these canals. Traffic can travel in either direction on these roads. These canals are owned by the Bureau of Reclamation, but are they are maintained by the YCWUA. The YCWUA issued an Encroachment License to the City of Yuma on January 2, 1996, to allow the City to construct operate and maintain a pathway along the East Main Canal from First Street to 40th Street. The City Police Department is to patrol pursuant to Attachment 1 to this Encroachment License, contained in **Appendix H** for information purposes. Unauthorized traffic, all terrain vehicles (ATVs), and other suspicious activity have been reported along this stretch of canal. The City of Yuma routinely receives and responds to a number of complaint calls about the unauthorized traffic on this part of the canal. A complaint number has been established that the public can use to report the license plate number of unauthorized or speeding vehicles on any unpaved roads.

YCWUA plans to expand the bike path and walkway to County 12 Street, but it estimates project completion in 5 years. A Yuma County Deputy Sheriff also works sixteen to twenty hours a week patrolling the canal roads under the jurisdiction of the YCWUA, all 400 miles of unpaved canal banks. In addition, YCWUA maintenance people prevent unauthorized traffic from using the canal roads. YCWUA and the Irrigation Districts also installed “No Trespass” signs and barricades in 1997 and added 50 signs in 1999 to discourage and prevent unauthorized vehicles on canal roads. Barricades have been installed at both sides of County 11 ½ and at County 13th Streets. Track-out resulting mostly from passenger cars is created where the canal roads link to the main roads. The YWCUA routinely waters and grades these roads, which mitigates dust emissions from this source.

YCWUA and the local Irrigation Districts have also reduced traffic on the unpaved canal roads by introducing weed-eating fish into the canals, obviating the need to use heavy equipment on these roads to remove weeds. YCWUA restocks the canals with 8,420 white amurs annually. YCWUA and the local Irrigation Districts added 7/8 of a mile of pipeline to the canal in 1995, 0.5 miles in 1996, 0.64 miles of canal in 1997, and 4 miles to the canal in 1999, which further reduces the need for weed control in the canals. YCWUA also restricts the unauthorized use of the canal roads. These entities also closed 1.2 miles of canal road in 1995 and 2.4 miles of canal roads in 1999. Emission reductions from these efforts 1991-2005 total **19.9 TPY**.

In the nonattainment area, the county roadways are primarily the section line roads, some of which are unpaved. Yuma County Public Works Department (YCPWD) has the legal responsibility to water, grade and compact the county unpaved roads in the Yuma Nonattainment Area. YCPWD can maintain, as a courtesy, public highways that were established by June 13, 1975, and all roads established by the Yuma County Board of Supervisors. The maintenance schedule varies from once every two weeks to once every two months, depending upon the daily traffic on the road. YCPWD increases its maintenance schedule during the vegetable growing season because the roads experience more use during that time. Unplanned unpaved roads are created in the Yuma Nonattainment Area by wildcat development and illegal lot splits. Wildcat subdivisions are on the Yuma Mesa. YCPWD does not have the legal authority to maintain these unpaved roads. Somerton waters the same 1211 miles of unpaved roads that it sweeps, but it does not apply chemical dust suppressants. Emissions reductions resulting from these watering and chemical stabilization programs 1991-2005 are estimated at **401 TPY**.

The agricultural producers water county unpaved roads during the growing season, in addition to the watering by YCPWD. The growers do this extra watering to prevent dust from these roads settling on their crops.

The most effective control measure for unpaved roadways is paving. Between 1991 and 1999, a combined **57.214 miles** of unpaved roads were **paved** in all of these jurisdictions and **21.5 miles** of unpaved road shoulders were **chip sealed**. Combined PM₁₀ emissions reductions from these measures totaled **5,560 Tons (695 TPY 1991-1999)**. Between 2000 and 2004, an additional **82 miles** of unpaved road, alleys and shoulders were **paved**. Developers in Yuma County’s jurisdiction added 12 miles per year of new paved roads during this period. Combined PM₁₀ emissions reductions from these measures totaled **3,162 Tons (527 TPY 2000-2004)**.

The grand totals are 139.2 miles paved and 21.5 miles chip sealed 1991-2004. Combined PM₁₀ emissions reductions from these measures totaled **8,722 Tons** (averaging out to **581 TPY 1991-2004**). These implemented unpaved road control measures far exceeded the SIP commitment of 216.6 TPY from 39.05 miles paved. The City of Somerton has also paved 35,720 feet of alleys 1994-2001.

Paving emission reductions are not viewed as TPY emission reductions. Instead, the Emissions Inventory has been adjusted to reflect the reduction of unpaved miles and the increase in paved miles. Annual emission reductions for control of dust on paved roads are reflected in street sweeping emission reduction calculations.

The Department of Homeland Security (known as the U.S. Immigration and Naturalization Service at the writing of the original SIP) also has unpaved roads under its jurisdiction. The Department agreed to reduce PM₁₀ attributable to dragging unpaved roads to imprint the footprints of illegal aliens entering the United States and to water 348.5 miles of gravel roads.¹

MCAS has a stabilization program for its remaining unpaved roads and also prevents unauthorized vehicles from using unpaved roads on the air station. Each year during the 2002–2005 timeframe, it restricted flight line vehicle access onto 4 miles of unpaved roads on the air station. Beginning in 2002, it maintains speed limit signs limiting the speed on a six mile stretch of unpaved road to 15 miles per hour.

6.3.4 Unpaved Parking Areas

The Cities of Yuma and Somerton committed to controlling dust from a total of 33 unpaved parking lots. Effective February 1979, the City of Yuma has had a zoning requirement that all new parking lots must be paved in Section 154-396 (E). Effective October, 1997, Yuma County Planning and Zoning Ordinance Part A §906.00 has required that all new parking lots must be paved.

A Memorandum of Agreement (MOA) between the Marine Corps Air Station (MCAS) and ADEQ was entered into in late 1992. The MOA and ordinances are in **Appendix H** for information purposes. MCAS agreed to paving commitments. Between 1991 and 1999, **201,250 square feet** of parking lots were **paved**, resulting in **2.6 Tons (0.3 TPY 1991-1999)** PM₁₀ emission reductions. Between 2000 and 2005, an additional **894,750 square feet** of unpaved parking lots and roads were **paved**. An additional **11.3 Tons (2.3 TPY 2000-2005)** PM₁₀ emission reductions resulted.

Total paving of previously unpaved parking lots is **1,096,000 square feet 1991-2005**. PM₁₀ emissions reductions from these measures totaled **13.91 Tons (1.7 TPY 1991-2005)**.

The jurisdictions chemically stabilized 13 other parking areas, resulting in **4.9 Tons** of reductions. Effective October, 1997, Yuma County Planning and Zoning Ordinance Part B §906.00 has required private sector chemical stabilization with dust-inhibitor treated ABC of

¹ This information was obtained through personal communication between ADEQ staff and Homeland Security personnel.

parking lots with more than 6 but less than 25 parking spaces. The zoning requirements are contained in **Appendix H** for information purposes and on Yuma County's web site.

Adding the emissions reductions from paving and stabilizing unpaved parking areas in Table 6.3 results in a combined **grand total** reductions of **18.8 Tons (1.4 TPY) from paving and chemical stabilization** were achieved. Details appear in Table 6-3.

6.3.5 Travel Reduction Strategies

Several strategies are described in the MOA between MCAS and ADEQ entered in late 1992. The MOA is in **Appendix H** for information purposes. MCAS worked with the City of Yuma to create a bicycle path from MCAS to Yuma for the purpose of reducing motor vehicle trips. MCAS constructed all 3 miles of bicycle path in 1995. MCAS provides bicycles free of charge to personnel on the installation. MCAS estimated that **2,600** cars were eliminated on their installation 1995-2003 as a result of issuing bicycles to messengers.

MCAS has also required carpooling for all administrative trips and other off-station trips beginning in 1991. MCAS estimates that off-station trips were reduced by 11,700 cars per year as a result of carpooling and 780 cars a year were eliminated from making off-station trips during the 1995–2005 timeframe.

This control measure has been fully implemented. Emissions reductions achieved from these strategies total **4.8 TPY**.

The 1994 SIP commitment estimated 14.9 TPY PM₁₀ reductions from this measure. The 10.1 TPY shortfall has been offset by the surplus emission reductions from the paving measures implemented as described in 6.3.3 above. In addition, the Yuma region has a mass transit system. Yuma Metropolitan Planning Organization (YMPO) informed ADEQ that in 2004, the ridership on the region mass transit system increased 88.9%.

6.3.6 Covered Haul Trucks

Yuma County Resolution **91-38** adopted a fee schedule for uncovered trucks taking loads to the Sanitary Landfill, effective in 1992. Yuma County dedicated these fees for cleanup of materials that have fallen out of uncovered trucks en route to the landfill, including PM₁₀. Fee collection was subsequently repealed. The City of Yuma Ordinance No. **2638** requires haul trucks to be covered or tarped to prevent materials from becoming airborne. A copy is in **Appendix H** for information purposes.

Law enforcement personnel for the municipalities concluded, after consultation with their legal representatives, that A.R.S. § **28-1098 (formerly -1873)** and **R18-2-606** do not provide them with sufficient authority to pursue enforcement for each such truck. These jurisdictions plan to pursue legislation to add language they need. This strategy has not been fully implemented.

The 13.4 TPY estimated for this control measure has been obtained instead through surplus emission reductions from the paving measures implemented as described in 6.3.3 above.

6.3.7 Temporary Sources of Dust on Paved Roads

The Cities of Yuma and Somerton and Yuma County committed to providing for traffic rerouting and rapid cleanup of sources of dust on paved roads within their respective jurisdictions by December 10, 1993, in Resolutions that appear in **Appendix H** for information purposes. The control of this source of dust was achieved through the adoption of quick cleanup policies emphasizing the importance of avoidance of spills, quick notification, and rapid cleanup. Table 6-3 shows an estimated **13.4 TPY** PM₁₀ reduction has been achieved from this source category since 1994.

The Cities of Yuma and Somerton and Yuma County have operated street sweeping programs for years, above and beyond the commitment made in the 1994 SIP. The City of Yuma program began 35 years ago and includes watering. The City swept 1183 miles on paved roads each year during the 1995–1999 timeframe, reducing re-entrained road dust emissions by **0.35 TPY**. Currently, the City of Yuma owns a total of six street sweepers. Four are PM₁₀ certified Elgin/Broombear street sweepers from two to five years old and two are standard street sweepers. Three PM₁₀ certified sweepers and the two standard street sweepers are operated one shift daily, five days/week. The five street sweepers run forty hours a week and are also operated during special call outs and events on an “as needed” basis. The fourth PM₁₀ efficient street sweeper costing \$167,000 was partially funded by a \$25,000 grant from ADEQ’s Division of Water Quality in 2005. It will serve as a spare held in reserve in case one of the others is out of service. The City of Yuma Department of Public Works Street Sweeping Plan is included in **Appendix H**. The City of Yuma sweeps 292 miles of paved roads at the frequencies described in its Street for information purposes Sweeping Plan. An average of **17,128 miles are swept annually**, resulting in emissions reductions of **64 TPY**.

The City of Somerton owns one street sweeper that is not PM₁₀ efficient and intends to replace it in 2008 with a street sweeper that is PM₁₀ efficient. Its newest sweeper, standard, was purchased in March 2000. Somerton’s records begin with 1998. Starting in 2001, Somerton has swept at least 2500 miles each year, resulting in emissions reductions of **0.38 TPY**.

Yuma County owns one PM₁₀ efficient street sweeper and spends approximately \$50,000 per year on street sweeping operations. The County swept **3,238** miles each year during the 1997–1999 timeframe resulting in emissions reductions of **1.0 TPY**.

MCAS also has a street sweeping program. Its street sweeping equipment is operated in a manner that minimizes dust, including using water during operations. During the 1995–2005 timeframe, MCAS swept **1,628,643 square yards/year** of the airfield on the installation. Combined PM₁₀ emission reductions from the municipalities and MCAS total **1.1 TPY**.

STREET SWEEPING				
Jurisdiction	Years	Duration	Tons/Year	Total Tons
City of Yuma	1995-1999	5	0.35	1.75
City of Yuma	2000-2005	6	64.00	384.00
City of Somerton	1998-2005	6	0.38	3.04
Yuma County	1997-1999	3	1.0	3.0
MCAS	1995-2005	11	1.1	12.1
TOTALS			37	403.89

Grand total emission reductions from these control measures beginning in 1995 are estimated as **404 Tons**, with an average reduction of **0.637 TPY**.

6.3.8 Dust Control Plans for Construction Land Clearing

The jurisdictions of Yuma, Somerton, and Yuma County have all adopted local laws that require some level of dust mitigation during construction projects.

Yuma County adopted Resolution 88-28 effective July 18, 1988. Yuma County requires in Section 201.3 Dust Control that contractors on County projects apply dust palliatives to areas where dust could be disturbed by construction or traffic activities. In Yuma County Resolution No. 98-65 adopted in August 1998, Yuma County adopted Amendments to its Comprehensive Building Codes. Section 3309.11 requires that a dust control plan be submitted to the Building Official prior to construction.

Prior to submittal of the 1994 SIP, the City of Yuma adopted the Uniform Building Code, 1991 Edition, including certain appendices. The appendix concerning grading activities includes a dust control plan requirement that is in Section 3304.2 of Chapter 150, Title 15 of the City of Yuma Code. The City of Yuma also adopted Ordinance No. 098-24 effective in 1998. Building permits for projects in the City of Yuma can be obtained through either the Zoning Department or the Public Works Department, depending upon the type of project. In each case, local law requires submittal of a dust control plan to the Building Official.

Somerton's requirement for dust control plans for construction is similar to the requirement for the projects in the unincorporated portions of Yuma County. The City of Somerton adopted Ordinance No. 300 in 2005, which requires an Erosion and Sedimentation Control Plan. Copies of these requirements are in **Appendix H** for information purposes. Arizona Department of Transportation (ADOT) often hires contractors for road construction projects in the Yuma PM₁₀ Nonattainment Area. ADOT requires its contractors to adhere to local dust control plan requirements. An estimated reduction of 5.4 TPY of PM₁₀ per year has been achieved through this measure from 1994 to date.

6.3.9 Control of Dust on Open Land

The 1992 MOA with MCAS requires MCAS to control dust emissions from a total of ten acres on its installation. MCAS has adopted MCAS Natural Resources Management Plan—1990 and

pages 3-1 and 3-18, concerning dust control from disturbed land areas, is specifically referenced in the MOU. Table 6.3 indicates that an estimated PM₁₀ reduction of **0.1 TPY** is achieved from this category, not including further reductions discussed below.

MCAS has also constructed buildings on formerly vacant land with disturbed soils. MCAS constructed a medical facility and clinic installation in 1996 and other buildings in 1996 and 1998. As a result of construction, permanent reductions of **0.43 TPY** PM₁₀ emissions from **102,141** square feet of formerly open land have been achieved.

In 2003, MCAS paved 750,000 square feet of open ground surrounding the air field with asphalt and developed 2,522,500 square feet of open ground. It developed 85,579 square feet of open ground in 2005.

MCAS informed ADEQ that it landscaped 464,689 square feet of wind erodible land with native plants to prevent or control windblown dust in 1999 and landscaped 39,860 square feet in 2004. MCAS cropped or mowed plants on 63 acres, rather than completely removed, on 63 acres each year 1995–2005.

MCAS also used dust palliatives or liquid surfactants to control dust on its open land. MCAS prevented cars from accessing and parking at selected locations on the air station. MCAS controlled soil erosion onto paved road surfaces. MCAS informed ADEQ that it has built 98 storm water retention basins on the installation since 2002. MCAS informed ADEQ that it trained 735 people in air quality issues in 2004 and 560 personnel in 2005.

Grand total emission reductions from all of these strategies are estimated as **22.3 TPY**.

Since 1974, YPG has operated as a major range and test facility for the Department of Defense pursuant to Public Land Order 848 dated July 1, 1952 and Public Land Order 8476 dated September 28, 1983. It is viewed as “ideally suited for testing military equipment, weapons, vehicles, and aviation systems in desert environments” according to the Final Range Wide Environmental Impact Statement, July 2001, U.S. Army Yuma Proving Ground (EIS). Although YPG covers 1300 square miles, only a small portion of YPG is in the Yuma air quality planning area. Figure 9 from the EIS delineates this area and is included in **Appendix H** for information purposes. In addition, the U.S. Army Yuma Proving Ground (YPG) undertakes measures to minimize PM₁₀ emissions from federal activities on its premises. ADEQ has been unable to locate an executed copy of a June 28, 1994, MOU prepared for signature. According to its January 10, 2002, report on implemented RACMs, beginning in 1997 YPG has graded and **watered approximately 11.7 million square feet of unpaved roads annually**. In May 2005, YPG reported its expenditures on RACMs from 1991-1994 as \$840,800; for 1995-1999 as in excess of \$1.3 million; and 2002-2004 as \$927,163. YPG’s RACM reports are included in **Appendix G**.

In addition, YPG is fenced to bar access by unauthorized personnel. Even authorized personnel are restricted to access on only a small portion of YPG, for the most part. The Yuma Proving Ground Hunting Program brochure explains that all off-road use of motorized vehicles is prohibited, and vehicle access is restricted to existing roads and developed trails. Hunting is

allowed only by holders of permits issued annually by YPG. Hunting is allowed during dove and quail season (September 1 through February 12th annually). The brochure shows the area where hunting is allowed, and a copy of it is included in **Appendix H** for information purposes. No emissions reductions have been modeled for YPG's control measures. Estimated emission reductions from these measures are **465 TPY**.

Section 118 of the Clean Air Act provides that Federal Facilities "shall be subject to, and comply with, all State and local requirements respecting the control and abatement of air pollution in the same manner, and to the same extent as any nongovernmental entity. The preceding sentence shall apply (A) to any requirement whether substantive or procedural (including any recordkeeping or reporting requirement, any requirement respecting permits and any other requirement whatsoever)...." However, the President may exempt any emission source from such requirements, other than compliance with Section 111 of the Act, upon making a determination that it is in the paramount interest of the United States to do so. Neither MCAS nor YPG have been exempted as of May 2006, according to EPA Region IX.

Table 6-3. 2000-2004 Yuma Area Implemented Control Measures and PM₁₀ Emission Reductions (Tons per Year)

Agency	Projects	Year	Tons	2000	2001	2002	2003	2004
City of Yuma	Pave unpaved roads	2000	1059	5.74 mi				
		2001	550		2.98 mi			
	Pave unpaved alleys	2000	3.5	0.83 mi				
		2001	3.5		0.83 mi			
	Paving unpaved vacant land		1.1				6835 sq yds	
	Chemically stabilize Unpaved roads	2001	4.1		1.0 mi			
		2002						
		2003	39				44287 yds	
		2004	77					88575 yds
	Watering shoulder	2001	0.1		5436' of 8' shoulder			
	Street sweeping Paved roads	2000	54	17128 mi				
		2001	54		171218 mi			
		2002	54			17128 mi		
		2003	54				17128 mi	
		2004	54					17128 mi
	Install curbs & sidewalks	2000	8	0.63 mi				
		2001	122		10.14 mi			
	Landscaping median	2000	0	5.74 mi				
	Magnesium chloride on Alleys	2003	3.8					87930 sq yds
2004		3.8					87930 sq yds	
Magnesium chloride on City property	2003	1.9					63852 sq yds	
	2004	1.9					63852 sq yds	

Agency	Projects	Year	Tons	2000	2001	2002	2003	2004
City of Somerton	Water unpaved roads	2000	511	400 mi				
		2001	511		400 mi			
		2002	None reprd					
		2003	1247				1211 mi	
		2004	1247					1211 mi
	Water unpaved Shoulders	2000	0.1	1820 mi				
		2001	0.1		1820 mi			
	Street sweeping	2000	4.3	1376 mi				
		2001	10.4		3286 mi			
		2002	9.1			2888 mi		
		2003	8.4				2662 mi	
		2004	8					2548 mi
		2005	9.2	2918 mi				
	Pave unpaved roads	2002	830			4.5 mi		
	Weekly cleanup of paved roads, mud, trackout, spills	2000	3.6	52				
		2001	3.6		52			
		2002	3.6			52		
		2003	3.6				52	
		2004	3.6					52
	Pave unpaved lots(ft2)	2002	6.41			505,440		
	Landscape shoulders (mi)	2002	5.5			0.5 mi		
	Install curbs (mi)	2002	11			1.0 mi		
		2003	13.7				1.25 mi	
		2004	2.7					0.25 mi
	Pave/stabilize unpaved roads	2001	138		0.75 mi			
		2003	185				1.0 mi	
		2001	138		0.75 mi			
Chip/sealed	2000	17	56.2 mi					

Agency	Projects	Year	Tons	2000	2001	2002	2003	2004	
	Magnesium chloride on Unpaved roads	2001	17		56.2 mi				
		2004	19					64 mi	
	Street Sweeping	2000	0.32	100 mi					
		2001	0.63		200 mi				
		2002	0.95			300 mi			
		2003	0.63				200 mi		
		2004	0.55						175 mi
Yuma County	Pave unpaved roads	2000	73.58	1.0 mi					
		2001	73.58		1.0 mi				
		2002	73.58			1.0 mi			
		2003	73.58				1.0 mi		
		2004	73.58					1.0 mi	
	Developers add new paved roads	2000	883	12.0 mi					
		2001	883		12.0 mi				
		2002	883			12.0 mi			
		2003	883				12.0 mi		
		2004	883						12.0 mi
	Chip/sealed unpaved roads	2001	138		0.75 mi				
	Magnesium chloride unpaved roads Street Sweeping	2000	17	56.2 mi					
		2001	17		56.2 mi				
		2002	18			61.6 mi			
		2003	17				56.7 mi		
		2004	19						64 mi
		2000	10	100 mi					
		2001	23		200 mi				
		2002	35			300 mi			
2003		23				200 mi			
2004		20						175 mi	

Agency	Projects	Year	Tons	2000	2001	2002	2003	2004	
Immigration and Naturalization Service		2000	7.1	18 mi					
		2001	7.1		18. mi				
		2002	7.1				18 mi		
		2003	7.1					18 mi	
		2004	7.1						18 mi
	Water drag roads	2000	3.35	Restock					
		2001	3.35		Restock				
		2002	3.35			Restock			
		2003	3.35				Restock		
		2004	3.35						Restock
	Pipelined	2000	2	2 mi					
		2002	0.84				0.8 mi		
		2003	0.53					0.5 mi	
	Maintain 350 "No Trespassing" signs & 50 barricades	2000	10	Enforcement					
		2001	10		Enforcement				
	Patrol & water unpaved canal roads	2000	82	400 mi					
		2001	82		400 mi				
		2002	82				400 mi		
		2003	82					400 mi	
		2004	82						400 mi
	3 mi posted/barricaded	2001	4.2		3 mi				
	Paved 2.5 mi		5		2.5 mi				
	1.5 mi fenced off		2.1		1.5 mi				
	Abandoned 3/8 mi								

		2003	1.3				2.6		
	Lined 8 mi of canal	2004	8.4					17.8	
Agency	Projects	Year	Tons	2000	2001	2002	2003	2004	
N. Gila Irrigation	20 miles posted	1999	0						
District									
Unit B Irrigation	3 mi posted/barricaded	1999	0						
District									
Bureau of Reclamation	Water 960 miles of canal banks	2003	54				960 mi		
		2004	54					960 mi	
Marine Corps Air Station	Remove 26 gas Vehicles	2000	0.06	0.06					
	Remove 15 gas Scooters	2001	0.02		0.02				
	Pave 140329 ft2 roadway	2003	1.4				70165 ft2	70165 ft2	
		2004	1.4				51056 ft2	51056 ft2	
	Pave 102112 ft2 parking	2003	0.2						
		2004	0.2						
	Sweeping 717221 yd2 runway								
	Sweeping 388952 yd2 taxiway								
	Sweeping 401090 yd2 aprons and 121,380 yd2 other			1.1/Year					
	Sweeping Totals								
	Stabilize desert			0.1	25,726 ft2			2,533,500 ft2	
	Total TONS				3604	3495	2866	2293	3384

6.3.10 Permanent and Enforceable Reductions

The 1994 SIP estimated that attainment would be achieved with emission reductions of 393.00 TPY. ADEQ has concluded that the control measures implemented 1991-2005 have achieved significantly greater emission reductions than required and that these measures have been completed. Furthermore, with the exception of paving unpaved roads, these emission reductions were not incorporated into the 1999 or 2016 Emission Inventories that formed the basis for the modeling maintenance demonstration. The predicted concentrations, already roughly 20% below the NAAQS, would have been even lower had these reductions been taken into account. In the Averaged Tons Per Year Reductions Table below, 1530 TPY for the period 2000-2005 result from control measures that were not subtracted from the 2016 Emission Inventory. The effectiveness of these emission reductions have been borne out at the ambient air monitor, which has shown attainment for over ten years. EPA has published a Clean Data Finding, and a modeled attainment demonstration is no longer required. Agricultural Best Management Practices are not included in either the Total Tons Reduced Table or the Tons Per Year Reductions Table.

TOTAL TONS REDUCED			
CONTROL MEASURE	1991-1999	2000-2005	TOTAL TONS REDUCED
Paving and chip sealing unpaved roads	5,560	1,610	7,170
Watering unpaved roads	2,234	3,808	6,042
Restricted open burning of agricultural acreage	1,758	1,855	3,613
Sweeping streets and runways	23	1,242	1,265
Canal roads dust control	68	672	740
Chemically stabilize unpaved roads	84	288	372
Construction project dust control	32	27	59
Open land dust control	0.4	52	52.4
Stabilizing unpaved parking lots	2.6	11.3	13.9
TOTAL TONS Reduced	9,762	9,565	19,327

The Average Ton Per Year Reductions Table appears on the next page.

AVERAGED TON PER YEAR REDUCTIONS			
CONTROL MEASURE	1991-1999	2000-2005	1991-2005
Paving and chip sealing unpaved roads	618	322	512
Watering unpaved roads	248	762	432
Restricted open burning of agricultural acreage	195	371	258
Sweeping streets and runways	3	248	90
Canal roads dust control	8	134	53
Chemically stabilize unpaved roads	9	58	27
Construction project dust control	4	5	4
Open land dust control	0	10	4
Stabilizing unpaved parking lots	0	2	1
COMBINED REDUCTIONS	1,085	1,913	1,381

6.4 Maintenance Demonstration Control Measures

All of the control measures described above that have been implemented to attain the PM₁₀ standard will continue throughout the maintenance period. Yuma's economy depends in part on a large influx of winter residents from cooler climates, many of whom are members of sensitive populations especially vulnerable to adverse impacts on the respiratory system. It is in Yuma's economic interest to maintain good air quality in order to continue to attract these residents, many of whom arrive in recreational vehicles and could easily choose other winter locations.

Paving and chip sealing unpaved roads; watering unpaved roads; and chemically stabilizing unpaved roads will continue at the current rate so long as funding remains available, as demonstrated by longstanding practices of the jurisdictions within the Yuma air quality planning area. Highway funds are distributed and projects prioritized through the Yuma Metropolitan Planning Organization process. Longstanding Planning and Zoning ordinances requiring dust control plans and paving of parking lots will remain in effect or become more stringent as the Yuma area grows. Construction project dust control plan requirements will continue to be enforced locally, and all new developments are required to pave associated new roads to prevent new problems from developing. Current dust control practices on canal roads are both cost effective and efficient for the YCWUA and Irrigation Districts to employ, including fish restocking and adding pipeline. The MCAS bicycle path built in 1995 will remain in place and in use, and trip reduction strategies in use at MCAS save money that would otherwise be spent on fuel and vehicles. The cap on agricultural wheat stubble burning has not been exceeded for several years, and agricultural land continues to be converted permanently to residential property for housing construction. Street sweeping has been particularly rigorous, and remaining standard sweepers will be replaced by PM₁₀ efficient sweepers.

Yuma area stakeholders have also committed to additional control measures initially included in a Natural Events Action Plan. These additional control measures will be implemented through 2016. These additional measures are described below.

6.4.1 Yuma Natural Events Action Plan (NEAP)

On August 18, 2002, the Yuma area experienced a 24-hour average PM₁₀ concentration of 170 µg/m³. The 24-hour average PM₁₀ NAAQS is 150 µg/m³. An unusually large and intense thunderstorm developed in east-central Sonora, Mexico, on the afternoon of August 18, 2002. By evening, the thunderstorm had moved to the northwest through the Yuma area, producing sustained winds in excess of 25 miles per hour with gusts up to 45 miles per hour.²

High wind events are one type of natural event covered by EPA's Memorandum entitled "Areas Affected by PM-10 Natural Events" dated May 30, 1996, authored by Mary D. Nichols, and known as EPA's Natural Events Policy (NEP). Pursuant to the NEP, Arizona adopted Policy 0159.00 Air Quality Exceptional and Natural Events and a companion Technical Criteria Document. Under these policies, ADEQ developed a Natural Events Action Plan (NEAP) to reduce particulates during future high wind events in the Yuma area. The NEP requires that NEAPs include commitments to five elements:

- Establish public notification and education programs
- Minimize public exposure to high concentrations of PM-10 due to future natural events
- Abate or minimize appropriate contributing controllable sources of PM-10
- Identify, study and implement practical mitigating measures as necessary
- Periodically reevaluate the effectiveness of the NEAP at least every 5 years.

The NEP provides:

"Programs to minimize PM-10 emissions may include:...(c) High winds – application of BACM [Best Available Control Measures] to any sources of soil that have been disturbed by anthropogenic activities. The BACM application criteria require analysis of the technological and economic feasibility of individual control measures on a case-by-case basis. The NEAP should include analyses of BACM for contributing sources...If BACM are not defined for the anthropogenic sources in question step 4 below is required." (emphasis added)

Step 4 is the requirement to study practical mitigating measures.

The NEP required ADEQ to submit a NEAP to the U.S. Environmental Protection Agency (EPA) by February 18, 2004 (eighteen months after the exceedance) and a NEAP Implementation Report by August 17, 2005.

6.4.2 Yuma Public Notification and Education Program

² Wind speeds of 15 miles per hour and greater can suspend surface soil dust into the air.

ADEQ assisted stakeholders in Yuma County, including the Cities of Yuma and Somerton, in the development a public notification and education program as part of a specific NEAP commitment. Yuma residents identified key stakeholders in the Yuma area to be included in this program. The program focuses on alerting sensitive segments of Yuma's population to potential health threats from exposure to high concentrations of PM₁₀ that can trigger asthma, bronchitis, severe coughing, heart attacks, and other life threatening upper respiratory problems if exposed through air quality health forecasts distributed through the media, on local web sites, and distribution by the ADEQ Community Liaison to school nurses, daycare centers, and senior centers. To this end, ADEQ and Yuma entities developed an Outreach and Notification Resource List included in **Appendix E** of this plan. The air quality health forecasts are utilized by the media, daycare centers, senior centers, and schools to enable these populations to minimize their exposure to dust in the event of a high-wind event that could increase concentrations of PM₁₀.

In addition, the Cities of Yuma and Somerton, along with Yuma County, developed dust complaint hotlines for citizens to report violators [Yuma: (928) 327-4500, Yuma County: (928) 217-3878, Somerton: (928) 627-9876]. Yuma County maintains a computer log of all complaints received. ADEQ assisted with the development of educational materials, including the bi-lingual brochure. These materials are disseminated by ADEQ's Community Liaison for the Southwest region in concert with Yuma County public service announcements, planned speaking events, and other information posted to local and State web sites where it can be downloaded for further dissemination. The ADEQ Web site containing these materials is <http://www.azdeq.gov/function/education/index.html>. The hotline number mentioned in the Yuma NEAP evolved, during the stakeholder process, into the various complaint numbers listed for the entities in Yuma on the public information pamphlet, *How Can I Protect My Family in Yuma from Dust Pollution* (see **Appendix D**). The pamphlet is available in both English and Spanish. Any Yuma area citizen can phone in a complaint to the number listed on the pamphlet for the jurisdiction in which he resides. The hotline numbers and the publication of the bi-lingual information pamphlet were a result of the high wind event on August 18, 2002.

In 2005, Yuma County developed a public service announcement (PSA) that is played on public access stations. The PSA warns Yuma area residents of the health hazards of dust and encourages them to find ways to control dust and minimize their exposure to it.

Although quantifiable emission reductions are not attributed to this program, it will continue throughout the maintenance period.

6.4.3 Minimization of Public Exposure during Future Natural Events

A 3-day Dust Control Action Forecast is sent to potential sources of dust when the 3-day forecast predicts conditions conducive to elevated dust levels so that they can minimize emissions and reschedule dust-producing activities. An example is in **Appendix F**. These forecasts address minimization of appropriate contributing controllable sources. Dust Control Action Forecasts are distributed by the Arizona Department of Agriculture to Yuma area farmers and by the ADEQ Community Liaison to City of Yuma, City of Somerton, and Yuma County Public Works Departments and to building construction contractors. These forecasts that reduce dust disturbance during wind-generated dust events combined with the public notification program

described in 6.4.2 minimize public exposure to particulate matter. Although quantifiable emission reductions are not attributed to this program, it will continue throughout the maintenance period.

6.4.4 Abatement or Minimization of Appropriate Contributing Controllable Sources

A. NEP Compared to Best Available Control Measures (BACMs) Guidance

Section 189 of the Act requires BACMs for Serious PM₁₀ nonattainment areas to reduce emissions from all “significant” contributing sources to a PM₁₀ exceedance. EPA was required by Section 190 of the Act to issue BACM Guidance within 18 months after November 15, 1990. EPA published an Addendum to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990³ in the Federal Register on August 16, 1994. Section VI of the Addendum, entitled “Best Available Control Measures” explains that *for Moderate areas reclassified as Serious*, “the nonattainment control requirements (i.e., RACM) are carried over and elevated to a higher level of stringency (i.e., BACM). So, by analogy, just as RACM includes RACT, in the same way, BACM includes BACT.” Section VI then quotes statements in H.R. Rep. No. 490, 101st Cong., 2nd Sess. 266-67 (1990) concerning BACM for Serious areas: “Such provisions must include the application of the best available control technology to existing stationary sources.”

Section VI. provides that “Therefore, under this policy, a source category (see footnote 33) will be presumed to contribute significantly to a violation of the 24-hour NAAQS if its PM-10 impact at the location of the expected violation would exceed five µg/m³” or if “its PM-10 impact at the time and location of the expected annual NAAQS violation would exceed one µg/m³.” (emphasis added) Footnote 33 explains that source categories for which BACM will be required refers to categories of area-wide sources or of large individual stationary sources. Under EPA’s presumptive policy, sources that contribute less particulate matter are presumed to be de minimis contributors to a violation.

Yuma is classified as a Moderate PM₁₀ area and has never been classified as a Serious PM₁₀ area. The NEP provisions related to BACM are not identical to the BACM requirements for Serious PM₁₀ areas. The NEP requires that an area that has flagged data due to a high wind event must commit to abate or minimize appropriate contributing controllable sources of PM₁₀ and provides that the area “may” apply BACM to sources of soil disturbed by anthropogenic activities to meet the abatement requirement. If BACM are not defined for the anthropogenic sources, then the State must identify, study, and implement practical mitigating measures as necessary. The NEP does not expressly require the application of BACT to existing stationary sources to meet the abatement requirement. The largest stationary source of PM₁₀ in Yuma emits less than 19 tons per year and is not subject to BACT.

The elevated PM₁₀ concentration in Yuma on August 18, 2002, was an exceedance of the standard, not the last in a series of exceedances that constitute a violation.

B. BACM Analysis Procedures

³ Federal Register, FRL-5052-2, August 16, 1994.

EPA's BACM Guidance outlines required steps for the analysis. The first step in the BACM analysis is to develop a detailed emissions inventory of PM₁₀ sources and source categories.

The second step requires evaluating source category impacts using the emission inventory in air quality modeling to evaluate the impact of the various sources and source categories on PM₁₀ concentrations above the standards to determine which have impacts above de minimis levels.

The third step entails identifying potential BACMs. In identifying these BACMs, the technical feasibility of potential controls for source categories with impacts greater than de minimis levels must be considered. Because of varying factors, such as the mix of sources, including nonanthropogenic sources, population exposure, and availability of controls, the set of control measures must be individualized for the specific conditions in each nonattainment area. When evaluating technological feasibility, States must document selection of BACMs by showing what control measures applicable to each significant source category were considered. The control measures selected should preferably be measures that will prevent PM₁₀ emissions rather than temporarily reduce them. The documentation should compare the control efficiency of technologically feasible measures, their energy and environmental impacts and the costs of implementation.

The fourth step is evaluation of the costs of the potential BACMs. When evaluating economic feasibility, a State should not restrict analysis to simple acceptance/rejection decisions based on whether full application of a measure to all sources in a particular category is feasible. A State should consider implementing a control measure on a more limited basis, for example, for a percentage of the sources in a category if it is determined that 100 percent implementation of the measure is infeasible.

Finally, BACM is to be selected for area sources and BACT is determined on a case-by-case basis for any stationary source category with impacts greater than de minimis levels.

C. Determination of Appropriate Contributing Controllable Sources

1. Determination for NEAP Development

ADEQ modeled August 18, 2002 using Industrial Source Complex Short Term 3 (ISCST-3) to identify the major contributing sources to the observed exceedance on that day. This modeling was based on windblown emissions for those hours where wind speed exceeded the 15 mph dust suspension threshold, as estimated for a high wind day from the Yuma PM₁₀ maintenance plan modeling (March 31, 1999). The Yuma NEAP contains a detailed look at PM₁₀ contributions from windblown dust on August 18, 2002.

Figure VI-1 of the NEAP showed that 41% of the ambient PM₁₀ during the wind-generated dust event on August 18, 2002, came from human activity. Figure VI-3 of the NEAP showed a breakdown of contributing human activities: 69% from on-road vehicles; 25% from construction, and 4% from unpaved roads. Other sources, including stationary sources, were determined to contribute less than 1%.

Figure VI-2 of the NEAP provided a breakdown of the other 59% that came from windblown dust on that date: 25% from unpaved roads; 30% from agricultural fields; 18% from urban disturbed areas; and 27% from other disturbed areas. The information produced by the modeling guided Yuma stakeholders in selecting control measures for appropriate contributing controllable sources.

2. Determination for Maintenance Plan Development

The following conclusions were derived from the technical analyses contained in the TSD, including the emission inventory. The main sources of PM₁₀ for windblown dust are vacant agricultural fields at 51%, miscellaneous disturbed areas at 26%, and unpaved agricultural roads at 17%. The main sources of PM₁₀ emissions on low-wind days are unpaved roads at 42%, road construction at 28%, agricultural tillage at 15%, and re-entrained dust from paved roads at 14%.

D. List of Potential BACMs and Economic Feasibility

A total of thirteen stakeholder meetings beginning on June 4, 2003, and ending on August 4, 2005, were held to develop and implement the Yuma NEAP, during which these BACMs were identified and selected. The sign-in sheets for these stakeholder meetings are contained in the NEAP appendices. The BACMs selected for Yuma are described below. The deadline for full implementation of BACMs pursuant to the NEAP was August 18, 2005. The candidate lists of BACMs considered by Yuma stakeholders was the BACM list completed for the Salt River PM₁₀ SIP included in Appendix G of the Yuma NEAP and the BACM list compiled for ADEQ's Exceptional and Natural Events Policy in June, 2001, included in **Appendix I** of this Maintenance Plan. These Arizona BACM lists were the starting point for determining BACMs to be used in Yuma County. Yuma stakeholders relied on the cost effectiveness analysis contained in the MAG "1999 Serious Area Particulate Plan for PM-10." EPA noted in its proposed approval of that SIP that "Overall, the plan presents one of the most comprehensive lists of potential BACM ever produced." 66 FR 50258. Information specific to Yuma is included in each measure discussed below.

E. Evaluation of Technological Feasibility for Yuma and Selected Abatement Measures

1. **Construction Sources**

a. Existing Control Measures

Arizona Administrative Code **R18-2-604.A.**, initially adopted effective May 14, 1979, and updated in 1990 and 1993, requires persons constructing, repairing, altering, or demolishing a building or preparing to do so on an urban or suburban open area or conducting earth moving or excavation activities to limit excessive amounts of particulate matter from becoming airborne through the use of approved dust suppressants, adhesive soil stabilizers, paving, covering, landscaping, continuous wetting, barring access or other means. ADEQ enforces this rule within the Yuma air quality planning boundaries.

All three jurisdictions have Dust Control requirements that apply to construction sites. The City

of Yuma Ordinance No. **098-24** requires a Plan to control dust on *all* construction sites. This requirement is more stringent than the Maricopa County Rule 310 BACM size threshold of 0.10 acre or more. Public Works Standards for Yuma County, Volume II, Sections **201.3** and **204.4** require contractors working on County projects to apply water and dust palliatives to control dust during all construction and related traffic. The City of Somerton adopted Ordinance No. **300**, in 2005, which requires an Erosion and Sedimentation Control Plan, as discussed in 6.3.8 above. Copies of these ordinances are in **Appendix H** for information purposes.

b. Selected Abatement Measures for NEAP and BACM Technological Feasibility for SIP

ADEQ and the Yuma area stakeholders conducted four meetings (on June 15, 2004; August 25, 2004; September 21, 2004; and October 27, 2004) to discuss a Project Information Sign requirement for construction projects. Over the course of the meetings, existing local laws that required dust mitigation plans to be in effect during construction projects were reviewed as was the list of potential BACMs. The selected measure for further controlling emissions from construction sites is designed to improve compliance with existing dust control plan requirements, defined as BACM in Maricopa County Rule 310 and Clark County, Nevada, Table 4-14. ADEQ worked with the Cities of Yuma and Somerton and with Yuma County to add a Project Information Sign requirement for all construction projects one acre or more in size. This size cutoff is more stringent than the Clark County, Nevada, size threshold of 10 acres or greater in size for such signs, listed in its Table 4-14 BACM Control Measures. These signs must include the applicable Dust Complaint Hotline number so that citizens can report dust problems to the appropriate jurisdiction for followup. More stringent measures were not selected because Yuma has experienced only a single exceedance in a period of more than a decade.

City of Yuma Ordinance No. **O2004-72** requires the owner and/or operator to erect and maintain a Project Information Sign, in accordance with Standard No. 8-100, Work Zone Identification Sign, Sign WZIS-1, of the City of Yuma Construction Standard Detail Drawings, that is readable by the public at the main entrance for all sites with a building or grading permits that are one acre or larger, except for routine maintenance. The City of Yuma has dedicated one staff person to enforce this ordinance. The City of Yuma Public Works and Community Development Department is responsible for the implementation and enforcement of this requirement, which became effective in 2004. This ordinance is enforced along with local stormwater regulations for construction sites, which also address dust generation from construction sites.

The City of Somerton adopted Article **9-6-1** of Resolution No. **907**, effective in 2005, which requires the owner and/or operator to erect and maintain a Project Information Sign, in accordance with Exhibit A (Work Zone Identification Sign Details) of the ordinance, that is readable by the public at the main entrance to the property for all sites with building or grading permits that involve disturbing one acre or larger.

Yuma County Ordinance No. **05-01**, effective in 2005, requires any person getting a building or grading permit of one acre or greater to install and maintain a Project Information Sign in accordance with requirements contained in the ordinance. Yuma County maintains a computer log of all complaints and has had excellent success with compliance as soon as the contractor is alerted to the receipt of a complaint. Copies of these ordinances appear in **Appendix H** for

information purposes.

One-on-one contact is made at the time of complaint response to ensure onsite implementation of dust control plans and appropriate dust suppression techniques.

In addition, MCAS posts construction sites of one acre or more on its installation with signage containing dust complaint information. In 2005, this type of signage was used at six construction sites.

Although ADEQ did not model the effectiveness of R18-2-604, local dust control plan requirements, and the newer project sign requirements as part of the maintenance demonstration, the PM₁₀ emissions reductions associated with this control strategy are estimated at 1% effectiveness or **22 TPY** by ADEQ.

Economic Feasibility: It costs the City of Yuma approximately \$5,000 per year for program management and implementation. The City of Somerton estimated similar costs to enforce the project sign ordinance. Yuma County staff estimates that 0.2–0.3 full-time employee is dedicated to the implementation of this control measure since the employee is part-time Yuma County's costs are approximately \$15,000 annually to enforce this requirement in the unincorporated areas of Yuma County in the nonattainment area.

2. **Paved Roads: Street Sweeping**

a. Existing Control Measures

Section 6.3.7 and Table 6.3 above describe publicly owned street-sweepers and current sweeping practices in detail.

b. Continuing BACM Technological Feasibility for SIP

PM₁₀-efficient street sweepers are technically feasible for the Yuma area. As described in Section 6.3.7 above, four PM₁₀-efficient street sweepers and two standard street sweepers are used by the City of Yuma to control dust from paved roads. The City of Yuma has already purchased and is using PM₁₀-efficient sweepers, as compared to the Maricopa County commitment to purchase such sweepers in its Serious PM-10 Nonattainment Area SIP. These street sweepers were purchased for the continued maintenance of the City of Yuma streets as described in its Standard Operational Procedures included in **Appendix H** for information purposes. Somerton and Yuma County commit to the purchase of PM₁₀-efficient street sweepers upon replacement of their standard street sweepers, to assist in maintenance of the NAAQS. Approximately 292 miles of streets are swept in the City of Yuma, and approximately 510 miles of streets are swept in Yuma County's jurisdiction. Somerton operates its sweeper daily. ADEQ modeled these measures as part of the maintenance demonstration for Yuma (see Table 3-2 of the TSD). Even greater PM₁₀ emissions reduction from paved roads will be achieved when the Somerton and Yuma County street sweepers in the Yuma area are replaced with PM₁₀-efficient street sweepers. Frequent street sweeping with PM₁₀-efficient street sweepers is BACM as determined for Maricopa County; South Coast, California, and Clark County, Nevada, in its Table 4-14 BACM Control Measures.

Economic Feasibility: The City of Yuma used its Highway User Revenue Fund to purchase its street sweepers, including one street sweeper on October 10, 2002, and a second street sweeper on October 16, 2002. The City paid \$156,887 and \$157,049, respectively, for these two street sweepers purchased from Norwood Equipment in Phoenix, Arizona. A sixth PM₁₀ efficient street sweeper costing \$167,000 has been partially funded by a \$25,000 grant from ADEQ's Division of Water Quality in 2005. The City of Somerton purchased a standard street sweeper in March 2000 for \$135,733. Its maintenance costs have totaled \$3,698 2003-2006 plus \$12,709 for parts. Labor costs are \$36,157 annually for a full-time operator.

This measure should be approved into the SIP.

3. **On-Road Vehicles: Covered Trucks**

Yuma stakeholders selected increased enforcement of covered haul truck requirements as a NEAP commitment. A.R.S. §§ **28-1098**, **28-1873**, and **28-7056** address such transport. A.A.C. **R18-2-606** expressly prohibits transport of materials that result in significant amounts of airborne dust. City of Yuma Ordinance No. **2638** requires haul trucks to be covered. The statutes, rule and ordinance are in **Appendix H** for information purposes. After the measure was included in the submitted NEAP, the majority of Yuma law enforcement stakeholders expressed the view that they have authority to ticket trucks for safety violations but not for air pollution control violations. Municipal attorneys also had reservations about the extent of local authority under Arizona statutes and rules. Local officials will pursue any additional legal authority needed during the upcoming legislative session.

In view of perceived problems with the enforceability of this control measure, ADEQ did not include this measure in the modeled maintenance demonstration for Yuma. This measure would become a selected abatement measure for purposes of maintenance of the NAAQS only if the perceived enforcement authority issue can be resolved during the maintenance period.

Economic Feasibility: Should this measure proceed, costs would be absorbed in ongoing law enforcement activities in the planning area.

4. **Yuma Agricultural Best Management Practices (AgBMP) Rule**

a. BACM Technological Feasibility for NEAP and Maintenance Plan

As demonstrated in the Yuma NEAP, a detailed analysis of the PM₁₀ concentrations during the wind event of August 18, 2002, revealed that agricultural fields contributed 17.7 percent of the concentrations on that day. ADEQ met with stakeholders of the agricultural community in Yuma County beginning in June 2002 to assess the impacts of particulate matter emissions from agricultural practices and potential emissions reductions from implementation of AgBMPs to develop an AgBMP program for Yuma. An AgBMP General Permit Rule and accompanying definitions had been adopted effective May 12, 2000, for the Maricopa County PM₁₀ nonattainment area in Arizona Administrative Code R18-2-610 and 611. Pursuant to these rules, three agricultural emission source categories are controlled: (1) tillage and harvest (2) non-cropland and (3) cropland.

In 2004, in *Vigil v. Leavitt*, the U.S. Court of Appeals for the Ninth Circuit⁴ upheld Arizona's BACM analysis for Agricultural Best Management Practices. Portions of the opinion are repeated below.

“Petitioners’ argument that Arizona’s general permit rule for agricultural PM₁₀ emissions does not constitute BACM would be compelling if the Act required a state to reduce its emissions to the maximum extent possible, regardless of cost. EPA, however, has concluded that ‘best available control measures’ means the maximum degree of emissions reduction of PM₁₀ and PM₁₀ precursors from a source considering cost ...*Addendum*, 59 Fed. Reg. at 42010. Petitioners do not challenge this longstanding interpretation of the Act, and we cannot say that the interpretation is impermissible. *See Alaska Dep’t of Env’tl. Conservation*, 124 S. Ct. at 1001; *cf.* 42 U.S.C. § 7479(3) (similarly defining the term ‘best available control technology’ for purposes of the Prevention of Significant Deterioration program).

In its state implementation plan, Arizona explained why it listed 34 BMPs in three categories, yet required farmers to implement only three BMPs (one BMP in each category). Arizona reported that an effective agricultural PM-10 control strategy is ‘highly dependent on specific local factors,’ such as ‘regional climate, wind strength and direction, soil types, [g]rowing season, crop types, cropping systems, moisture conditions, water availability, and relation to urban centers.’ Air Quality Div., Ariz. Dep’t of Env’tl. Quality, Maricopa County PM₁₀ Serious Area State Implementation Plan Revision: Agricultural Best Management Practices, Enclosure 3 at 17-18 (June 13, 2001) (BMP Plan). Thus, ‘each PM₁₀ agricultural strategy must be based on local circumstances and a single BMP will not work equally for all growers.’ *Id.* at 17. Arizona’s plan stated that farmers were ‘*encouraged* to implement more than one BMP,’ but ‘it is not reasonable to *require* more than one BMP because in some instances one may be enough for a particular farm.’ *Id.* at 18 (emphasis added). The committee ‘could not determine that requiring more than one BMP would be reasonable given the cost and emission reduction uncertainties.’ *Id.* at 18.

Common and accepted practice for the control of dust.... Allowing sources the discretion to choose from a range of specified options is particularly important for the agricultural sector because of the variable nature of farming. As a technical matter, neither we nor the State is in a position to dictate what precise control method is appropriate for a given farm activity at a given time in a given locale.... Moreover, the economic circumstances of farmers vary considerably. As a result, it is imperative that flexibility be built into any PM-10 control measure for the agricultural source category.

EPA concluded that the ‘general permit rule represents a comprehensive, sensible approach’ and satisfied BACM with respect to both the 24-hour and the annual standards. TSD at 240.

⁴ Opinion No. 02-72424 Filed May 10, 2004.

In developing the BMPs for the general permit rule, the Arizona committee considered agricultural PM-10 controls adopted by the South Coast region of California. BMP Plan at 15, 18. It noted, however, that the South Coast was the only other area in the United States to require implementation of BMPs to reduce agricultural PM-10 and that information concerning the effectiveness and cost of these BMPs was therefore limited. *Id.* at 18. EPA accepted Arizona's conclusions that agricultural production differs from farm to farm and that it was not possible to compare directly Arizona agriculture and California agriculture. EPA also acknowledged that the BMP committee had very limited information regarding the technological feasibility, costs, and energy and environmental impacts of the potential BMPs. Indeed, EPA found that Arizona could not evaluate the South Coast's practices because "the South Coast did not attempt to estimate the reductions and cost from each conservation practice."

EPA not only examined Arizona's final rule and rationale, it looked closely at the process by which Arizona arrived at its BMP Plan. Arizona assembled representatives from agriculture, state and federal agencies, and the University of Arizona – "a multi-year endeavor involving an array of agricultural experts familiar with Maricopa County agriculture." 67 Fed. Reg. at 48,730. The BMP Committee held public hearings and received public comments. It thoroughly reviewed the South Coast rules and found that certain aspects of them were not adapted to Arizona's conditions.

Arizona has offered a reasoned explanation for the choices it made, and EPA was within the bounds of its judgment and expertise to approve it."

Yuma stakeholders evaluated differences in the mix of crops in Yuma compared to Maricopa. Whereas Maricopa has high production of cotton and hay, Yuma harvests a substantially higher yield of vegetables and is known as the nation's "winter salad bowl." Yuma stakeholders considered the emissions impacts of each of the AgBMPs listed in R18-2-611 for implementation in the Yuma air quality planning area based on control efficiency and feasibility for Yuma crops and soil types.

In addition to the AgBMPs adopted for the Maricopa PM₁₀ planning area, Yuma stakeholders considered AgBMPs quantified and adopted by the San Joaquin Valley Air Pollution Control District in California. After further evaluation, Yuma stakeholders chose to add to the Maricopa tillage and harvest practices the following BMPs: bed row spacing; conservation irrigation; conservation tillage; night farming; precision farming; and transgenic crops. Yuma stakeholders chose not to include reduced tillage system. They also added precision farming to the list of cropland measures. The selected AgBMPs for Yuma agriculture support principles that slow or control soil movement, conserve farm resources and prevent degradation of air quality. The Yuma PM₁₀ AgBMP rule was adopted effective July 18, 2005, as **R18-2-613** and is being submitted separately. A copy of this rule is in **Appendix C** of the 2006 Maintenance Plan for information purposes. Yuma area farmers are required to implement at least one AgBMP in each of the three categories. The fifteen practices available with respect to tillage include combining tractor operations, limiting activity in high winds, and the use of multi-year crops. The ten AgBMPs for noncropland include restricting access to roads, reducing speed, and reducing wind erosion from roads. With respect to cropland, the fifteen available AgBMPs include the use of

multi-year crops, residue management, timing of tillage, and planting crops based on soil moisture.

The adopted best management practices for Yuma agriculture support principles that slow or control soil movement, conserve farm resources and prevent degradation of the air quality. In agreement with requirements found in the Maricopa County PM₁₀ General Permit, farmers who conduct agricultural activities in the Yuma County PM₁₀ nonattainment area are required to implement at least one BMP for each of the three agricultural emission source categories. Yuma regulation goes further than the requirements in the Maricopa County PM₁₀ General Permit by requiring that BMP records for Yuma provide the date each BMP was implemented to demonstrate compliance with the regulation, therefore necessitating the record to be updated when practices or crops are changed.

The AgBMPs were selected as BACM measures pursuant to EPA's Natural Events Policy and ADEQ's Policy 0159.00 Natural and Exceptional Events Policy to abate or minimize appropriate contributing controllable sources of PM₁₀ during a future natural event. For that reason, they are not available for use as Maintenance Plan contingency measures. Nevertheless, because the AgBMPs were not modeled as measures required for the maintenance of the PM₁₀ NAAQS through 2016, they should be viewed as providing additional confidence that Yuma will maintain the PM₁₀ standard for many years to come. In the past decade, Yuma experienced only a single exceedance of the PM₁₀ NAAQS, on August 18, 2002. That exceedance was caused by a natural event that was flagged by ADEQ, with concurrence by EPA. Estimated emission reductions from the Yuma AgBMPs are based on implementation on 60,192 non-citrus acres. A detailed explanation of the derivation of the emissions reduction estimate appears in Appendix C of the Yuma Maintenance Plan Technical Support Document. ADEQ has estimated that PM₁₀ emission reductions of 2,062 TPY, or 6 Tons per Day, result from the Yuma AgBMP rule.

Economic Feasibility: In terms of compliance costs, ADEQ expects the Yuma County AgBMP program to have a minimal to moderate economic impact on commercial farmers. This is because farmers must implement a minimum of one best management practice from each of three categories: tillage and harvest, noncropland, and cropland. Equipment modifications, track-out controls, and constructing wind barriers, representing examples of AgBMPs from each category, could result in increased costs to commercial farmers. Another compliance cost associated with the AgBMPs is recordkeeping. Commercial farmers must demonstrate compliance with the rule by documenting which AgBMP is being implemented for tillage, harvest, cropland, and noncropland.

Because many of the AgBMPs listed in the rule already are being used by farmers, costs associated with implementing those techniques would represent sunk costs; hence, they would not be considered incremental compliance costs. Nonetheless, information provided by the Yuma Farm Bureau suggests that potential compliance costs could be as much as \$5.00 to \$10.00 per acre; depending on which AgBMPs are implemented, compliance costs might be either recurring or one-time costs. This estimate includes recordkeeping.

Estimated emission reductions from the Yuma AgBMPs are based on implementation on 60,192 non-citrus acres. The estimated cost would be, at most, \$300,960 to \$601,920. According to the

Yuma Farm Bureau, commercial farmers already are implementing many of the AgBMPs, and as such, compliance costs resulting solely from these AgBMPs would be lower. Additionally, farmers can choose AgBMPs that would be the most economically feasible, which would tend to significantly reduce compliance costs.

For ADEQ, the impact due to the review of records submitted by commercial farmers is expected to be very minimal. The current FTEs are expected to handle the increase in the workload. Agricultural commodity groups may be impacted minimally as they educate and provide technical assistance to commercial farmers. ADEQ does not expect the Yuma County AgBMP program to significantly impact business revenues, payroll expenditures, or employment. ADEQ does not anticipate an impact upon state revenues.

This measure should be approved into the SIP.

5. Unpaved Roads

Permanent emission reductions have been achieved from the paving measures described in 6.3.3 above. Nearly 50% of publicly owned unpaved roads outside of the canal districts have been paved. Paving will continue to be technologically feasible throughout the nonattainment area. The existing watering and chemical dust suppression programs will continue to be operated by the municipalities and YCWUA as technologically feasible programs. Yuma County requires developers to pave all new private roads upon rezoning, although it is not possible to predict the paving rate precisely. Annual emission reductions will also continue to be achieved by the YCWUA through annual restocking of weed-eating fish, barricades, watering, and enforcement against trespass. Surface treatment, traffic reduction and speed controls are BACM measures employed in Maricopa County and in Clark County, Nevada, Table 4-14. ADEQ has modeled unpaved roads control strategies as part of the maintenance demonstration for Yuma (see Table 3-2 of the TSD).

Economic Feasibility: Controls for dust through watering and chemical suppressants on unpaved roads are already being implemented by the agricultural growers, local irrigation districts, and the water users' association. They would not be considered incremental compliance costs and have been budgeted by the respective jurisdictions. Consequently, ADEQ and the stakeholders agree that these controls are economically feasible for the Yuma area. Paving is much more costly, and any paving by the municipalities would occur through a competitive process coordinated by the Yuma Metropolitan Planning Organization using available funding.

This measure should be approved into the SIP.

6. Off Highway Vehicles

Off highway vehicles (OHVs) are a very minor source of dust in the nonattainment area. Local residents can call the dust complaint numbers listed on the Yuma public information pamphlet for their respective jurisdictions when they suspect OHVs are trespassing on public or private lands. The prevention of trespass of OHVs on public and private lands is being achieved through complaint response. Heavily used off-road recreational facilities are available in Imperial Valley, California, immediately west of Yuma County and at the Ehrenburg Bowl Off-Highway

Vehicle Recreation Area in La Paz County, Arizona. Both of these areas are outside of the Yuma air quality planning area boundaries.

Economic Feasibility: The cost to prevent OHVs from trespassing on public or private lands is mainly associated with the printing and distribution of the Yuma public information pamphlet. Given the nominal cost associated with the public information pamphlet, ADEQ and the stakeholders deemed that preventing OHVs from trespassing on public and private lands is economically feasible. PM₁₀ emissions reduction associated with this control strategy was not modeled as part of the maintenance demonstration, although the topic is discussed in the TSD.

7. Arizona Administrative Code R18-2-702 General Provisions Stationary Source 20% Opacity Limit

Additional emissions reductions from permitted sources in the Yuma Nonattainment Area are expected as a result of revising Arizona Administrative Code R18-2-702 General Provisions to satisfy a deficiency identified by EPA September 23, 2002 at 67 FR 59546. The previous opacity limit of 40% did not meet RACM for Moderate PM₁₀ nonattainment areas. R18-2-702 applies to certain categories of permitted sources not covered by a separate source category specific opacity limit found in other sections of ADEQ rules, and it is in **Appendix B**. ADEQ revised this rule effective February 3, 2004, to correct this deficiency and submitted it to EPA. EPA approved this SIP submittal effective September 23, 2004. ADEQ chose to avoid reopening every permit issued under its jurisdiction simultaneously, as that would have been administratively burdensome. Instead, ADEQ sent out letters to all permit holders informing them that they are required to comply with the 20% opacity rule beginning February 3, 2004, except for emissions units subject to specific opacity limits, such as a 15% opacity limit for boilers. All State sources are required to abide by the General Provisions 20% opacity requirement regardless of whether it is included in the most recently issued permit or not. ADEQ has been including such language in all the permits issued or renewed since the rule went into effect on February 3, 2004, and will continue to do so.

ADEQ did not model the PM₁₀ emissions reduction associated with this control measure as part of the maintenance demonstration or as a contingency measure.

Economic Feasibility: The economic impact of R18-2-702 on ADEQ was minimal. Although the Permits Section of the Air Quality Division will eventually have to revise additional permits to incorporate the 20% opacity limit, ADEQ does not anticipate any need for additional employees or resources. Although each regulated facility is unique, compliance with the 20% opacity limit is technically feasible although facilities might have to buy new equipment or need to modify existing equipment, make adjustments or enhancements to operations and maintenance, and replace or modify processes and designs. ADEQ does not anticipate that the general public will experience any costs as a result of the rule, outside of a minor increase in costs for those goods and services that might be affected by the lower opacity limit. ADEQ has already estimated that only a few sources, and therefore any goods and services they offer, might be affected by the rule.

This measure should be approved into the SIP.

8. Other Stationary Source Control Measures

A current list of the stationary sources in the Yuma Nonattainment Area is contained in **Appendix B** of the 2006 Maintenance Plan. Actual direct emissions from these sources are well below applicability thresholds for New Source Review. Trackout from plant property onto paved roads may create PM₁₀ emissions associated with permitted sources in the Yuma nonattainment area. This will be a focus area in future permit renewals.

Economic Feasibility: ADEQ routinely amends the permits of sources under its jurisdiction. Consequently, adding the General Provisions upon permit renewal for PM10 sources in the Yuma area would not amount to any incremental compliance costs for ADEQ. It could result in incremental compliance costs for the sources. ADEQ estimates these increased costs to be minimal. Consequently, ADEQ concluded that this control measure was economically feasible for the Yuma area.

9. Pilot Tests and Studies of New Emission Reduction Techniques for Windblown Dust

As part of the Yuma NEAP, ADEQ had the option of including commitments to conduct pilot tests of new emission reduction techniques. Although Yuma stakeholders did not identify pilot tests on new emission reduction techniques to test their feasibility and effectiveness, the U.S. military is conducting tests to develop new emission factors for dust-disturbing activities from Department of Defense training and testing activities. The Strategic Environmental Research and Development Program is developing emission factors for “Dust Generated by Unique Military Activities” according to CP-1399 and CP-1400 revised November 5, 2004. These documents are in **Appendix H** for information purposes. Project completion is anticipated in 2009. The Desert Research Institute is working with the U.S. Army Engineer Research and Development Center on this project.

Any information made available to ADEQ as a result of this study will be shared with Yuma stakeholders and will be used to further refine future planning efforts.
