FINAL DRAFT

Clean Air Action Plan

Pahrump Regional Planning District
Plan to Attain Federal Standards for Particulate Matter 10 Microns and Smaller

Department of Conservation and Natural Resources
Division of Environmental Protection
Nevada Bureau of Air Quality Planning
Nye County Board of Commissioners
Town of Pahrump

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ABBREVIATIONS AND ACRONYMS

AADT(s)	Average Annual Daily Trips
AP-42	Report containing EPA's compilation of emission factors
ASTM	American Society of Testing and Materials
AVMT	Annual Vehicle Miles Traveled
BACM(s)	Best Available Control Measure(s), also referred to as Control Measures
BACT	Best Available Control Technology
BAM	Beta Attenuation Monitors
BAPC	Nevada Bureau of Air Pollution Control
BAQP	Nevada Bureau of Air Quality Planning
BMP	Best Management Practice
BTU	British Thermal Unit
CAA	Federal Clean Air Act
CAAP	Clean Air Action Plan
CMAQ	Federal Highway Administration's Congestion Mitigation and Air Quality Improvement Program
CMB	Chemical Mass Balance
DMV	Nevada Department of Motor Vehicles
EI	Emission Inventory
EPA	U.S. Environmental Protection Agency
FR	Federal Register
FRM	Federal Reference Method
g	grams
g/m^3	grams per cubic meter
GIS	Geographic Information System
lb	Pound
MRI	Midwest Research Institute
MOU	Memorandum of Understanding
mph	Miles per hour
MSW	Municipal Solid Waste
NAAQS	National Ambient Air Quality Standards
NAMS	National Air Monitoring Stations
NCBOC	Nye County Board of Commissioners
NDEP	Nevada Division of Environmental Protection
NRS	Nevada Revised Statutes
NSR	New Source Review
PM	Particulate Matter
PM_{10}	Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (μm); PM_{10} includes a fine particle fraction (<2.5 μm), or $PM_{2.5}$, as well as a coarse particle fraction (2.5-10 μm)
PTB	Pahrump Town Board
RACM	Reasonably Available Control Measure
RVP	Reid Vapor Pressure
SAD	Surface Area Disturbance

SEC	Nevada State Environmental Commission
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Stations
tpd	tons per day
tpy	tons per year
TSP	total suspended particulates
VMT	Vehicle Miles Traveled
yr	year
$\mu g/m^3$	micrograms per cubic meter.

GLOSSARY

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Air Monitoring: The periodic or continuous sampling and analysis of air pollutants in ambient air or from individual pollutant sources.

Air Pollutants: Substances which are foreign to the atmosphere or are present in the natural atmosphere to the extent that they may result in adverse effects on humans, animals, vegetation, and/or materials.

Ambient Air: Air occurring at a particular time and place outside of structures. Often used interchangeably with outdoor air.

Anthropogenic: Of, relating to, or influenced by the impact of humans on nature; human-made.

Area Sources: Also known as "area" sources, are those sources which are not large enough to be tracked individually, but when added together can represent a large quantity of pollution. Examples of these sources include multiple stationary emission sources such as water heaters, gas furnaces, fireplaces, gas stations, dry cleaners and woodstoves.

Attainment: Achieving and maintaining the air quality standards for a given standard. This is generally accomplished by using monitoring data to demonstrate that ambient pollutant levels do not exceed the appropriate standard.

Attainment Area: A geographic area that is in compliance with the National Ambient Air Quality Standards (NAAQS).

Best Available Control Measure (Control Measure): A term used to describe the "best" measures (according to EPA guidance) for controlling small or dispersed sources of particulate matter and other emissions from sources such as roadway dust, fugitive dust from disturbed vacant land and unpaved roads.

Conformity: A demonstration of whether a federally-supported activity is consistent with the State Implementation Plan (SIP) – per section 176(c) of the Federal Clean Air Act. Transportation conformity refers to plans, programs, and projects approved or funded by the Federal Highway Administration or the Federal Transit Administration. General conformity refers to projects approved or funded by other federal agencies.

Criteria Air Pollutant: An air pollutant for which acceptable levels of exposure can be determined and for which a federal or state ambient air quality standard has been set. Examples include: Ozone, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulfur Dioxide, PM_{10} and $PM_{2.5}$.

Design Value: The air quality design value at a given monitoring site is defined as the pollutant concentration which when reduced to the numeric level of the standard ensures that the site meets the standard. For a concentration-based standard, the design value is simply the standard-related test statistic. Air quality managers use the design value as the basis for determining attainment of an air quality standard.

Design Day: The day on which the design value was calculated.

Emission Factor: For stationary sources, the relationship between the amount of pollution produced and the amount of raw material processed or burned. For mobile sources, the relationship between the amount of pollution produced and the number of vehicle miles traveled. By using the emission factor of a pollutant and specific data regarding the activity level for a given source (e.g., quantity of raw material processed or number of vehicle miles traveled) quantities of material used by a given source, it is possible to compute emissions for the source.

Emission Inventory: An estimate of the amount of pollutants emitted into the atmosphere from major mobile, stationary, area-wide, and natural source categories over a specific period of time such as a day or a year.

Emission Projecting: Utilizing information and growth and control estimates to approximate future emissions.

Environmental Protection Agency (EPA): The United States Environmental Protection Agency is a federal agency charged with protecting human health and safeguarding the natural environment—air, water, and land-- upon which life depends. EPA promulgates national ambient air quality standards and implements other federal programs designed to improve air quality.

Exceedance: A measured pollutant level that is greater than the numeric value of the corresponding ambient air quality standard for the time period specified in the standard. Specifically, under EPA regulations (40 CFR part 50, Appendix K), an exceedance of the 24-hour PM_{10} standard means a daily value that is above the level of the standard (which is 150 micrograms per cubic meter) after rounding to the nearest 10 micrograms per cubic meter (i.e., values ending in 5 or greater are to be rounded up).

Federal Clean Air Act (CAA): A federal law passed in 1970 and significantly amended in 1977 and 1990 that forms the basis for the national air pollution control efforts. Basic elements of the Act include national ambient air quality standards for major air pollutants, air toxics standards, acid rain control measures, and enforcement provisions.

Federal Clean Air Act Amendments of 1990: The 1990 amended version of the CAA that mandates attainment of the National Ambient Air Quality Standards (NAAQS) by specified dates for designated nonattainment areas.

Federal Reference Method (FRM): EPA has established a filter based FRM for PM_{10} sampling that is the standard against which all other methods are measured. PM_{10} data generated from Beta Attenuation Monitors (BAMs) are an 'equivalent FRM method'. BAMs cost less and require less maintenance compared to the filter based FRM, and therefore are used throughout NDEP's particulate monitoring network.

Memorandum of Understanding (MOU): An agreement made among agencies for the purposes of jointly accomplishing a goal, program, etc. The governing boards of the involved agencies must ratify this agreement.

Mobile Sources: Sources of air pollution that are not stationary by nature such as automobiles, motorcycles, trucks, off-road vehicles, boats, and airplanes.

National Ambient Air Quality Standards (NAAQS): Standards set by the Federal Environmental Protection Agency for the maximum levels of air pollutants that can exist in the ambient air without unacceptable effects on human health or public welfare.

New Source Review (NSR): A program for pre-construction review and permitting of new or modified stationary sources. The purpose of the program is to assure that new and modified stationary sources will not interfere with the attainment or maintenance of any ambient air quality standard, or prevent reasonable further progress towards the attainment or maintenance of any ambient air quality standard. In designated attainment or unclassifiable areas, the pre-construction permitting program for new major stationary sources or significant modifications of existing major stationary sources is typically referred to as Prevention of Significant Deterioration (PSD) review whereas, in nonattainment areas, it is referred to as Nonattainment NSR review. The control technology requirement under PSD review is "Best Available Control Technology," or BACT, whereas under Nonattainment NSR review, the corresponding requirement is more stringent and is known as "Lowest Achievable Emission Rate" (LAER). Offsets are also generally required under the Nonattainment NSR program but are not required under PSD.

Nonattainment Area: An area designated by the EPA as not meeting the NAAQS for a given pollutant.

Particulate Matter (PM_{10}): A criteria air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and mists. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the air sacs deep in the lungs where they may be deposited and result in adverse health effects. PM_{10} also causes visibility reduction.

Reid Vapor Pressure (RVP): The absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids, except liquefied petroleum gases (see ASTM D 323-94).

Scalar Wind Speed and Scalar Wind Direction: Wind is air in motion relative to the surface of the earth. The wind has both an orientation (direction) and a magnitude (speed). That is, it is a vector that is described by the speed and direction of the wind. These quantities are commonly referred to as "scalars" because they can be described by a single numerical value at a point in space. Thus, the scalar wind speed and scalar wind direction are averages of scalar quantities over a given time period.

State Implementation Plan (SIP): An evolving set of documents required of each State under the Clean Air Act, as amended in 1970, and that provide emission limitations and other requirements (typically set forth in adopted State and local regulations), compliance plans, air pollution monitoring programs, pre-construction review programs for new or modified stationary sources,

individual area plans (which contain emissions inventories, attainment or maintenance demonstrations, and additional control measures), and adequate legal authority for implementation and enforcement, for the purpose of attainment and maintenance of the national ambient air quality standards. The State of Nevada submitted the original Nevada SIP to EPA on January 28, 1972, and EPA approved that submittal later that same year. Since then, the Nevada SIP has been revised numerous times. Some SIP revisions, once approved by EPA, supersede older SIP provisions while other revisions, once approved, represent new additions to the SIP. The Code of Federal Regulations (CFR), title 40, subpart DD - Nevada, part 52, section 52.1470 chronicles the various SIP revisions that have been submitted by Nevada and approved by EPA since 1972.

Stationary Sources: Non-mobile sources such as power plants, refineries, and manufacturing facilities that emit air pollutants.

Valley: All references to the "Valley" in this plan refer to Pahrump Valley, which is defined for the purposes of the CAAP to be the Nye County portion of State hydrographic area #162. Nearly all of the existing and planned land use development within the valley is contained within the Pahrump Regional Planning District.

Vehicle Miles Traveled (VMT): A measure of both the volume and extent of motor vehicle operation; the total number of vehicle miles traveled within a specified geographical area over a given period of time.

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EXECUTIVE SUMMARY

A. CAAP Purpose

The Clean Air Action Plan (CAAP) is the strategy for achieving the 24-hour National Ambient Air Quality Standards (NAAQS) for particulate matter measuring less than 10 microns in diameter in Pahrump Valley. The plan is designed to attain the particulate matter NAAQS no later than 2009 and maintain the standard thereafter. The CAAP will be submitted to the U.S. Environmental Protection Agency (EPA) by the Nevada Division of Environmental Protection (NDEP) for approval as a revision to the Nevada State Implementation Plan (SIP).

B. Description of PM_{10} and Its Health Impacts

Particulate matter (PM) is a term used to describe a complex group of air pollutants that vary in size and composition, depending upon the location and time. The size of PM can vary from coarse wind-blown dust particles to fine particles.

One of the two ambient air quality standards for PM is based on the fraction of particles with diameters less than 10 microns. This fraction of particulate matter is commonly referred to as PM_{10}. PM_{10} can be inhaled through the upper respiratory airways, and deposited in the lungs causing serious health problems. Particles larger than 10 microns in diameter are deposited almost entirely in the nose and throat area and can be expelled easily, whereas fine and ultrafine particles are able to reach the air spaces deep in the lungs. The other ambient air quality standard for PM addresses the smallest fraction of particles, those with diameters less than 2.5 microns, or $PM_{2.5}$. In January 2005, EPA published designations for $PM_{2.5}$ for all areas of the country (70 Fed. Reg. 944, 989). Within Nevada, EPA designated the entire State on the basis of hydrographic areas as "unclassifiable/attainment." While the CAAP has been developed to reduce PM_{10} emissions and concentrations, the measures adopted herein will reduce $PM_{2.5}$ emissions and related concentrations as well.

Populations at general risk for suffering adverse health effects from exposures to particulate matter include children, people of all ages with asthma, and the elderly with illnesses like bronchitis, emphysema and pneumonia.

C. PM_{10} History and Extent of Problem in Pahrump

Most current and planned development within Pahrump Valley is located within the Town of Pahrump, which is located in the Pahrump Regional Planning District of Nye County in southern Nevada. The Town of Pahrump is approximately 60 miles west of Las Vegas and 60 miles east of Death Valley.

Pahrump is an unincorporated town governed by a five-member, elected Town Board. The Nye County Commissioners have the authority to adopt, implement, and enforce ordinances as may be necessary to protect and promote the health, safety and welfare of the Town of Pahrump citizens.

From 1994 to 2004, the population in Pahrump increased from 13,060 to 31,883 persons – an increase of nearly 19,000. By 2005, the annual growth rate of Pahrump was between 2% and 5% and it has become the "bedroom community" to Las Vegas. It is estimated 60 percent of the workforce commutes to Las Vegas. Retirees comprise the majority of the population.

The recent population growth has resulted in intensive development. Large parcels of land have been cleared of vegetation, subdivided and prepared for housing construction. Dirt and gravel roads were constructed. Many of the planned housing developments never materialized and the lots are now disturbed, vacant areas. Several new major housing developments are currently under construction and will eventually provide over 10,000 new homes in the valley.

Citizen complaints in the late 90s led to the installation of an ambient PM_{10} monitor in the downtown area. The Bureau of Air Quality Planning (BAQP) has been monitoring the concentration of PM_{10} in the ambient air in the Town of Pahrump since January 2001. BAQP has monitoring data for 2001, 2002 and 2003 for the monitor located near the municipal pool ("pool site monitor"). In addition, BAQP installed four more monitors in the valley, one station monitors the background concentration, a second station is located on the Willow Creek Golf Course, the third is located near the dry lakebed and the third is located near the Manse Elementary School. During the period 2001 - 2003, twenty-seven (27) exceedances of the national ambient air quality standard for PM_{10} (24-hour average) were recorded at the pool site monitor. Seventeen (17) exceedances were associated with high wind events, and two exceedances occurred during the Southern California wildfires in October 2003. Three additional exceedances were attributed to special events in Pahrump (Fall Festivals).

D. Causes of the PM_{10} Problem and Control Strategies

Based on the annual and 24-hour emissions inventories, area and mobile sources (i.e., disturbed vacant land and unpaved roads) are the overwhelming causes of the PM_{10} problem in Pahrump Valley. The valley is subject to high winds, and these winds often create dust storms.

Resource allocation is a significant issue in Nye County; funds are not readily available to address all the sources or to implement numerous control measures in Pahrump Valley. Therefore, control measures were selected that would result in the most significant emissions reductions. The control strategy is focused on the geographic sub area within Pahrump Valley in which most existing land use development is located and where most future land use development is expected to occur (i.e., the Pahrump Regional Planning District) and is focused on the most significant source categories: unpaved roads and disturbed vacant lands.

Several control measures were selected to control fugitive dust from unpaved roads. Nye County has been implementing a paving/chip sealing program for several years. This paving program will continue and will improve all existing County gravel roads to paved or chip sealed roads in 7 to 10 years. Other control measures that will be implemented include the reduction of vehicle speeds on unpaved roads, prohibition of the construction of new unpaved roads, requirements for stabilization for disturbed lots and employment of best management practices for construction sites, and requirements for site-specific mitigation for special events.

Feasible control measures were identified as a means to reach attainment by 2009 and maintain the NAAQS in the future. All control measures need to be implemented by December 2006 and substantial emissions reductions will occur to reach attainment by 2009.

Chapter 1 CAAP Introduction and Overview

A. Introduction

There are different approaches for meeting the Federal Clean Air Act (CAA) requirements for attaining the PM_{10} NAAQS. One approach is for EPA to formally declare the area in violation of the NAAQS and formally designate it as a "nonattainment area" under section 107(d) of the CAA. Under this approach, within a certain amount of time after the effective date of the nonattainment designation, a State must prepare a revision to the State Implementation Plan (SIP) for the area designated nonattainment. This SIP revision must implement all r*easonably available control measures*, provide for *reasonable further progress* (a certain percentage of pollutants must be reduced each year), and provide a demonstration of attainment (a plan showing how the area will reach attainment as expeditiously as practicable but no later than the date set by statute).

In addition, in designated nonattainment areas, new major stationary sources or major modifications of existing stationary sources are subject to more stringent control technology requirements for nonattainment pollutant emissions than would otherwise be the case and are also subject to the requirement to offset those emissions increases with equivalent emissions reductions from other sources in the area. These more stringent requirements are referred to as Nonattainment New Source Review or just New Source Review (NSR). Also, in designated nonattainment areas, actions taken by federal agencies within these areas are subject to the requirements of EPA's Transportation and General Conformity regulations to ensure that such actions conform to the SIP revision that the State has prepared for the area. After the area reaches attainment, a mandatory 10-year maintenance plan is required to ensure that the area maintains the standard.

The Pahrump Valley CAAP Memorandum of Understanding (MOU) sets forth a different approach. *See* Appendix A. First, local, state and federal governments volunteer to participate in an MOU. The MOU charts the course for development of a plan that is designed to achieve clean air sooner than would likely occur under the formal nonattainment designation approach and allows for more local control in selecting emission reduction measures. Under this MOU, the participants agree to follow an action plan (i.e., the CAAP) that outlines the steps necessary to demonstrate attainment, and any additional steps to continue to attain once the standard has been achieved. The CAAP includes a control strategy, consisting of several control measures, which will become federally enforceable once EPA approves the CAAP as a revision to the SIP.

One advantage is that while EPA may still propose designation of the Pahrump Valley to nonattainment, the formal designation is deferred as long as the MOU terms and milestones are met. Another advantage is that the NSR requirements would not take effect under the MOU, and the conformity determinations are not necessary. Finally, the long-term maintenance plan is limited to 5 years.

The MOU approach was agreed to for the Pahrump Valley. The MOU was signed by the NDEP, the Nye County Board of Commissioners (NCBOC), the Pahrump Town Board (PTB) and the EPA on September 29, 2003. The MOU outlines all responsibilities of federal, state and local

governments, and, in addition, it describes the elements and the timelines for development of the CAAP (such as reporting, emissions inventories, emission reduction strategies, attainment assessments, maintenance for growth and public involvement), for implementation of adopted control measures, and for subsequent attainment of the PM_{10} NAAQS. Should any milestones be missed, EPA can opt to terminate the MOU, and the area would revert to traditional nonattainment/attainment requirements. Table 1-1 outlines the schedule and describes the milestones that need to be met. While some administrative deadlines have not been met, the County began formal implementation of its dust control program on December 31, 2004.

Table 1-1. CAAP Milestones

1	February 28, 2003	NDEP completed initial base year (2001) emissions inventory.
2	May 31, 2003	NDEP completed refined base year (2001) emissions inventory.
3	October 31, 2003	NDEP and NCBOC select potential control measures for further study.
4	November 30, 2003	NDEP completes future year (2009) baseline and control case inventories and an initial draft attainment assessment. Draft assessment is sent to EPA for its review.
5	April 30, 2004	NDEP, NCBOC and PTB select emission reduction strategy, including specific State and local control measures.
6	June 30, 2004	NDEP submits list of proposed control measures to EPA that were agreed upon by NDEP, NCBOC, and PTB, including description of the measure, emission reduction potential, cost effectiveness, and schedule for adoption and implementation.
7	August 31, 2004	NDEP completes draft CAAP and distributes the draft plan to NCBOC, PTB, EPA and public.
8	October 31, 2004	NDEP presents draft CAAP at meetings with NCBOC and PTB in the Town of Pahrump. NCBOC and PTB complete public hearings and adopt control measures and ordinances.
9	December 31, 2004	NDEP completes Final CAAP.
10	January 31, 2005	The State Environmental Commission (SEC) holds public hearing on Final CAAP. SEC adopts regulations. NDEP submits Final CAAP to EPA as SIP revision.
11	December 31, 2006	NDEP and NCBOC implement all adopted control measures from Final CAAP.
12	December 31, 2009	PM_{10} NAAQS attained.
13	December 31, 2014	Maintenance period ends.

B. Regulatory Responsibilities[1]

Federal

[1] Note that the full responsibilities for each agency as agreed to in the MOU are included in Appendix A.

The EPA is responsible for developing and ensuring compliance of the NAAQS. EPA has the authority under the CAA to sanction states for failing to prepare SIP revisions for designated nonattainment areas and to approve or disapprove SIP revisions once they have been adopted and submitted. Under the MOU, EPA will provide technical assistance to the state and local agencies in the development of the CAAP and review and act on the final SIP submittals for the CAAP.

State

The lead agency for air quality in Pahrump Valley is the NDEP Bureau of Air Quality Planning (BAQP). The BAQP is responsible for monitoring local air quality and for preparing and submitting SIP revisions, which can take the form of long term planning documents such as the CAAP. The State is also responsible for adopting the CAAP.

Local

The NCBOC and the PTB are authorized to adopt, implement, and enforce ordinances as may be necessary to protect and promote the health, safety and welfare of Nye County citizens. Local government is responsible for adopting the CAAP and implementing and enforcing the control measures.

Chapter 2 Pahrump Regional Planning District

A. Environmental Setting and Air Quality Patterns

The State of Nevada has historically relied on hydrographic areas as the geographic basis for air quality planning. Pahrump Valley is the name of hydrographic area #162, a geographic area that extends across the State line into California. The Nevada portion of Pahrump Valley encompasses approximately 800 square miles. The Pahrump Valley is bounded to the east and north by the Spring Mountains and to the north-northwest by the Last Chance Range. Roughly 40 percent of the Nevada portion of Pahrump Valley, or approximately 300 square miles, lies within Nye County. The remainder of the Nevada portion of Pahrump Valley lies within Clark County. For the purposes of the CAAP, the term Pahrump Valley refers just to the Nye County portion of hydrographic area #162. The Pahrump Regional Planning District encompasses roughly 45 percent of Pahrump Valley (as the valley is defined for the purposes of the CAAP), or 135 square miles (86,451 acres), of which 27% is disturbed vacant land, 35% is native desert and 38% is stabilized lands (this data was generated by BAQP using a GIS application). Figure 2-1 is a map representing the land types in different colors within the Pahrump Regional Planning District.

This plan focuses on the Pahrump Regional Planning District because most existing land use development within Pahrump Valley is located within the district, and most expected future growth in the valley is expected to occur within the district as well. Figure 2-2 is a map of the broader regional setting including the full extent of the hydrographic area, the mountain ranges, and the boundaries of the hydrographic area.

Due to the rain shadow effect of the Sierra Nevada, moisture associated with Pacific storms rarely reaches the valley. The Pahrump Valley experiences an arid climate (~5 inches of precipitation per year) typical of the northern Mohave Desert region. The average daily maximum temperature in July is approximately 100 degrees and in January approximately 57 degrees. Average daily minimum temperatures vary from 57 degrees in July to 26 degrees in January.

Surface meteorology in the Pahrump Regional Planning District is generally characterized by regional prevailing winds from the southwest to northwest with monthly average wind speeds ranging from 4 to 9 miles per hour (mph). In addition to prevailing winds, some wind generated by local topography and temperature also affects the valley. During the day, as the air mass is heated, wind directions are generally upslope and in an easterly direction. At night the wind direction is reversed and cool air drawn from the higher elevations (i.e., Spring Mountains) drains to the lower valley. The winds driven by local topography are not as strong as those associated with weather fronts in the spring and fall. There are also major wind events (sustained winds greater than 20-25 mph or wind gusts greater than 30 mph) that occur in the spring and fall.

The typical seasonal and diurnal variation of PM_{10} concentrations in the Pahrump Regional Planning District display a distinct pattern associated with these major wind events. PM_{10} concentrations approaching or exceeding the NAAQS generally occur during high wind conditions.

B. Impacts of Population Growth

Population growth in the Pahrump Regional Planning District has resulted in intensive development. Large parcels of land have been cleared of vegetation, subdivided and prepared for housing construction. Dirt and gravel roads were constructed, but many of the planned housing developments never materialized.

Winds frequently pick up dust from the disturbed vacant land and from the large number of dirt and gravel roads. This occurs particularly during high wind events. The airborne dust can become a health hazard at high concentrations; in addition, the dust contributes to local visibility impairment and regional haze.

C. Demographics

Pahrump is located in the southern part of Nye County. Population growth started to accelerate in the early 80s, and by 1990, the population of Pahrump was approximately 7,000. Ten years later, in 2000, the population had increased by approximately 17,000 to 24,000. Population in Pahrump Valley grew by another 3,600 residents since 2000 and was estimated at 27,527 by 2002[2]. Table 2-1 depicts the projected population growth in the valley from 2001-2014. There is an estimated 35% increase in population between 2001 and 2014.

Table 2-1. Projected Population Growth from 2001-2014

Year	Population	Growth
2001	26,470	
2002	27,527	4.0%
2003	28,335	2.9%
2004	29,557	4.3%
2005	30,834	4.3%
2006	32,058	4.0%
2007	33,275	3.8%
2008	34,480	3.6%
2009	35,677	3.5%
2010	36,869	3.3%
2011	37,995	3.1%
2012	39,086	2.9%
2013	40,149	2.7%
2014	41,173	2.6%

[2] Nevada State Demographer, 2002 population estimates, released 1-27-02.

Figure 2-1

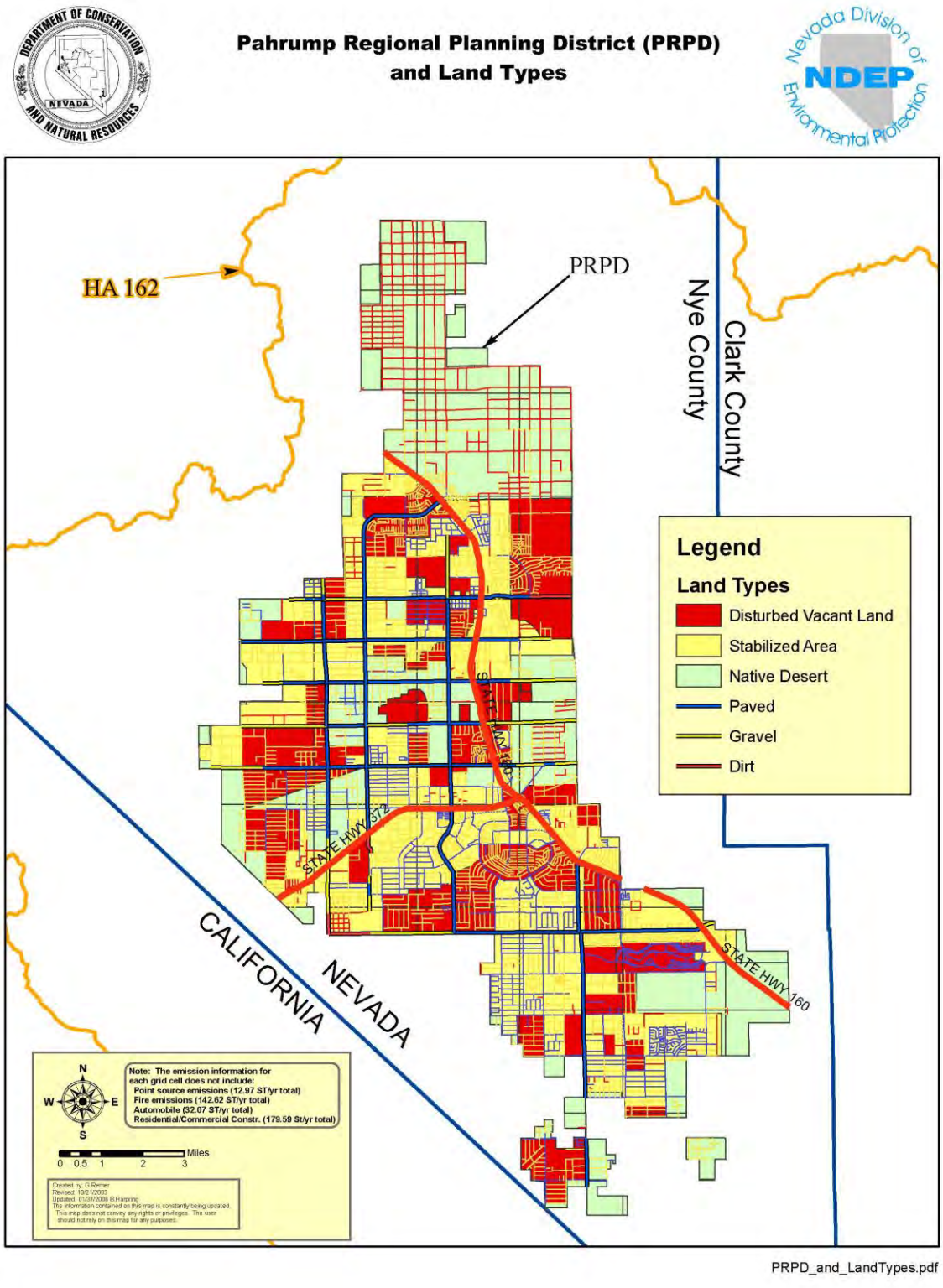
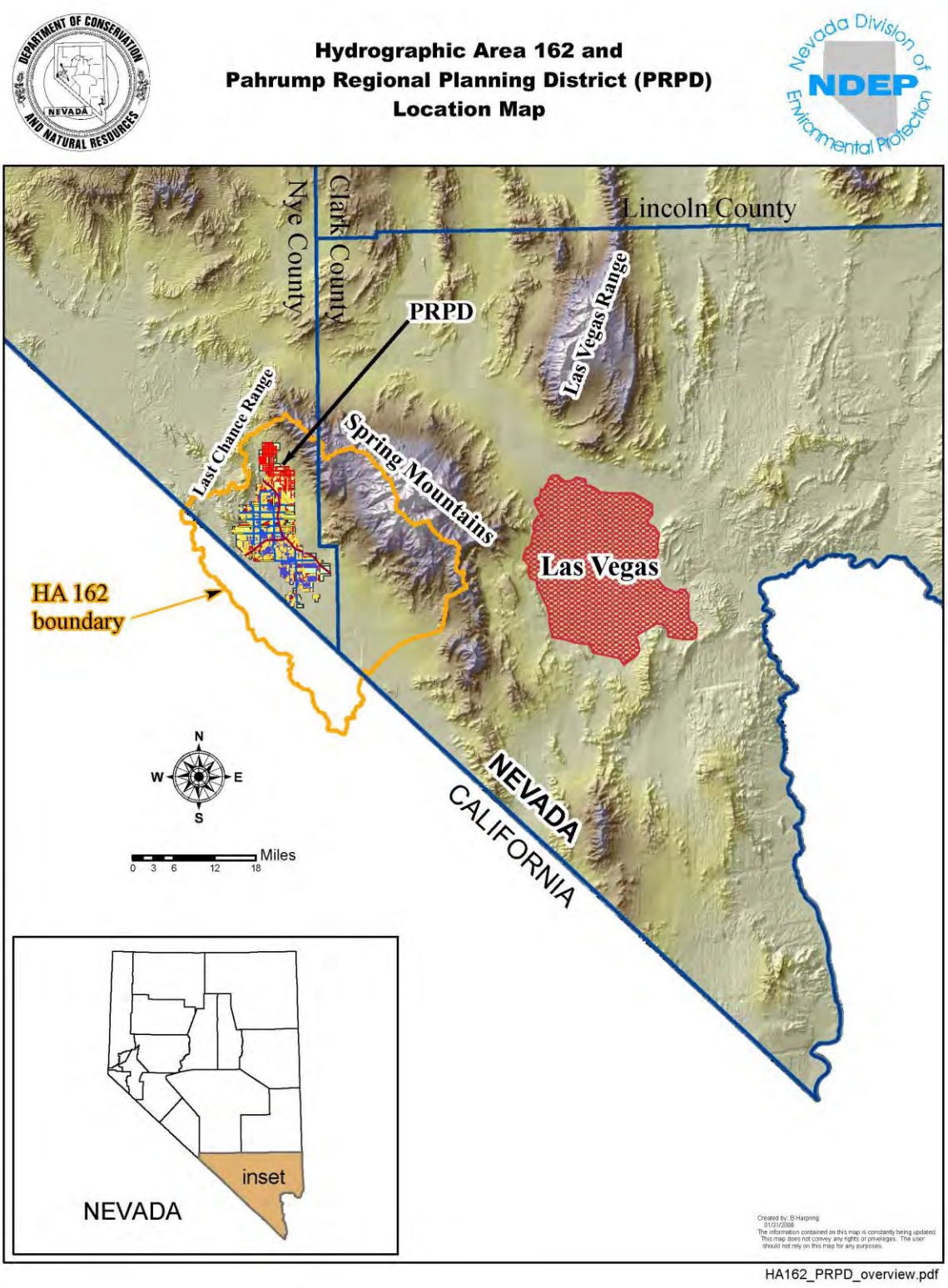


Figure 2-2



Chapter 3 Ambient Monitoring Data

A. Introduction

Section 110(a)(2)(B) of the CAA, as amended in 1990, requires ambient air quality monitoring for the purposes of SIP development. These requirements also address criteria for reporting air quality monitoring data to the EPA.

The BAQP has particulate matter monitoring data from 2001 to the present from the pool site monitoring station ("pool monitor"). During the 2001-2003 period, a total of approximately 998 24-hour samples were taken at the pool monitor. Of these samples, approximately 88% represent "good" air quality as defined in EPA's Air Quality Index (i.e., the measured concentration was 50% of the standard or less (AQI of 50 or less)), approximately 10% represent "moderate" air quality (an AQI of 51 to 100), and 2% represent various categories of "unhealthy" air quality. Generally, PM_{10} concentrations are less in winter than in spring, summer, or fall, and exceedances are not generally expected anytime from the beginning of November through the end of January.

A total of 27 exceedances of the 24-hour PM_{10} NAAQS were recorded at the pool monitor (*see* Tables B-1, B-2 and B-3 in Appendix B for details). Most of the exceedances were recorded on days during which sustained high winds were also measured. Three of the exceedances were recorded during Fall Festivals. The concentrations recorded during the festivals were 242 $\mu g/m^3$ (Oct. 6, 2001), 293 $\mu g/m^3$ (Oct. 5, 2002), and 237 $\mu g/m^3$ (Oct. 4, 2003). Generally, wind speeds were relatively low during the Fall Festivals from 2001-2003. Two exceedances, 273 and 362 $\mu g/m^3$, were recorded on October 29 and 30, 2003, respectively, reflecting the combination of sustained high winds and smoke originating from wildfires in Southern California.

The "expected annual mean" for the Pahrump Valley calculated according to EPA regulations in Appendix K to 40 CFR part 50 and based on the monitoring data collected at the pool monitor over the 2001-2003 period is 48 $\mu g/m^3$, which is slightly less than the corresponding annual average PM_{10} NAAQS of 50 $\mu g/m^3$. Because the valley meets the annual PM_{10} NAAQS, but experiences exceedances of the 24-hour PM_{10} NAAQS, the CAAP focuses on attainment and maintenance of the latter, but as a practical matter, any CAAP control measure implemented to improve 24-hour PM_{10} air quality will also have the effect of helping to ensure that the annual standard is not violated in the valley in the future.

Although the data from the pool monitor were very useful in identifying air quality exceedances at one location in the Pahrump Valley, the use of only one ambient air monitor did not provide sufficient data to assess PM_{10} conditions more generally throughout the valley. Thus, a network of PM_{10} monitoring stations was installed. Currently, monitors are installed at four locations throughout the valley that will allow the BAQP to further evaluate air quality on a regional scale. Figure 3-1 shows the locations of these four monitors. One station monitors the natural background, while the other monitors will provide the basis to determine impacts from specific sources.

Ambient PM_{10} data collection at the background site (located on North Linda Street and referred to as the "Linda monitor") began in May 2003. During 2003, a total of 229 (24-hour) samples were collected. Of those samples, all represented "good" air quality (API of 50 or less) except for one "moderate" day and two exceedance-days, October 29 and 30, 2003, during which, as discussed above, high winds combined with smoke from Southern California wildfires to elevate PM_{10} concentrations in the valley. Typically, 24-hour PM_{10} concentrations measured at the Linda monitor are 20 to 40 $\mu g/m^3$ less than those measured at the pool monitor on the same day; however, during days on which elevated concentrations occur at the pool monitor, background concentrations, as measured at the Linda monitor, can be 100 to 200 $\mu g/m^3$ lower than the same-day concentrations at the pool monitor.

B. Goals of the Monitoring Network

The goals of the monitoring network are to provide ambient air monitoring data for different areas. The monitoring network consists of four PM_{10} monitors, strategically located to evaluate the following conditions:

- *Background PM_{10} concentrations.* The monitor located at 8825 N. Linda Street will allow the BAQP to assess the air quality of the 'undisturbed' desert land surrounding Pahrump. These data will be compared to data generated in more urbanized areas of the valley and will provide information on realistic particulate matter goals in the valley.
- *PM_{10} transport*. The church monitor will be used to quantify the PM_{10} emissions that are transported into Pahrump from outlying areas, including the dry lakebed in the valley. The coarse fraction is from particulate sources that are generally localized; the inventory suggests that the PM_{10} in the valley is coarse crustal material, not combustibles or small material that is easily disturbed or transported long distances. Therefore, neither fugitive dust from the dry lakebed (located mostly in the California portion of hydrographic area #162) nor emissions generated in Las Vegas Valley is likely to be a significant contributor of PM_{10}. A review of the literature revealed that PM_{10} is primarily a localized pollutant. For example, a study of PM_{10} transport between the Imperial Valley and Mexicali determined that PM_{10} sources within a few miles have a major impact on PM_{10} measurements, while sources farther than a few miles are far less significant.[3] During several days of the study, PM_{10} data were significantly different among monitors as close as 10 miles even when favorable transport conditions were present. The BAQP had considered the use of PM_{10} monitors in Clark County to assess PM_{10} transport. However, given that prevailing regional winds have a westerly component, and the localized nature of PM_{10}, it is very unlikely that significant PM_{10} transport is occurring between Las Vegas and Pahrump. Moreover, Clark County operates a single regional scale PM_{10} monitor to assess transport into the Las Vegas area, and no monitors are located in areas to assess regional scale PM_{10} pollution from Clark County into Pahrump Valley.

[3] Chow, Judith C and Watson, John G. 1995. Imperial Valley/Mexicali Cross Border PM_{10} transport study. DRI Document No. 8623.2D1.

- *Compliance with NAAQS.* The U.S. EPA has determined maximum concentrations (thresholds) of various air pollutants should not be exceeded to protect human health. The new monitoring network is designed to determine if the NAAQS are maintained.
- *Source identification*. The monitoring network will allow us to identify specific sources or source categories. For example, the church monitor may register higher PM_{10} concentrations during wind events with prevailing winds from the dry lakebed, while other monitors detect no significant PM_{10} difference during the event. In that case, dry lakebed would be considered a significant source during high wind events.
- *Effectiveness of control measures.* The BAQP has defined best available control measures (BACM(s)) to minimize dust generation (*see* Chapter 5). The monitoring network is designed to evaluate the effectiveness of these measures.
- *Air quality trends*. The network is designed to identify air quality trends over time. As part of the agreement between the BAQP and EPA, and agreed upon in the MOU, improvements in air quality, achieved by BACM(s), should be demonstrated in the next several years.

C. Station List, Locations, and Categories

Monitoring capabilities. PM_{10} is continuously monitored, and the monitors are co-located with a weather station capable of measuring maximum wind speed, wind direction and temperature. The weather station data will identify trends and highlight localized weather events and patterns. Each PM_{10} monitor is a Beta Attenuation Monitor (BAM), a measurement device that has been shown to correlate well with the federal reference method (FRM). The monitoring data is downloaded twice a day from each of the monitors and posted on the NDEP website.

A 10-meter meteorological tower is located near the pool site monitor. Figure 3-1 depicts the locations of the monitors throughout the Pahrump Regional Planning District. Table 3-1 is a detailed summary of the monitoring equipment in the valley.

D. Description of Monitoring Stations

1. Pool Monitor

This monitor is located near the downtown area at 250 N. Highway 160. This site has been operational since 2001. Nearby land use is predominately recreational (municipal pool and ballpark) and includes irrigated parkland, rodeo arena, and paved and unpaved parking lots. This monitor is located to estimate population exposure to PM_{10}. There are no trees or buildings close enough to affect the monitor; the monitor has 360° unrestricted airflow. Highway 160 is about 70 meters to the east of the monitor.

Due to renovations to the municipal pool complex, it was necessary to move this monitoring site. The Pool monitor was shut down in late 2004. The new location is approximately one mile south at the Manse Elementary School (*see* description below).

2. Willow Creek Monitor

This monitor is located on the Willow Creek Golf Course located at 1500 Red Butte. The nearest road to the monitoring station is a paved road, Belville Road, which is about 140 meters to the south. This distance is consistent with EPA siting criteria for an urban scale monitor. This monitor is located to estimate population exposure to PM_{10}. The land use around this site is predominately irrigated golf course. The monitor has 270º unrestricted airflow and is an acceptable distance from the closest road.

3. Linda Monitor

This site at 8825 N. Linda St. monitors the natural background concentration for the valley. The land surrounding the monitor is native desert (typical of the northern Mohave region.) The monitor is located near gravel roads however; the roads have very low usage. For example, a 24-hour traffic count at Roadrunner Road east of Highway 160 yielded a count of 75 vehicles in January 2004 (the traffic count location was located approximately 1 mile from the monitor).

Although there is some disturbed land around the monitor (dirt roads, cleared vegetation), the BAQP expects that air quality will more closely represent native desert conditions. There are no trees or buildings close enough to affect siting criteria, and the monitor has 360° unrestricted airflow. The wind direction is from the north-northwest and south-southeast due to the local topography.

4. Church Monitor

The Church monitor site is located at 781 E. Gamebird Road (Our Lady of the Valley Catholic Church). This monitor will provide the basis to ascertain if localized PM_{10} transport from a dry lakebed southwest of the valley is an issue. Land use south and southwest of the monitor is relatively undisturbed Bureau of Land Management land.

The dry lakebed is located within 2.5 miles of the monitor. This monitor location was chosen to estimate the impact of the dry lakebed on PM_{10} concentrations. A church and building are nearby, but are not too close per EPA siting criteria. The monitor has 360° unrestricted airflow.

5. Manse Monitor

The Manse monitoring site is located at the Manse Elementary School at 1020 E. Wilson Street. This monitor will replace the Pool Site monitor that was shut down. This location is approximately 1 mile south of the Pool Site. This monitor will estimate the impacts on the downtown area. It will begin operating in late 2005.

Table 3-1. Meteorological and Particulate Monitoring Equipment

Location	Parameter[a]	Method	Instrument	Range[b]	Designation[c]	Spatial Scale[d]
Municipal Pool Complex	PM_{10} WD WS TMP	Beta Attenuation Wind Vane Anemometer Thermistor	BAM 1020 Met One 024A Met One 014A Met One 107	0-1000 µg/m^3 0 to 360E 0 to 45 mps -36 to +53EC	SLAMS	Population exposure
Linda Street	PM_{10} WD WS TMP	Beta Attenuation Ultrasound Ultrasound Thermistor	BAM 1020 Met One 50.5 Met One 50.5 Met One 592	0-1000 µg/m^3 0 to 360E 0 to 50 mps -30 to +50EC	SLAMS	Background
Willow Creek	PM_{10} WD WS TMP	Beta Attenuation Ultrasound Ultrasound Thermistor	BAM 1020 Met One 50.5 Met One 50.5 Met One 592	0-1000 µg/m^3 0 to 360E 0 to 50 mps -30 to +50EC		Population exposure
Manse Elementary School	PM_{10} WD WS TMP	Beta Attenuation Ultrasound Ultrasound Thermistor	BAM 1020 Met One 50.5 Met One 50.5 Met One 592	0-1000 µg/m^3 0 to 360E 0 to 50 mps -30 to +50EC		Population exposure
Church Monitor	PM_{10} WD WS TMP	Beta Attenuation Ultrasound Ultrasound Thermistor	BAM 1020 Met One 50.5 Met One 50.5 Met One 592	0-1000 µg/m^3 0 to 360E 0 to 50 mps -30 to +50EC		Transport
Municipal Building (10-meter meteorological tower)	WD WS TMP (DT) SR Rain Gauge	Wind Vane Anemometer Thermistor Pyranometer Tipping Bucket	Met One 020C Met One 010C Met One 062 Met One 96-1 Met One 370C/ 372C	0 to 360E 0 to 60 mps -50 to +50EC 3000 watts/m^2 0.01 in. min.		

[a] WD – wind direction; WS – wind speed; TMP – ambient temperature; SR – solar radiation

[b] µg/m^3 – micrograms per cubic meter; mps – meters per second

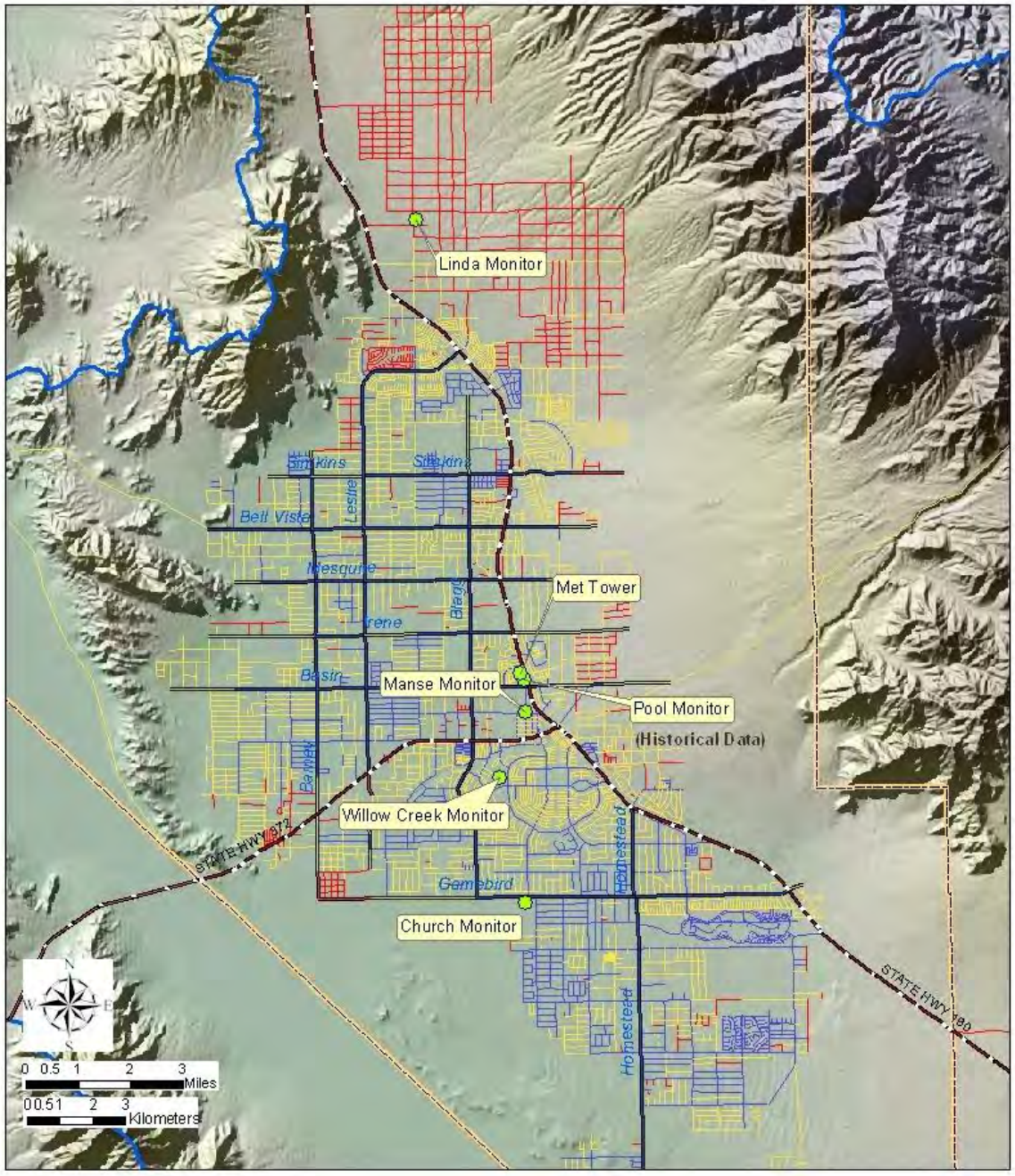
[c] SLAMS – State and Local Air Monitoring Stations

[d] PM_{10} is generally a localized pollutant. Each monitor has a spatial scale that is assigned to it – two monitors will be local scale, and the remaining three monitors will be regional scale. Local scale denotes that the data derived from this monitor are used to determine air quality in the immediate vicinity of the monitor. By contrast, the remaining monitors are set up to be regional scale – these monitors are designed to assess PM_{10} transport into the Pahrump Valley or assess natural background air quality in the Pahrump Valley.

The PM_{10} monitors will initially be Special Purpose Monitoring Stations (SPMS). The Pool site and Linda site are currently entered into EPA's Air Quality System (AQS) database, formerly known as the Aerometric Information Retrieval System (AIRS), as State and Local Air Monitoring Stations (SLAMS). All monitors will be entered as SLAMS. As SLAMS stations, data will be available to EPA after submission to AQS.

Figure 3-1 shows the locations of all the monitoring sites in the valley. More detailed maps and photographs of the locations and the surroundings of the monitors can be found in Appendix C.

Figure 3-1. Monitor Locations in Pahrump, Nevada†



† Due to renovations to the municipal pool complex, it was necessary to move the Pool site. The new location is approximately one mile south at the Manse Elementary School. *See* Section 3.D.

Chapter 4 Base Year Emission Inventory

A. Introduction

The BAQP compiled an annual 2001 base year emission inventory and several 24-hour emissions inventories using the EPA AP-42 emission factors for most of the source categories. Emission factors and methodologies from Clark County were also used to calculate the emissions from different land types (disturbed vacant land, desert land, and stabilized land). The BAPC's Paradox database was used to compile the stationary source inventory**.**

A survey of the Pahrump Regional Planning District was done in January of 2002 to identify the types of roads throughout the valley (paved and unpaved; local, arterial, and highway) and to identify three land types (desert, stabilized, and disturbed vacant land). Information was also obtained from the Nye County Planning and Roads Departments, the Nye County Treasurer, the Town of Pahrump, and personal communications with elected officials and local residents. A GIS application was used to plot and calculate the acreage of the different land types.

B. Traffic Information

Activity data for arterial roads and highways were obtained from the Nevada Department of Transportation (NDOT). Under existing conditions within Pahrump Regional Planning District, all highway segments and most arterial road segments are paved, whereas most local road segments are unpaved. Vehicle counts on unpaved local roads were determined by a traffic count conducted in January 2004 by Traffic Data Service from Flagstaff, Arizona. The BAQP, with input from the Nye County Roads Department and local residents, selected 15 traffic count locations throughout the valley. Some traffic count locations were selected according to the location of the schools. The strategy was to count some of the heavily traveled roads and some of the less traveled roads, and calculate an average that would be applied to all unpaved roads. A map of the traffic count locations is included in Appendix D. The traffic counts were done for a 24-hour period during a typical workweek. The traffic counts did not consider the traffic direction or vehicle type/classification.

The average vehicle count for unpaved roads is 60 vehicles per day. Table 4-1 lists the locations and their respective traffic count.

Table 4-1. Traffic Count Locations

Street	Count
Roadrunner & East Hwy 160	75
Linda at Harris Farms	15
Corbin south of Bell Vista	18
Lola, between Bell Vista & Blosser	22
Corbin, between Irene & Basin	31
Lola, between Irene & Basin	137
Bannovich, South of Charleston park	127

Street	Count
Flamingo at Barney	6
David, between Charleston & Hwy 372	11
Panorama, between Hwy 160 & Crawford	62
Hichory, west of Blagg	52
Spy Glass South of Charleston	15
Pahrump Valley south of Thousandaire	181
Heritage at Malibou	5
Quarter Horse at Turner Blvd	157
Average	**60**

C. Emissions Sources Excluded from Inventory

Some of the potential fugitive dust sources were omitted from the inventories because of the lack of emission factors, activity data, or the fact that some subcategories are only a small percentage of the overall inventory. Specifically, emissions generated during the Fall Festivals could not be calculated, due to a lack of activity data. Activities during the festivals include traffic around temporary parking lots, rodeo activities and any emissions from cooking devices. Also, agricultural sources and residential fuel combustion were excluded from the inventory as described later in this chapter.

Emissions associated with the year round use of the rodeo arena, horse corrals, and racetracks were not specifically calculated because of the lack of activity data and emissions factors. These categories account for approximately less than 1% of the fugitive dust from disturbed vacant lands and are included in the emissions calculations from this category.

Fireplace emissions are another source of PM_{10} emissions. The number of homes in the Pahrump Regional Planning District with wood burning fireplaces was estimated to be very minimal, due to the warm climate and the large number of modular homes. The main source of heat for the homes in this area is propane, which does not contribute significantly to PM_{10} emissions. Therefore, this source category was not included in this emission inventory for PM_{10}.

PM_{10} emissions from agricultural sources are commonly calculated for agricultural tilling and burning. To calculate the emissions from agricultural tilling, current methodologies are used for crop types where seasonal tilling is a common practice. The main crop raised in the Pahrump Regional Planning District is alfalfa grown for hay. Alfalfa fields do not require seasonal tilling therefore there are no emissions from tilling in this inventory.

Also, agricultural field burning is not a common practice for alfalfa crops grown for hay. After harvest, stubble remaining in the fields is left over the winter. Burning of alfalfa is only done for alfalfa seed and this variety is not grown in the valley. Consequently, agricultural field burning was also not included in this PM_{10} emission inventory.

D. Annual Emissions

1. Mobile Sources: Non-Fugitive Emissions (Vehicle Exhaust, Brake and Tire Wear)

a. *On-road vehicle emissions.* The PM_{10} emissions factors were developed using the MOBILE6.2 Mobile Source Emissions Factor Model. The model results are attached in Appendix E. The emissions for particulate from vehicles, including vehicle exhaust, tire wear, and brake wear were calculated using the emission rates from MOBILE6.2 and vehicle miles traveled (VMT) data. VMT data for highways and arterial roads was obtained from NDOT, VMT for local roads were calculated from traffic counts. Table 4-2 summarizes the activity data (as VMT), the emission factors and the total emissions for the categories.

Table 4-2. Non-Fugitive: Vehicle Exhaust, Brake and Tire Wear

	VMT (vehicle-mi/day)	**Emission Factor** (grams/mile)	**Emission** (tons/yr)
Highways			
SO4	207,105.40	0.0020	0.1667
Exhaust PM	207,105.40	0.0601	5.0088
Brake wear	207,105.40	0.0125	1.0418
Tire wear	207,105.40	0.0097	0.8042
Arterial Roads			
SO4	126,330.00	0.0020	0.1017
Exhaust PM	126,330.00	0.0602	3.0578
Brake wear	126,330.00	0.0125	0.6355
Tire wear	126,330.00	0.0097	0.4906
Local Roads			
SO4	60,426.00	0.0021	0.0511
Exhaust PM	60,426.00	0.0603	1.4650
Brake wear	60,426.00	0.0125	0.3040
Tire wear	60,426.00	0.0097	0.2347
Total (tpy)			**13.36**

b. *Non-road vehicle emissions.* The emissions were determined using the NONROAD2000 Model for exhaust PM_{10}. The model was used to calculate the emissions for Nye County and 75% of that value was assumed to be from the Pahrump Regional Planning District, based on population and housing data. The fuel parameters used in the NONROAD2002 model were obtained from Vernon Miller, Sr. Petroleum Chemist, Nevada Department of Agriculture. Table 4-3 summarizes the emissions calculated with NONROAD2002. Four different model runs (to include the seasonal variability in Reid Vapor Pressure (RVP) and temperature) were used to calculate the emissions. The total non-road emissions for the valley are 10.07 tpy.

Table 4-3. Total Non-Road Exhaust PM_{10} Emissions

Season	Fuel RVP	Gas Sulfur %	Diesel Sulfur %	Exhaust PM_{10} Emission (tons/season)
Winter	10.0	0.005	0.02	1.47
Spring	9.5	0.005	0.02	2.43
Summer	9.5	0.005	0.02	3.74
Autumn	9.5	0.005	0.02	2.43
Total (tpy)				**10.07**

2. Mobile Sources: Fugitive Emissions (Road Dust – Paved and Unpaved)

The BAQP used EPA AP-42 equations in Chapter 13 (AP-42, Fifth Edition, Volume I: Miscellaneous Sources) to calculate fugitive emissions for paved and unpaved roads for highways, arterial and local roads. Assuming that conditions in Las Vegas and Pahrump are very similar, the BAQP used parameters developed for Clark County by Dames & Moore and documented in a study published in 1998 to calculate emissions, specifically the silt loading factor.

a. *Paved Roads (including highways, arterials and local roads)*. An emission factor of 0.0123 lb/VMT was used to calculate paved road emissions for highways. The following equation was used to calculate the emission factor:

$$E = k(sL/2)^{0.65}(W/3)^{1.5}$$

Where:

E = particulate emission factor
k = particle size multiplier for particle size range and units of interest
sL = road surface silt loading
W = average weight (tons) of the vehicles traveling the road

The particle size multiplier (k) was extracted from AP-42 Table 13.2-1.1 for PM_{10} as 0.016 lb/VMT, and the PART5 model default value of 3 tons was used for W (there is no specific local data available). Using a silt loading of 1.34 g/m^2, the calculated paved road emission factor for highways is:

$$E = 7.3 \text{ g/VMT } (1.34 \text{ g/m}^2/2)^{0.65}(3.0 \text{ tons}/3)^{1.5}$$

$$E = 0.0123 \text{ lb/VMT}$$

Using this emission factor, the emissions were calculated to be 464.90 tpy for highways.

An emission factor of 0.082 lb/VMT was used to calculate paved road emissions for arterial and local roads. Using the same formula with a silt loading of 24.7 g/m^2, the paved road emission factor for arterial and local roads is:

$$E = 7.3 \text{ g/VMT } (24.7 \text{ g/m}^2/2)^{0.65}(3.0 \text{ tons}/3)^{1.5}$$

$$E = 0.0820 \text{ lb/VMT}$$

The VMT for paved roads were calculated using NDOT data and map/survey data for road types. Using this emission factor, the emissions were calculated to be 1,410.38 tpy for arterial roads and 228.54 for local roads. Table 4-4 summarizes the emissions for the three road types.

Table 4-4. Fugitive Emissions for Paved Roads

	VMT (vehicle-mi/day)	**Emission Factor** (lb/VMT)	**Emissions** (tons/yr)
Highways	207,105.40	0.0123	464.90
Arterials	94,245.00	0.0820	1,410.38
Locals	15,271.80	0.0820	228.54
Total			**2,103.82**

b. *Unpaved Roads (arterial and local roads)*. An emission factor of 3.27 lb/VMT was used to calculate unpaved road emissions for arterial and local roads. The following equation was used to calculate the emission factor:

$$E = \frac{k\,(s/12)^a (W/3)^b}{(M/0.2)^c}$$

Where:

k, a, b, and c are empirical constants referenced in AP-42 Table 13.2.2-2
E = size-specific emission factor
s = surface material silt content
W = mean vehicle weight
M = surface material moisture content

The range for surface material silt content in AP-42 13.2.2 is 1.2 to 35%. Based on an April 1997 report developed for Clark County by Desert Research Institute, an average surface silt material content of 16% was used in the calculations, assuming similar conditions in Las Vegas and Pahrump.

The constants for PM_{10} extracted are as follows: k = 2.6 lb/VMT, a = 0.8, b = 0.4, c = 0.3. The PART5 model default value of 3.0 tons was used for W. The range for surface moisture contents from AP-42 is 0.03% to 20% with 0.2% presented as the default value. Using the 0.2% as the value for M, the calculated emission factor for unpaved roads is:

$$E = \frac{2.6 \text{ lb/VMT } (16\%/12)^{0.8} (3.0 \text{ tons}/3)^{0.5}}{(0.2\%/0.2)^{0.3}}$$

$$E = 3.27 \text{ lb/VMT}$$

Using the emission factor and VMT, a total of 46,094.42 tpy were calculated. Table 4-5 summarizes the emission calculations. VMT for arterials was obtained from NDOT, while the VMT for unpaved roads was calculated using the traffic count data.

Table 4-5. Fugitive Unpaved Road Emissions

	VMT (vehicle-mi/day)	**Emission Factor** (lb/VMT)	**Emissions** (tons/yr)
Arterials	32,085.00	3.27	19,147.53
Locals	45,154.20	3.27	26,946.90
Total			**46,094.42**

3. Fugitive Dust from Disturbed Vacant, Native Desert, and Stabilized Vacant Lands

Emission factor methodologies from the Clark County PM_{10} SIP were used to calculate wind erosion emissions from lands in the Pahrump Regional Planning District. Assuming the conditions in Las Vegas and Pahrump are similar, the BAQP staff chose to use the emissions factors derived in the *Estimation of PM_{10} vacant land emissions factors for Unstable, Stable and Stabilized lands using data from 1995 and 1998-1999 UNLV wind tunnel studies of vacant and dust-suppressant treated lands, January 16, 2001- Second Final Report* (Section III of Appendix C in the Clark County 2001 PM_{10} SIP). To obtain the total acreages for disturbed lands, native desert and stabilized vacant land, hydrographic area mapping data (GIS data) from the Nevada Division of Water Resources were used. Acreage distribution was also estimated through a combination of survey results taken in January 2003 and GIS data. The BAQP staff conducted a survey of the valley in early January of 2003. Observations on land use and road conditions were recorded during a weeklong survey. The results were used to update some of the data in the GIS application.

Emissions were calculated for three land types using the following methodology:

a. *Disturbed Vacant Land*. An initial wind threshold of 20 mph was used for disturbed vacant land because the wind tunnel studies determined that emissions would occur at this wind speed for 90% of disturbed vacant land parcels. An initial "spike" was measured when wind speeds reached a level where particles were first measured. The particulate reservoir for disturbed vacant land was assumed to have no limit. For every hour the sustained wind speeds were within a given wind speed category above the "spike" wind speed, the emissions were calculated. A single "spike" mass was added for each acre, assuming each day represented a single wind event and the reservoir recharging would not have occurred during a 24-hour period.

Therefore, the emissions factor was calculated as follows:

(# hours in range) x (sustained winds emission factor) + (# days in range) x (spike emissions factor) = Emission Factor for Disturbed Vacant Land

The emissions from the disturbed vacant land total 60,287.17 tpy (*see* Table 4-6).

Table 4-6. Fugitive Dust – Disturbed Vacant Lands

Wind Speed Category (mph)	# of Hours in Range	# of Days in Range	Sustained Winds Emission Factor (ton/acre/hr)	Spike Emissions Factor (ton/acre)	Emission Factor of Unstable Land (ton/acre)
15-19.9	685	144	N/A	N/A	N/A
20-24.9	383	91	.00521	.000816	2.07
25-29.9	55	31	.00640	.00194	.4120
30-34.9	18	9	.00462	.00141	.0959
35-39.9	1	1	.00705	.00380	.0109
Total					2.59
(23,276.90 acres) x (2.59 tons/acre) = **60,287.17 tons/yr**					

b. *Native Desert Land*. The emissions factor for native desert was determined using the same methods as for disturbed vacant land, except 25 mph was determined to be the initial wind threshold for native desert parcels. Because the native desert parcels were determined to have a limited particulate reservoir, calculations were made based on the assumption that the reservoir would be depleted within one hour of sustained winds above the "spike" wind speed. Consequently, only one hour of emissions were calculated during each day that winds exceed the "spike" wind speed.

Therefore, the emissions factor was calculated as follows:

(# days in range) x (sustained wind emissions factor) + (# days in range) x (spike emissions factor) = Emissions Factor for Native Desert Land

The emissions for native desert land are summarized in Table 4-7 and total 4,026.70 tpy (*see* Table 4-7).

Table 4-7. Fugitive Dust – Native Desert

Wind Speed Category (mph)	# of Days in Range	Sustained Winds Emission Factor (ton/acre/hour)	Spike Emissions Factor (ton/acre)	Emission Factor of Unstable Land (ton/acre)
15-19.9	144	N/A	N/A	N/A
20-24.9	91	N/A	N/A	N/A
25-29.9	31	.00257	.000490	0.0949
30-34.9	9	.00316	.000588	0.0337
35-39.9	1	.00299	.000924	0.0039
Total				0.1325
(30,390.20 Acres) x (.1325 tons/acre) = **4,026.70 tons/yr**				

c. *Stabilized Vacant Land*. The initial wind threshold for this category was observed to be lower than the other categories, yet the overall emissions factors were greatly reduced. The wind tunnel studies for this land type category generally did not observe spikes from the stabilized parcels, so emission factors without spike corrections were used. As with native desert, the stabilized parcels were assumed to have a limited particulate reservoir that would be depleted within one hour of sustained winds, so only one hour of emissions were calculated during each day.

Therefore, the emissions factor was calculated as follows:

(# days in range) x (sustained winds emission factor) = Emissions Factor of Unstable Land

The emissions from the stabilized vacant land total 3,251.83 tpy (*see* Table 4-8).

Table 4-8. Fugitive Dust – Stabilized Vacant Land

Wind Speed Category (mph)	# of Days in Range	Sustained Winds Emission Factor (ton/acre/ hour)	Emission Factor of Unstable Land (ton/acre)
15-19.9	144	0.00042	.06050
20-24.9	91	0.00034	.03090
25-29.9	31	0.00019	.00589
30-34.9	9	0.00019	.00171
35-39.9	1	0.00019	.00019
Total			.09919
(32,783.80 Acres) x (.09919 tons/acre) = **3,251.83 tons/yr**			

4. Construction Activities

Emission factors from the Midwest Research Institute (MRI), *Improvement of Specific Emissions Factors March 1996*, were used to calculate fugitive dust emissions from construction activity. The emissions factors were derived by MRI from onsite evaluations of construction operations within four serious PM_{10} nonattainment areas: Las Vegas, NV; Coachella Valley, CA; South Coast, CA; and San Joaquin Valley, CA.

Emissions were calculated for three types of construction: residential, commercial and highway. The BAPC regulates fugitive dust at construction sites. The BAPC Compliance and Enforcement Branch estimates a 20% compliance rate for implementing controls for each type of construction activity in the Pahrump Valley. Research contracted for by the EPA assigns a 50% control efficiency to watering for control of particulates from construction activities.[4] Therefore, the BAQP used an overall control efficiency of 10% for the three construction activities listed in Table 4-11.

[4] U.S EPA, Investigation of Fugitive Dust Volume 1 - Sources, Emissions, and Control, June 1974, EPA-450/3-74-036a. See Table 4-2 and pp. 4-25, 26.

a. *Residential Construction*. The number of new residential units for 2001 in the Pahrump Regional Planning District was obtained from the Nye County Planning and Assessor's Office. The BAQP used EPA-recommended conversion factors to estimate the total acres disturbed by construction.[5] The total acres disturbed are shown in Table 4-9. A total of 133.08 tpy of emissions were calculated using an emission factor of 0.265 tons/acre/month (*see* Table 4-11).

Table 4-9. Residential Construction

	# Homes	Conversion	Acres Disturbed
Single Family Detached	312	¼ acre/bldg	78.0 acres
Single Family Attached	34	¼ acre/bldg	8.5 acres
Multi-Family Housing Units	13	½ acre/bldg	6.5 acres
Total			**93.0 acres**

b. *Commercial Construction*. The total acres of non-residential construction activity for 2001 in the Pahrump Regional Planning District were obtained from information from the Nye County Building Department and the Nye County Assessor's Office. Table 4-10 lists all commercial construction locations and the size of the development. Using that data and an emission factor of 0.265 tons/acre/month, a total of 46.51 tpy of emissions was calculated (*see* Table 4-11).

Table 4-10. Commercial Construction

Address		Acres
51	E. Hwy 372	3.2
301	S. Oxbow Ave	2.2
601	S. East Street	0.37
681	S. Hwy 160	8.09
950	S. Pahrump Valley Blvd	0.35
1021	E. Gamebird Rd	1.1
1041	S. Hwy 160	0.84
1070	E. Irene St	2.3
1101	S. Hwy 160	2.55
1231	E. Basin Ave	1.35
1240	E. State St	1.63
1470	E. Calvada Blvd	0.17
1541	E. Wahkiakum Ave	2.7
1700	P V Blvd	24.87

[5] E.H. Pechan & Associates, Inc., Documentation for the Final 1999 National Emissions Inventory (Version 3.0) for Criteria Air Pollutants and Ammonia Area Sources, prepared for the U.S. EPA Office of Air Quality and Planning Standards, January 31, 2004. See Appendix D, Methodologies for Estimating 1999 NEI Emissions for Area Source Categories, p. D-6.

Address		Acres
2201	E. Postal Dr	1.17
2281	E. Postal Road	0.853
4061	E. Dandelion Street	3.77
4760	Pahrump Regional Planning District Blvd	2.17
5281	Vicki Ann Rd Building D	4.7
5441	S. Vicki Ann	8.97
Total		**64.38**

c. *Highway Construction*. The BAQP staff contacted NDOT[6] and the Nye County Road Department[7] to obtain the number of miles or acres disturbed for new highways/roads, widen projects, and shoulder work. Both offices reported *no* highway construction projects in 2001. To determine if this is typical for highway construction projects for new highways/roads, widen projects and shoulder work, staff reviewed a report from NDOT for proposed highway projects for FY 2001-2006. This report projected two widening projects for a total of 8.5 miles over the next five years. This would average approximately 31 acres of disturbed land over a five year period or 6.2 acres per year.

Table 4-11. Construction Activity Emissions

Type of Construction	Number of Acres Under Active Construction in 2001	% of Sites Implementing Controls	Overall Control Efficiency	Months Under Active Construction	PM_{10} Emission Rate (tons/acre/month)	PM_{10} Emissions for 2001 (tons)
Residential Homes	93	20%	10%	6	0.265	133.08
Commercial	65	20%	10%	3	0.265	46.51
Highway	0	20%	10%	12	0.42	0.00
Total						**179.59**

5. Fires

a. *Residential Municipal Solid Waste (MSW) Burning*: Emission estimates for residential MSW burning were developed by first estimating the amount of waste generated in the Pahrump Regional Planning District. The amount of waste generated was estimated using a state average per capita waste generation factor of 7.8 lb/person/day (NDEP Bureau of Waste Management). This factor was applied to the population estimate in the valley; the total waste generated in the valley is 37,680.05 tpy. The difference between the amount of waste generated and the amount landfilled (29,804.04 tpy) was assumed to be burned. The waste burned (7,876.01 tpy) generated 63 tons of PM_{10} emissions as summarized in Table 4-12.

[6] Gus Michaels, District 1, Construction Department, NDOT
[7] Dave Fanning, Road Foreman, Nye County Road Department

MSW calculations:

= (7.8 lb/person/day) x (26,470 people) x (365 days/yr) / (2000 lbs/ton)

= 37,680.05 tons MSW/yr for Pahrump Regional Planning District

Subtract amount landfilled, 29,804.04 tons → 7,876.01 tons MSW burned

b. Emission factors were extracted from AP-42 Table 2.5-1, *Emission Factors for Open Burning of Municipal Refuse*. The emission factor for particulates is 16 lb/ton.

Table 4-12. MSW Burning Emissions

MSW burned (tons/yr)	Emissions Factor (lb/ton)	Total Emission (ton/yr)
7,876.01	16	63.0

6. Stationary Sources

The BAPC tracks stationary point sources and issues permits to those sources that have a potential to emit 5.0 tons or more of PM_{10} emissions in a year. The following table reflects ten permitted point sources located in Hydrographic Basin 162 and their reported PM_{10} emissions. Table 4-13 lists all the stationary sources and their total emissions that were operating in the valley in 2001.

Table 4-13. Permitted Stationary Sources PM_{10} Emissions

Permit No.	Company Name	PM_{10} (tpy)
Mining or quarrying crushed and broken stone		
AP14290988	FLOYD'S CONSTRUCTION INC - Shamrock Pit	0.13
Construction Sand and Gravel		
AP14420118.01	PAHRUMP CONCRETE INC	2.85
AP14420228.01	BOLLING CONSTRUCTION	0.52
AP14420802	ELITE CONCRETE CORP	1.90
AP14420890	DESERT SAND & GRAVEL INC-Mesquite Road East	0.25
AP14420909	RON MURPHY CONSTRUCTION CO, INC-East/West Pit	0.62
Highway and Street Construction		
AP16110519	WULFENSTEIN CONSTRUCTION CO INC	5.07
AP16110900	ACTION READY MIX	1.61
Total		**12.95**

7. Summary of Annual Emissions in the Valley

Table 4-14 summarizes the total annual base year emissions in the Pahrump Regional Planning District. The emissions from mobile sources including vehicle exhaust from on-road and nonroad vehicles, and fugitive dust emissions from roads account for 48,221.67 tpy. Fugitive

emissions from lands (disturbed, stable and native desert lands) total 67,559.47 tpy. Construction, which includes residential, commercial and highway construction, totals 179.59 tpy. Finally, fires and stationary sources account for 63.0 tpy and 12.95 tpy, respectively.

Fugitive emissions from unpaved roads and disturbed vacant land are the biggest sources of PM_{10} emissions in the valley. They account for 40% and 52%, respectively, of the total emissions.

Table 4-14. Total 2001 Annual Particulate Emissions for Pahrump Regional Planning District in Tons per Year

Area Source	Emission Factor	Emissions (tpy)
MOBILE SOURCES		
Vehicle Exhaust Emissions - On-road	See Table 4-2	13.36
Vehicle Exhaust Emissions - Nonroad	See Table 4-3	10.07
Fugitive Dust - Paved Roads	0.0123 lbs/VMT	2,103.82
Fugitive Dust - Unpaved Roads	3.27 lb/VMT	46,094.42
	Subtotal:	48,221.67
VACANT/DISTURBED LANDS		
Fugitive Dust - Disturbed Vacant Lands	2.59 tons/acre	60,287.17
Fugitive Dust - Native Desert Lands	0.1270 tons/acre	4,026.70
Fugitive Dust - Stabilized Lands	0.0990 tons/acre	3,251.83
	Subtotal:	67,565.70
CONSTRUCTION ACTIVITIES		
Fugitive Dust - Residential Construction	0.265 tons/acre/month	133.08
Fugitive Dust - Commercial Construction	0.265 tons/acre/month	46.51
Fugitive Dust - Highways Construction	0.42 tons/acre/month	0.00
	Subtotal:	179.59
FIRES		
Fires - Residential MSW Burning	16 lb/ton	63.0
Permitted Sources (excluding SAD's)		12.95
Total Particulate Emissions:		**116,042.91**

E. 24-Hour Emission Inventories

In addition to the annual emission inventory, two 24-hour base year emission inventories were compiled for the following cases: (1) a high-wind day on which high winds significantly influenced the high measured PM_{10} concentration (May 2, 2001); and (2) a low-wind day on which winds were not a significant factor influencing the high measured PM_{10} concentration (September 18, 2002). The inventories are summarized in Appendix F. Emission inventories were not developed to represent Fall Festivals, but Chapter 5 describes the control strategies that are being implemented to address the exceedances that typically occur during these events. No emissions inventory was prepared to represent days on which wildfire smoke is present, but such events are addressed in the maintenance chapter of the CAAP (Chapter 7).

The 24-hour emission inventories were calculated using the meteorological data (maximum scalar wind speed) from the Pool site monitoring station. The methodologies used for the annual emission inventory were used to calculate 24-hour inventories. Emissions from construction activities, fires and stationary sources were assumed to be same during the different events. The annual emissions from these categories were divided by 365 to determine 24-hour emissions.

1. A High-Wind Day on May 2, 2001

The 24-hour average PM_{10} concentration on May 2, 2001 was 360 $\mu g/m^3$. This represents the third highest PM_{10} concentration measured at the pool monitor during the 2001–2003 design period. The maximum (one-hour average) scalar wind speed for that day was 42 mph. On this day, over the 24 hour period, average (hourly) wind speeds exceeded 20 mph on 16 hours, 15 of which exceeded 25 mph. During days on which persistent high winds occur, the PM_{10} inventory is dominated by wind erosion of ground surfaces, particularly disturbed vacant land, but also including native desert lands. PM_{10} emissions from wind erosion of disturbed vacant land are generated each and every hour during which average (hourly) wind speeds exceed 20 mph. In contrast, PM_{10} emissions from wind erosion of native desert lands occurs only during the first hour during which average (hourly) wind speeds exceed a threshold velocity of 25 mph, because the wind depletes the "reservoir" of loose particles on native desert lands over that hour. No such depletion by wind occurs at disturbed vacant land sites. The total emissions for the day were approximately 2690 tons, with the majority generated by disturbed vacant land (approximately 91%) and native desert lands (4%). This day provides the CAAP with the basis for distinguishing significant source categories from insignificant source categories for the purpose of identifying BACM in Chapter 5 and is the "high wind" design day for attainment assessment purposes in Chapter 6. High wind effects on particulate concentrations are further discussed in Chapter 7 in connection with maintenance of the standard.

2. A Low-Wind Day on September 18, 2002

The 24-hour average PM_{10} concentration on September 18, 2002 was 286 $\mu g/m^3$. This reflects the single highest PM_{10} concentration measured at the pool monitor over the 2001-2003 design period that was not affected by persistent high winds. The maximum scalar wind speed for that day was 26 mph. The total emissions for the day were approximately 1835 tons, with the majority generated by disturbed vacant land (approximately 87%) and native desert lands (5%).

Chapter 5 Control Strategies

A. General Approach

For the purposes of the CAAP, the control strategy focuses on the 24-hour PM_{10} NAAQS because the data collected from the ambient PM_{10} monitoring network indicates that the 24-hour standard, rather than the annual average standard, is violated on occasion in Pahrump Valley. Measures taken to reduce 24-hour PM_{10} concentrations will also, however, help to ensure that annual-average PM_{10} continues to be within the corresponding standard.

The first step is to select the design days for which the strategies will be developed. The two design days selected for the CAAP include the high-wind day of May 2, 2001 during which a 24-hour average PM_{10} concentration of 360 $\mu g/m^3$ was measured, and the low-wind day of September 18, 2002 during which a 24-hour average PM_{10} concentration of 286 $\mu g/m^3$ was measured. The high-wind design day represents the third highest PM_{10} concentration measured at the pool monitor during the period 2001–2003.[8] The low-wind design day represents the seventh highest overall PM_{10} concentration measured at the pool monitor over the 2001-2003 period and reflects the single highest measured PM_{10} concentration that was not affected by persistent high winds or by activities associated with Fall Festivals.

The second step is to develop emissions inventories for the design days. These emissions inventories provide the basis for distinguishing "significant" source categories from insignificant source categories by apportioning the design concentration to the various sources contributing to the inventory. Next, a list of potential control measures is developed for each of the significant source categories, and each of the potential measures is described and evaluated for effectiveness and for technical and economic feasibility. The evaluation of potential measures then leads to the identification of BACM for each of the significant source categories.

This chapter presents the emissions inventories for the two design days, identifies the significant source categories, provides the list of potential control measures, evaluates those measures in the process of identifying BACM, and discusses BACM implementation issues. Chapter 6 then provides the attainment assessment, which shows the effect of BACM implementation on PM_{10} concentrations on the design days.

A different approach is taken to address PM_{10} exceedances during Fall Festivals. For reasons stated previously, no emissions inventory has been prepared for Festival Days, and thus the approach must be qualitative in nature. The control strategy for Fall Festival days builds upon the strategies developed to address the two design days, in that implementation of BACM will help to reduce PM_{10} concentrations throughout the valley and throughout the year, including specific places and times such as the Fall Festivals. It is recognized, however, that additional site-specific measures are needed to supplement area-wide BACM implementation, and thus this chapter also

[8] Selection of this design day is based on application of the "table look-up" method developed by EPA for determining design concentrations. See U.S. EPA, PM10 SIP Development Guideline, June 1987, EPA-450/2-86-001, chapter 6.0 (Development of Control Strategies).

identifies additional specific measures to be implemented to minimize PM_{10} concentrations during these annual events.

B. Design Day Emissions Inventories

Table 5-1 is the 24-hour emission inventory for the high-wind day, May 2, 2001. The 24-hour average PM_{10} concentration that day was 360 $\mu g/m^3$. The inventory clearly demonstrates the most significant PM_{10} sources (disturbed vacant land, native desert, and unpaved roads) and the difference in their relative importance for the annual and 24-hour emission inventories.

Table 5-1. 24-hour Emission Inventory for High-Wind Design Day

Inventory Date 5/2/2001 **Concentration: 360 $\mu g/m^3$**

Mobil Sources	**Road Length (miles)**	**Average Annual Daily Trips**	**VMT (Vehicle miles/day)**	**Emission Factor (lb/VMT)**	**Emissions (tons/day)**	**Percent of Total Emissions**
Vehicle Exhaust-On-road					0.04	0 %
Vehicle Exhaust-Nonroad					0.03	0 %
Fugitive Dust-Paved Highway	24.0		207,105.4	0.0123	1.27	0 %
Fugitive Dust-Paved Arterial Roads	62.8	1,500	94,245.0	0.082	3.86	0 %
Fugitive Dust-Paved Local Roads	254.5	60	15,271.8	0.082	0.63	0 %
Fugitive Dust-Unpaved Arterial Roads	21.4	1,500	32,085.0	3.27	52.46	2 %
Fugitive Dust Unpaved Local Roads	752.6	60	45,154.2	3.27	73.83	3 %
Area Sources	**Percent of Total Area**	**Baseline Area (acres)**		**Emission Factor (tons/acre)**	**Emissions (tons/day)**	
Fugitive Dust-Disturbed Vacant Lands	26.92%	23,276.9		0.104826	2440.02	91 %
Fugitive Dust-Native Desert Lands	35.15%	30,390.2		0.003648	110.86	4 %
Fugitive Dust-Stabilized Lands	37.92%	32,783.8		0.00019	6.23	0 %
Total Pahrump Regional Planning District Area	100.00%	86,450.9				
Other Sources				**Baseline Emissions (tons/yr)**	**Emissions (tons/day)**	
Fugitive Dust-Construction				179.59	0.49	0 %
Fires residential burning				63	0.39	0 %
Stationary Sources				13.0	0.04	0 %
Total					**2690.15**	100 %

Table 5-2 is the 24-hour emission inventory for the low-wind day, September 18, 2002. The 24-hour average PM_{10} concentration that day was 286 $\mu g/m^3$. This day reflects the single highest measured PM_{10} concentration that was not affected by persistent high winds or by activities associated with Fall Festivals.

Table 5-2. 24-Hour Emission Inventory for Low-Wind Design Day

Inventory Date 9-18-2002 **Concentration: 286 µg/m^3**

Mobil Sources	**Road Length (miles)**	**Average Annual Daily Trips**	**VMT (Vehicle miles/day)**	**Emission Factor (lb/VMT)**	**Emissions (tons/day)**	**Percent of Total Emissions**
Vehicle Exhaust-On-road					0.04	0 %
Vehicle Exhaust-Nonroad					0.03	0 %
Fugitive Dust-Paved Highway	24.0		207,105.4	0.0123	1.27	0 %
Fugitive Dust-Paved Arterial Roads	62.8	1,500	94,245.0	0.082	3.86	0 %
Fugitive Dust-Paved Local Roads	254.5	60	15,271.8	0.082	0.63	0 %
Fugitive Dust-Unpaved Arterial Roads	21.4	1,500	32,085.0	3.27	52.46	3 %
Fugitive Dust Unpaved Local Roads	752.6	60	45,154.2	3.27	73.83	4 %
Area Sources	**Percent of Total Area**	**Baseline Area (acres)**		**Emission Factor (tons/acre)**	**Emissions (tons/day)**	
Fugitive Dust-Disturbed Vacant Lands	26.92%	23,276.9		0.068846	1,602.52	87 %
Fugitive Dust-Native Desert Lands	35.15%	30,390.2		0.00306	92.99	5 %
Fugitive Dust-Stabilized Lands	37.92%	32,783.8		0.00019	6.23	0 %
Total Pahrump Regional Planning District Area	100.00%	86,450.9				
Other Sources				**Baseline Emissions (tons/yr)**	**Emissions (tons/day)**	
Fugitive Dust-Construction				179.59	0.49	0 %
Fires residential burning				63	0.39	0 %
Stationary Sources				13.0	0.04	0 %
Total					**1834.78**	100 %

C. Significant and Insignificant Source Categories

EPA guidance identifies 5 µg/m^3 as the presumptive level at which a given source category will be presumed to contribute significantly to a violation of the 24-hour PM_{10} standard, which is 150 µg/m^3. *See* EPA's "State Implementation Plans for Serious PM_{10} Nonattainment Areas, and Attainment Date Waivers for PM_{10} Nonattainment Areas Generally; Addendum to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990," 59 Fed. Reg. 41998, at 42011 (August 16, 1994). Where applicable, BACM is generally required for all source categories that are found to contribute significantly to PM_{10} standard violations.

To determine whether a source category was significant, concentrations for the various source categories were calculated by multiplying the monitored ambient concentration (minus the background) by the fraction that each source category contributes to the inventory. This method is similar to the one used for the *Revised PM_{10} State Implementation Plan for the Salt River Area* (August 2004), prepared by the Arizona Department of Environmental Quality (ADEQ) and submitted to EPA for approval on August 2, 2004. See the discussion of this method in Chapter 6 of ADEQ's Technical Support Document (June 2004) for the revised Salt River Area PM_{10} plan.

The significance level for each of the source categories was calculated for the high-wind day on May 2, 2001, which recorded 360 µg/m^3. Background concentration monitoring began in June 2003; the average background concentration from June 2003 until April 2004 was used for the calculations. The average background concentration for that period is 16.5 µg/m^3. Subtracting this background from the measurement gives a difference of 343.5 µg/m^3. This value is multiplied by the percent contribution of the different source categories to give the significance concentration of that source. The source contributions in µg/m^3 for May 2, 2001 are calculated in Table 5-3. The same approach was used to identify the significant source categories for the low-wind design day. See Table 5-4 below. A comparison of these two tables reveals that the same source categories were "significant" during the two design days.

Table 5-3. Source Contribution to PM_{10} Levels for the High-Wind Design Day

Inventory Date: 5/2/2001

24-hr PM_{10} concentration	360	µg/m^3
Average background	16.5	µg/m^3
Difference at station	343.5	µg/m^3

Mobile Sources	**Emissions (tons/day)**	**Percent of Total Emissions**	**Contribution in µg/m3**
Vehicle Exhaust-On-road	0.04	0.0 %	0
Vehicle Exhaust-Nonroad	0.03	0.0 %	0
Fugitive Dust-Paved Highway	1.27	0.0 %	0
Fugitive Dust-Paved Arterial Roads	3.86	0.1 %	0
Fugitive Dust-Paved Local Roads	0.63	0.0 %	0
Fugitive Dust-Unpaved Arterial Roads	52.46	2.0 %	7
Fugitive Dust Unpaved Local Roads	73.83	2.7 %	9
Area Sources	**Emissions (tons/day)**		
Fugitive Dust-Disturbed Vacant Lands	2440.02	90.7 %	312
Fugitive Dust-Native Desert Lands	110.86	4.1 %	14
Fugitive Dust-Stabilized Lands	6.23	0.2 %	1
Other Sources	**Emissions (tons/day)**		
Fugitive Dust-Construction	0.49	0.0 %	0
Fires residential burning	0.39	0.0 %	0
Stationary Sources	0.04	0.0 %	0
Total	**2690.15**	100.0%	

Table 5-4. Source Contribution to PM_{10} Levels for the Low-Wind Design Day

Inventory Date: 9-18-2002

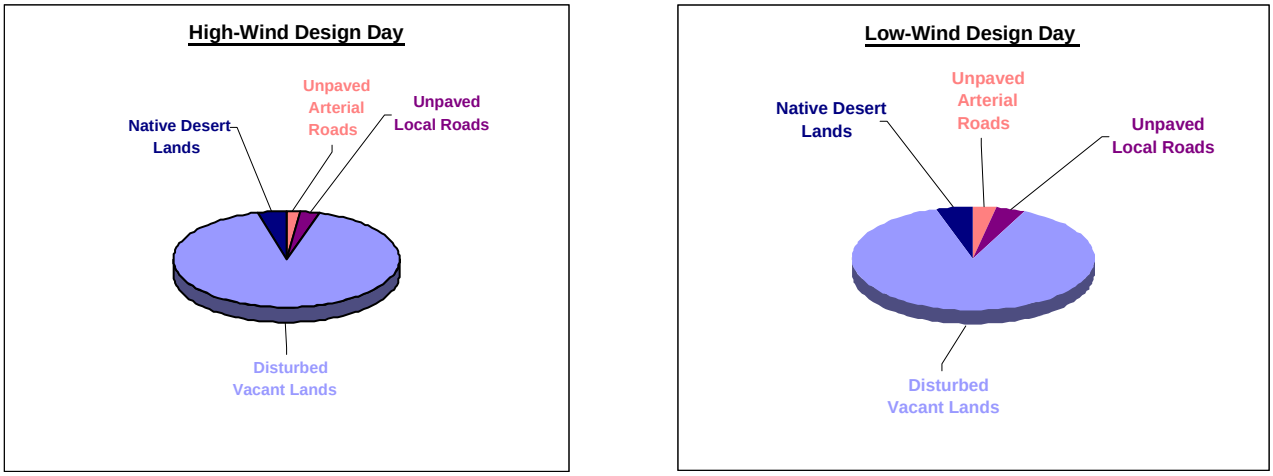
24-hr PM_{10}concentration	286	$\mu g/m^3$
Average background	16.5	$\mu g/m^3$
Difference at station	269.5	$\mu g/m^3$

Mobile Sources	**Emissions (tons/day)**	**Percent of Total Emissions**	**Contribution in µg/m3**
Vehicle Exhaust-On-road	0.04	0.0 %	0
Vehicle Exhaust-Nonroad	0.03	0.0 %	0
Fugitive Dust-Paved Highway	1.27	0.1 %	0
Fugitive Dust-Paved Arterial Roads	3.86	0.2 %	1
Fugitive Dust-Paved Local Roads	0.63	0.0 %	0
Fugitive Dust-Unpaved Arterial Roads	52.46	2.7 %	8
Fugitive Dust Unpaved Local Roads	73.83	3.7 %	11
Area Sources	**Emissions (tons/day)**		
Fugitive Dust-Disturbed Vacant Lands	1602.52	87.3 %	235
Fugitive Dust-Native Desert Lands	92.99	5.6 %	14
Fugitive Dust-Stabilized Lands	6.23	0.3 %	1
Other Sources	**Emissions (tons/day)**		
Fugitive Dust-Construction	0.49	0.0 %	0
Fires residential burning	0.39	0.0 %	0
Stationary Sources	0.04	0.0 %	0
Total	**1834.78**	100.0%	

Figure 5-1 depicts the source contribution for both the high-wind and low-wind design days. Note that the contribution of disturbed land is greater in the high-wind design day inventory (312 $\mu g/m^3$) than it is in the low-wind design day inventory (235 $\mu g/m^3$).

The significance analysis shows that four source categories are significant contributors to the PM_{10} exceedances: unpaved arterial roads, unpaved local roads, native desert lands and disturbed vacant lands. There is no data available to distinguish private from county roads, but private roads are expected to form a small fraction of the total road inventory. These roads are also expected to have low traffic loads, since they typically access one, or at most, a few parcels.

Figure 5-1. Emission Inventory – Source Contributions



For each of the significant sources identified in the emission inventory, except for native desert lands, potential control measures were identified and analyzed for implementation. Potential control measures were identified using the Clark County, Nevada PM_{10} Implementation Plan; the Maricopa County, Arizona PM_{10} Plan; and the San Joaquin Valley, California PM_{10} Plan. No measures are being evaluated for the significant source category of wind-blown dust from native desert lands, but, to the extent that this source category continues to contribute to occasional PM_{10} exceedances in the valley even after implementation of BACM for the other significant source categories, this source category is addressed in Chapter 7, which addresses issues related to maintaining the NAAQS once it has been attained. Public comment during workshops on dust control and the Revised Pahrump Master Plan provided additional control measures for consideration.

Exhaust from on-road and non-road equipment, fugitive dust from paved roads and emissions from residential burning and stationary sources are not considered in the control measure analysis because they are determined to be insignificant sources. The control measure analysis explores and evaluates control measures and strategies for unpaved roads and disturbed vacant lands and is organized into three parts:

- *Control Measure Identification*: Different control measures for each source category are identified and evaluated. Costs associated with controls are summarized in Appendix G.
- *BACM Selection*: Refined lists of selected BACMs are discussed and the ordinances identified.
- *BACM Implementation*: Implementation of the selected BACMs is discussed.

D. Control Measure Identification

1. Unpaved Roads

Natural winds and vehicular movement suspend dust on unpaved roads.[9] The vehicle traffic adds to the suspended dust load because tire contact creates a shearing force with the road that lifts particles into the air.[10] These surfaces are an almost limitless reservoir of dust, because they are continuously being disturbed.[11] In addition to exposing new dust particles for suspension in the atmosphere by disturbing the surface of the roadbed, the grinding action of tires on coarse particles is continuously generating finer particles in the PM_{10} size range. Moving vehicles can also create turbulent wakes that loft and suspend particles in the air column where they can be dispersed by the ambient winds.

Dust emission rates have been found to be dependent on fine particle content of the roadbed, roadbed moisture content, as well as vehicle speed, size and shape.[12] In order to limit vehicle-generated PM_{10} emissions from unpaved roads, controls affecting each of these factors can be considered. The following control measures were evaluated:

- Paving/ chip sealing
- Watering
- Application of chemical dust suppressants
- Reduced speed
- Vehicle routing
- Graveling
- Private road dust control
- Prohibit construction of new unpaved roads
- Road closures

All cost estimates can be found in Appendix G, Control Measure Cost Estimates.

a. *Paving*. Paving (applying asphalt to roadway) unpaved roads is an excellent fugitive dust control measure. Based on the comparison of the paved emission factor and the unpaved emission factor used in the fugitive emission inventory for the Pahrump Regional Planning District (paved roads = 0.0820 lb/VMT; unpaved roads = 3.27 lb/VMT), paving achieves a 97.5% control efficiency. This measure is also the most expensive in the short term and requires ongoing maintenance.

[9] Watson, J.G., J.C. Chow, and T.G. Pace. 2000. *Fugitive Dust Emissions* (Chapter 4) *in* Air Pollution Engineering Manual, W.T. Davis, ed., Air & Waste Management Association, Pittsburgh, PA, pp117-135.

[10] Nicholson, K.W., J.R. Branson, P. Geiss, and R.J. Cannell. 1989. *The Effects of Vehicle Activity on Particle Resuspension*. J. Aerosol. Sci. 20:1425-1428.

[11] Watson, J.G., J.C. Chow, J.A. Gillies, H. Moosmuller, C.F. Rogers, D. DuBois and J. Derby. 1996. *Effectiveness Demonstration of Fugitive Dust Control Methods for Public Unpaved Roads and Unpaved Shoulders on Paved Roads*. DRI Document No. 685-5200.1F1., Desert Research Institute, Reno, Nevada.

[12] Gillies, J.A., J.G. Watson, C.F. Rogers, D. DuBois, and J.C. Chow. 1999. *Long-Term Efficiencies of Dust Suppressants to Reduce PM_{10} Emissions from Unpaved Roads*. J.Air & Waste Manage. Assoc. 49:3-16.
Mollinger, A.M., F.F.M. Nieuwstadt, and B. Scarlett. 1993. *Model Experiments of the Resuspension Caused by Road Traffic*. Aerosol. Sci. Technol. 19:330-338.

The estimated cost of paving is $144,000 per mile of road per year,[13] assuming a five-year road life. This cost includes any preparation that needs to be done on the existing roadways. The maintenance cost of paved roads is $18,500 per mile of road. The cost estimates include equipment costs and wages for the operators. The cost effectiveness is estimated at $4,100 per ton, assuming an unpaved road supporting 60 vehicle trips per day. *See* Appendix G.

b. *Chip Sealing*. Chip seals are economical surface treatments that can be used as control measures for unpaved roads. In a single chip seal, an asphalt binder is sprayed on the pavement, then immediately covered by a single layer of uniformly sized chips. The new surface treatment is then rolled to seat the aggregate and swept to remove any loose chips.

The cost estimate, for chip sealing, is $65,000 per mile of road per year, assuming a five-year road life. This cost includes any preparation that needs to be done on the existing roadways. The maintenance cost of chip sealed roads is $18,500 per mile of road. The cost estimates include equipment costs and wages for the operators. The cost effectiveness is estimated at $1,900 per ton assuming an unpaved road supporting 60 vehicle trips per day. *See* Appendix G

c. *Graveling*. Graveling unpaved roads would seem at first glance to be an excellent method of suppressing fugitive dust emissions; however, this has not been confirmed by field investigations. Flocchini et al.[14], in a study of dust suppressants, found that graveling did not appear to reduce dust emissions at all. Rosbury and Zimmer[15] had similar findings. The gravel appears to provide, in conjunction with its activation into movement by tires, a high-energy source that actively grinds the surface creating a source for fine particles. Before graveling can be accepted, some site-specific information must be collected to confirm how much control can realistically be expected. Graveling will not be proposed as a potential control measure because of the lack of field investigations discussed above.

d. *Watering Roads***.** Simple watering of unpaved roads is a very effective dust control measure when only short-term control is necessary. The application of water clumps the fine particles together or adheres them to larger particles, temporarily eliminating the reservoir of PM_{10} particles. In hot, dry conditions, water application may have to be applied more than once a day. For 50% control, water application may be required daily. The water application rate should be adequate to dampen the roadbed, but not sufficient to create muddy conditions that can allow the tracking of particles onto paved surfaces. The cost estimate for watering of unpaved roads is $9,100 per mile per year. The estimated cost includes operating and water expenses. The cost effectiveness is estimated at $400 per ton assuming an unpaved road supporting 60 vehicle trips per day. *See* Appendix G.

[13] All costs associated with paving and chip sealing were provided by Sam Yao (Public Works Director Nye County) 8/30/04.

[14] Flocchini, R.G., T.A. Cahill, M.L. Pitchford, R.A. Eldred, P.J. Feeney, and Z.-Q. Lu. 1994. *Evaluation of the Emissions of PM_{10} Particulates from Unpaved Roads in the San Joaquin Valley*. Final Report Prepared for the San Joaquin Valley Unified Air Pollution Control District, U.S. EPA, and California Air Resources Board, April, 1994, 61p.

[15] Rosbury, K.D., and R.A. Zimmer. 1993. *Cost Effectiveness of Dust Controls Used on Unpaved Haul Roads*. Volume 1: Results, Analysis, and Conclusions. Prepared by PEDCo Environmental, Inc., for the Bureau of Mines, U. S. Dept. of Int.

e. *Application of Chemical Dust Suppressants*. There are a variety of chemical dust suppressants available for application to unpaved roads. The optimum choice for a particular unpaved road depends on the composition of roadbed, climate, suppressant availability, and application and maintenance costs. The general categories of chemical dust suppressants typically used in desert climates are salts, petroleum emulsions, lignin sulfonates, and polymers. The cost effectiveness for chemical dust suppressants often applied in desert climates are evaluated in a memo dated 8-13-2003 regarding Best Available Control Measure and Inventory Analysis for the CAAP. *See* Appendix C.

i. Salts. Salts as chemical dust suppressants generally refer to magnesium and calcium chloride. These hygroscopic (water adsorbing) compounds control dust by retaining moisture in the road bed. These salts will actually adsorb water from the atmosphere if there is sufficient relative humidity. Magnesium chloride is generally preferred in dry climates. However, roads treated with magnesium chloride may need supplemental watering during persistent dry conditions to retain maximum effectiveness. In the Pahrump Regional Planning District, light watering once or twice a month may be required outside of the winter season for optimal dust control. Reapplication may be necessary after heavy rains, which can leach the salts from the roadbed.

While magnesium chloride is the cheapest chemical surfactant to apply, the annualized costs include the potential need for multiple applications and periodic watering. Test applications may be necessary to evaluate the true cost of this control.

ii. Petroleum Emulsions. Petroleum oils are nonwater-soluble carbon compounds that are suspended in water. They control dust by sticking particles together. After being sprayed on a dusty surface, the cohesive resins from the petroleum emulsions attach themselves to the dusty fine particles, clustering them into particles that are too large to become airborne. Petroleum emulsions can be effective in reducing dust caused by vehicle traffic on unpaved road surfaces.

iii. Lignin Sulfonates. Lignin sulfonate is an organic adhesive produced as a derivative of the paper industry and is the essentially the glue that holds wood fiber together. It is water soluble, environmentally safe, and very effective in dry conditions. Lignin sulfonate controls dust by cementing particles together. It is also used to stabilize roads by mixing into the top few inches of the road bed rather than using spray application. In this instance, dust is controlled, but the roads tend to develop pot holes. Heavy rains can wash lignin sulfonate out of the road bed, because it is water soluble.[16]

iv. Polymer. Polymer dust suppressants are byproducts of the adhesives industry. They form an elastic seal on the surface of the road that binds particles together. They are very effective in dry conditions, nontoxic, and commonly require only annual applications to maintain their effectiveness unlike other suppressants. However, Gillies et al.[17] found that

[16] Interim Guidelines on Dust Palliative Use in Clark County, Nevada, p.8. http://ndep.nv.gov/admin/dustpa1.pdf
[17] See supra n. 12, Gilles.

one polymer dust suppressant retained 80 percent dust control a year after application on a lightly used (50 Average Daily Trips) unpaved road in the San Joaquin Valley of California. The Kern County Air Pollution Control District reported similar findings in a 1994-1995 field study.

f. *Reduced Vehicle Speed*. Reducing vehicle speed is an effective way to reduce PM_{10} emissions. Flocchini et al.[18] recognized a 58% reduction in PM_{10} emissions by reducing vehicle speeds from 25 to 10mph. EPA considered the percentage decrease in vehicle speed equal to the percentage decrease in emissions (i.e., reducing speeds from 50 mph to 40 mph should equal a 20 percent decrease in emissions). Many agencies do not consider mandating a vehicle speed reduction as a primary way to reduce emissions because it is difficult to enforce.

g. *Heavy Vehicle Routing*. Mollinger et al.[19] found that vehicle size and shape have a significant impact on the amount of particulates lifted in their wake. Large, rectangular vehicles, such as tractor trailers and school buses will lift more particles and loft them further into the atmosphere than do smaller, more aerodynamic automobiles. Restricting the use of large vehicles to paved roads, to the degree feasible, will help decrease PM_{10} emissions.

h. *Prohibit the Construction of New Unpaved Roads***.** Since unpaved roads are among the most significant sources of PM_{10} emissions, disallowing the construction of new unpaved roads would, at a minimum, help stabilize the air quality in the Pahrump Regional Planning District. The update to the Pahrump Master Plan (approved November 2003) addresses this issue. The Pahrump Master Plan defines an Air Quality Policy that requires asphalt paving in all new master planned communities, industrial parks and business parking in the Pahrump Regional Planning District.

i. *Road Closures*. Limiting access to redundant or unnecessary roads could decrease potential sources of PM_{10} emissions on unpaved roads. Road closures would lessen the amount of roadways potentially subject to other forms of emission control and ongoing maintenance.

j. *Private Road Dust Controls*. Private roads are expected to form a small fraction of the total unpaved roads PM_{10} emissions. These roads are expected to have low traffic loads, since they typically access one, or at most, a few parcels.

2. Disturbed Land

Disturbed land is any area where the natural desert soils and vegetation have been removed or disrupted. The natural soils typically develop a wind resistant crust that limits their ability to emit particulates. The vegetation hinders wind flow near the soil surface, decreasing the impact of the wind. Dust emissions from vacant disturbed land are the highest source of particulates in the Pahrump Regional Planning District according to the emission inventory for the high-wind design day. The BAQP estimates that disturbed land has 20 times the potential to emit particulates as undisturbed desert on an acre-by-acre annual basis, based on the emission factors used in the emissions inventory for Pahrump (disturbed land emission factor = 2.59 tons/acre; native desert

[18] See supra n. 14.
[19] See supra n. 12, Mollinger.

emission factor = 0.1325 tons/acre). Therefore, controlling new disturbance and stabilizing already disturbed lands is important.

Fugitive dust emissions from the soil surface, exclusive of vehicular action, require wind to loft the particles into the air. The EPA[20] stated that the wind threshold above which particles can become entrained in the atmosphere is approximately, on the average, 12 mph. The BAQP's inventory for the Pahrump Regional Planning District uses a threshold wind speed of 20 mph for disturbed vacant land based on wind tunnel studies in Clark County. The primary goal is to prevent particulate emissions from disturbed lands during high-wind events.

Any activity in the Pahrump area that disturbs five-acres or more is currently required to obtain a Surface Area Disturbance permit from the BAPC under NAC 445B.22037, Emission of particulate matter: fugitive dust, and to file a Fugitive Dust Control Plan, as required in SIP 445.734, Fugitive dust, with "measures required by the director to prevent particulate matter from becoming airborne." These regulations are available in Appendix H. The Fugitive Dust Control Plan itemizes all of the dust control techniques to be considered. A variety of controls are discussed below to stabilize disturbed lands and minimize emissions. The following control measures were evaluated:

- Limiting vehicle access
- Watering
- Revegetation
- Soil Covers
- Dust suppressants
- Windbreaks
- Dust Control Plans

The costs and cost effectiveness for each of these control measures can be found in Appendix G.

a. *Limiting Vehicle Access*. Vehicular activity on disturbed lands is the activity with the highest emissions considered in this assessment. Continuing to disturb the soils creates a nearly limitless supply of fine particulates that can become airborne on high-wind days. In order for disturbed desert to stabilize, vehicular use must be curtailed. Curtailment may require the use of fencing, signs, or physical barriers.

b. *Watering*. Watering on windy days is an appropriate measure for small areas, and is typically used as a solution during construction or other temporary activities. Intermittent watering of soils that subsequently remain undisturbed will eventually develop a crust that will inhibit dust generation. The costs estimated by Clark County Health District for watering include operating costs, travel, hauling, and water expenses.

[20] EPA 1995. *Compilation of Air Pollutant Emissions Factors, Volume 1: Stationary Point and Area Sources*. Chapter 13.2. U. S. Environmental Protection Agency, Office of Air and Radiation, Office of Air Quality Planning and Standards, Research Triangle Park, NC.

c. *Revegetation*. Revegetation is perhaps the ultimate goal for disturbed lands not destined for development. Successful revegetation to a degree adequate for dust control is difficult, due to the climate. Revegetation is a feasible alternative for residential properties.

d. *Soil Covers***.** Any material applied to the surface of the soil that shields the soil from high winds can be an effective control. This includes covers of gravel or geotextiles, and organic mulches. Plas-Tex is a product used in many locations in Las Vegas that consists of shredded news print in a plaster matrix. The dust control properties of Plas-Tex can last for over a year. Seed can be mixed with product to aid in revegetation. The cost estimate assumes annual applications, which in practice may not be necessary.

e. *Dust Suppressants***.** Dust suppressants, as discussed in Section 5.D.1.e can be very effective controls. Typically, suppressants require periodic reapplication, but are less expensive to use on disturbed lands because they need not support vehicular traffic. Many dust suppressants do not inhibit revegetation, and can actually aid the process by retaining soil moisture. Clark County estimates the cost of stabilization of disturbed land with suppressants to be between $500 and $2,000 dollars per acre per year. The hygroscopic and petroleum emulsion suppressants are disallowed on disturbed land in Clark County because of pollution concerns and reapplication requirements.

The application of a polymer dust suppressant is estimated in the $500 to $800 dollar per acre range. If the surface remains undisturbed and the soil begins to develop a crust, then the suppressant may be effective for over a year. Manufacturers provided anecdotal evidence that some parcels in desert settings remain controlled for over two years from a single application. This would have to be evaluated on a case-by-case basis.

f. *Windbreaks***.** The use of windbreaks was addressed and was found to be suitable as a potential control measure. The placement of windbreaks in terms of both orientation and spacing is critical if windbreaks are to be effective in controlling dust. Where surfaces have been stabilized, windbreaks are not necessary.

g. *Dust Control Plans***.** A dust control plan is required to ensure that appropriate control measures are applied to all dust-producing activities in the Pahrump Regional Planning District. The dust control plans must address the type of best practical methods of fugitive dust control to be used to control fugitive dust in detail. More than one type of fugitive dust control method may be necessary to prevent fugitive dust generation and use of multiple fugitive dust methods must be addressed if applicable.

E. BACM Selection

The control measure list was refined after meetings and briefings that included elected officials from the NCBOC, the PTB, and the public.

The process for selecting control measures involves consideration of several criteria. The cost, effectiveness of control measures, enforceability and testing, and implementation method were evaluated while selecting the BACMs. Resource allocation is a significant issue in Nye County;

funds are not readily available to address all the sources or to implement numerous control measures in the Pahrump Regional Planning District. Therefore, control measures were selected that would result in the most significant emissions reductions. Although Nye County cannot allocate funds beyond the current fiscal year, the decision by the NCBOC to sign and implement the MOU coupled with Board actions to develop, adopt and implement dust control measures, demonstrates its continued willingness to support the CAAP.

Nye County officials, the NDEP and independent contractors have made a good faith effort to secure additional State and Federal funds to support the emission control efforts. The Nye County commissioners contacted Nevada Governor Kenny Guinn and U.S. Senator Reid to ask for additional state or federal funds for dust controls. No funds were available. Nye County undertook an extensive search and review of federal grant programs that could provide funding for air quality improvement activities. Grant programs sponsored by the EPA, the Economic Development Administration, the U.S. Department of Agriculture, the U.S. Department of Transportation (DOT), and various private grant sources were identified and evaluated. Of the programs identified, only EPA offered grant funds that could be used for air quality improvement activities, but none of the EPA grant funds could be applied to areas with only PM_{10} attainment problems. The EPA funds could only be applied to designated nonattainment areas with significant sources of toxic emissions. The Pahrump Regional Planning District does not meet the population criterion (greater than 45,000) for Federal DOT funds to abate particulate matter. Private grant sources have been greatly diminished or eliminated during the past 48-month period.

The BAQP requested a new position to support the implementation of Nye County's Dust Control Ordinance. This position has been located in Pahrump and was available on November 17, 2004.

1. Unpaved roads

a. Paving/Chip Sealing Program. This program was implemented a few years ago to improve road conditions in the valley. The program is ongoing and will be supported into the future. Although this is an expensive control measure, it is a very effective emissions reduction measure.

Nye County is prioritizing the existing unpaved roads in the Pahrump Regional Planning District for BACM implementation based on intensity of usage and proximity to sensitive receptors (schools, medical facilities, retirement homes, etc.). According to the Pahrump Master Plan Update, roads that are most heavily traveled and nearest to commercial and residential facilities, as well as business and industrial parks, will be prioritized for paving. The lowest-ranked roads, those that are traveled by less than 60 vehicles per day, will not be considered for the paving/chip sealing program or any other control measure based on the findings of a traffic count survey of 15 unpaved roads within the valley. This survey found that these little-used roads currently support very low traffic volumes. In some cases, the roads support just a few cars per day. Thus, their contribution to this source category is minimal and excluding them from control would not interfere with the overall control strategy. Maps created by the BAQP identify high and low priority roads, by road types and by emissions (Appendix I). The Nye County Roads Department is currently using the maps to implement the paving program. Table 5-5 summarizes the selected control measures for unpaved roads and the applicable regulations.

b. Gravel. This option was not selected because more field testing needs to be done to confirm that graveling is a valid control measure (see discussion in the BACM Identification section of this document.)

c. Watering. This method can be very effective but is only temporary. This option was discussed with the Public Works Director and will be used on an as needed basis.

d. Chemical Suppressants. This option was not selected because of resource allocation issues. Application of chemical suppressants needs to be done several times a year and the county currently does not have the equipment or storage facilities to use chemical suppressants as a control measure.

e. Reduced Speed Limits. Lowering speed limits is still an important component of the strategy to control fugitive dust. The Town of Pahrump enacted an ordinance on October 4, 2002 (Appendix J) to reduce speed limits on unpaved roads. On all gravel and dirt roads within the unincorporated Town of Pahrump the maximum allowable speed is 25 mph.

f. Heavy Vehicle Routing. This control strategy has been discussed as a future potential measure for PM_{10} emission reductions. The Nye County Road Department is currently looking into this measure but does not have any heavy vehicle re-routing plans at this time.

g. Prohibition of New Unpaved Roads. This control measure was identified in the Master Plan Update that was completed in November 2003 (Nye County Code Chapter 16.28.280.I): each and every new parcel created pursuant to a parcel map application shall be provided with full width or one-half width dedicated or private road right of way with two moving lanes of asphalt paving. This Nye County Code is located in Appendix J.

Table 5-5. Selected Control Measures for Unpaved Roads

Control Measure	**BACM Yes or No**	**Ordinance**
Paving	Yes	County Program
Chip seal	Yes	County Program
Gravel	No	
Watering	Yes	County policy
Chemical suppressants	No	
Reduced Speed Limits	Yes	Town of Pahrump Ordinance 72.020
Heavy Vehicle Routing	No	

Control Measure	BACM Yes or No	Ordinance
Prohibition on new unpaved roads in public thoroughfares	Yes	Nye County Code Chapter 16.28.280

2. Disturbed Vacant Lands

a. *Limit Off-Road Use of Vehicles on Vacant Land*. Disturbed vacant lands will stabilize naturally; the natural soils typically develop a wind resistant crust, or pebble lag, that limits their ability to emit particulates. Limiting off-road use of vehicles will protect the already stabilized lands. This option was chosen because if off-road use of vehicles is limited, no additional controls are needed to control the vacant lands. Nye County Ordinance 15.28.120 states that physical barriers and signs will be used to prohibit access to vacant lots.

b. Stabilization and Revegetation. Stabilizing the soil surface and prohibiting new disturbance were determined to be key steps in controlling fugitive dust from vacant lots. Revegetation was included as a control measure subject to site-specific approval. Windbreaks were also an optional control strategy, as a subcategory of limiting vehicle access.

c. Construction Activities – Dust Control Plans. Any activity in the Pahrump area that requires more than five acres of total disturbance is currently required to obtain a Surface Area Disturbance permit from BAPC under NAC 445B.22037 and to file a Fugitive Dust Control Plan (*see* Appendix H), which itemizes all of the dust control techniques to be employed. Best Management Practices for construction activities are outlined in the Fugitive Dust Control Plan. Construction contractors in the valley currently use BMPs on all their construction sites. BMPs include but are not limited to wind breaks, soil covers, watering, etc. Table 5-6 lists the selected control measures for vacant lands and the applicable regulation.

Nye County Ordinance 297 Chapter 15.28.090 requires a dust control plan for any project involving, in aggregate, one-half acre or more of disturbed area. In addition, Ordinance 297 requires implementation of control measures to the extent necessary to pass the stabilization test described in Chapter 15.28.140 of the ordinance. The ordinance is located in Appendix J.

Table 5-6. Selected Control Measures for Disturbed Lands.

Control Measure	BACM Yes or No	Ordinance
Limit off-road use of vehicles on vacant land	Yes	Ordinance 297 Chapter 15.28.110
Stabilize surface (soil covers, watering to develop soil crust)	Yes	Ordinance 297 Chapter 15.28.140
Construct windbreaks	Yes	Ordinance 297 Chapter 15.28.110
Revegetation	Yes	Ordinance 297 Chapter 15.28.110

Control Measure	BACM Yes or No	Ordinance
Dust control plans for construction/land clearing projects	Yes	Ordinance 297 Chapter 15.28.090.C

F. BACM Implementation

1. Legal Authority

Legal authority for Nye County is derived pursuant to the Planning and Zoning Act of Nevada codified in the Nevada Revised Statutes (NRS) Chapter 278 – Planning and Zoning. Additional county authorities are identified in NRS 244 – Counties: Government. These statutes authorize the NCBOC to adopt, implement, and enforce ordinances as may be necessary to protect and promote the health, safety and welfare of Nye County citizens. In addition, Nye County can issue notices of alleged violation and penalties.

State authority for NDEP in contained in the Nevada Revised Statutes 445B and the applicable code. BAQP has the authority to require implementation of control measures, and also require soil and source testing. In addition, BAQP can issue of notices of alleged violations and penalties.

2. Funding

a. *County*. Nye County is spending considerable resources on its ongoing chip sealing and paving program in Pahrump Regional Planning District. Currently, Nye County has approximately 350 miles of gravel roads out of a total unpaved road inventory of approximately 800 miles. Some gravel roads are considered to be arterials, but most are considered to be local roads. Chip sealing or paving the highest priority roads as determined below will maximize the effectiveness of this program. The Nye County Road Department is responsible for the implementing the chip seal and paving program funding as described below. Implementation of the plan will improve all existing gravel roads to paved or chip sealed roads in seven to 10 years.

Chip seal and paving priorities will be established by the emissions inventory and petition from residents. At least 20 miles of gravel roads that have the highest emissions will receive either chip seal or paving each year, until such time as the entire county-owned gravel roads have been treated or paved. An additional 20 to 30 miles of road will also be chip sealed per year in accordance with the chip seal petition program. With the development explosion in Pahrump, developers are expected to pave county gravel roads on which their development lands will be fronted. It is envisioned that by the year 2010, all Nye County (gravel) roads in the Pahrump Valley will be chip sealed or paved.

Funds for annual chip seal and paving are appropriated through Nye County Road Funds in the amount of approximately $800,000 per year. The road funds are supplemented by approximately $2 million from the Payments Equal to Taxes (PETT) fund, a fund received from the Department of Energy to Nye County pursuant to Section 136 the Nuclear Waste Policy Act of 1982, as amended. Each year the NCBOC appropriates approximately $2.8 million in funds to provide for

the chip seal (or paving) of roads in the Pahrump Valley. Additionally, Nye County also recently sought Federal grants to accelerate the chip sealing program to facilitate PM_{10} abatement. Although Nye County cannot allocate funds beyond the current fiscal year, the decision by the NCBOC to sign and implement the MOU coupled with Board actions to develop, adopt and implement dust control measures, demonstrates its continued willingness to support the CAAP.

b. *State*. The BAQP currently has one inspector in the Las Vegas NDEP office; this person does inspections and enforcement in the Pahrump Regional Planning District (among other areas). The BAQP added a new inspector position. This inspector will have an office in Pahrump and will conduct inspections, do testing, provide training and public outreach in the Pahrump area in accordance with the County's Dust Control Ordinance. This position was available November 17, 2004. Under the direction of the Nye County Planning Director, this inspector will review dust control plans, zoning issues, investigate complaints, perform inspections and write warning letters and notice of alleged violations (NOAV's) if necessary.

3. Enforcement

Currently the Nye County Planning Department, the Public Works Department and the Sheriff's Office are enforcing the County Ordinances. Although BAQP cannot enforce county ordinances, the inspector will help with inspections, conduct soil stabilization tests and write inspection reports. Nye County will then take the final enforcement action, including issuance of Notices of Violation. All fines will be collected by Nye County.

Nye County and the BAQP developed the Nye County Penalty Policy Guidance Document. This document will contain a penalty matrix to ensure that penalties are negotiated in a fair and consistent manner and that the amount is appropriate for the violation committed. Currently the maximum penalty amount of $10,000 per violation, per day is established in Nye County Ordinance No 289.

G. Site-Specific Control Measures for Fall Festivals

As outlined in a letter dated November 8, 2005 from Dave Richards, Pahrump Town Manager (Appendix K), the following control measures will be implemented prior to the Pahrump Fall Festival:

- Pre-festival watering of the rodeo grounds and baseball field three days prior to the event.
- Gravelling of high traffic pedestrian areas and vehicle parking areas.
- Event site watering as needed throughout the event.

H. Summary of CAAP Control Strategy Measures and Commitments

1. Unpaved roads

a. *Existing Unpaved Roads*: Adoption of the CAAP signals Nye County's commitment to continue the paving/chip sealing program in the Pahrump Regional Planning District. Specifically,

the county commits to paving or chip sealing at least 40 miles per year of unpaved roads in the Pahrump Regional Planning District through 2014,[21] subject to continued availability of funding at current levels under the Nye County Road Fund and PETT fund. If available funding is reduced, then the mileage commitment will be reduced proportionately; and if the funding levels rise or a new source of funds is located, then the mileage commitment will increase, also in proportion. The County will prioritize paving/chip sealing of unpaved roads consistent with the BAQP's maps in Appendix I showing high-priority and low-priority roads.

b. *Future Unpaved Roads*: The County has adopted a Nye County Code, Chapter 16.28.280 prohibiting new unpaved roads in the Pahrump Regional Planning District. This ordinance is included in Appendix J. The county will implement this ordinance in the course of reviewing plans and issuing permits for new development under the Pahrump Master Plan.

2. Disturbed Vacant Lands

a. *Disturbed Areas*. The County has adopted an ordinance (Nye County Ordinance No. 289), effective December 31, 2004, that regulates unpaved parking lots and storage areas, construction activities, and open areas and vacant lots within the Pahrump Regional Planning District. This ordinance is included in Appendix J. The NDEP commits to continued funding of the new inspector position based in Pahrump to assist Nye County staff in implementing and enforcing the requirements of this ordinance. Also, the NDEP commits to updating periodically the database of disturbed acreage.

b. *Construction Activities*. In addition to the Nye County ordinance described above, NAC 445B.22037 will be relied upon to control emissions from construction-related fugitive dust sources at sites with disturbed areas greater than five acres. NAC 445B.22037 is included in Appendix H.

3. Site-Specific Measures for Special Events

a. *Fall Festivals*: The Town of Pahrump commits to continue implementing the following measures during these events (*see* Appendix K):

- Pre-festival watering of the rodeo grounds and baseball field three days prior to the event.
- Gravelling of high traffic pedestrian areas and vehicle parking areas.
- Event site watering as needed throughout the event.

4. Training Programs and Public Education

The BAQP holds annual training workshops on fugitive dust in the Town of Pahrump. These workshops target construction contractors, although the public is welcome to attend. The workshops will continue to occur in the Pahrump Regional Planning District.

[21] The duration of this annual commitment includes the control period (i.e., through 2009) and the five-year maintenance period (i.e., through 2014).

The BAQP has developed a series of brochures and fact sheets on fugitive dust issues. In addition, the BAQP has a part-time staff position for public education. This staff position will be responsible for developing public education materials and workshops to educate the public on fugitive dust issues.

5. Ambient Monitoring Network

The BAQP is committed to continue operation of the particulate matter monitoring network described in Chapter 3 through year 2014 consistent with EPA monitoring requirements and to continue providing access to the data both through its website and through the AQS database.

Chapter 6 Attainment Assessment

A. Introduction

This chapter applies a "rollback" method to assess whether control measures selected for implementation will reduce emissions sufficiently to achieve attainment of the 24-hour PM_{10} NAAQS by December 31, 2009. This chapter addresses the impacts of the control measures and the projected attainment status.

B. Design Value Selection

In accordance with EPA guidance, a representative 24-hour concentration is needed to estimate the amount of emission reductions required to demonstrate attainment of the standard (referred to as the design day). This concentration, referred to as the design value, is used to determine the type and level of controls needed to attain the standard. For example, if the design value is 160 $\mu g/m^3$, and the background concentration is 5 $\mu g/m^3$, the CAAP measures must result in at least a 5 $\mu g/m^3$ reduction to meet the 150 $\mu g/m^3$ standard.

C. High-Wind Design Day

May 2, 2001 was chosen to represent a high wind-day in Pahrump, where the 24-hour PM_{10} concentration was 360 $\mu g/m^3$. The average hourly wind speed on this day was 26 mph with a maximum wind speed of 42 mph. This design day provides the CAAP with the basis for distinguishing significant source categories for the purpose of identifying BACM in Chapter 5 and for conducting attainment assessments in this chapter.

D. Low-Wind Design Day

September 18, 2002 was chosen to represent a low-wind day in Pahrump, where the 24-hour PM_{10} concentration was 286 $\mu g/m^3$. The average hourly wind speed on this day was 15 mph with a maximum wind speed of 26 mph. This design day enables us to look at source categories for identifying BACM in Chapter 5 and for conducting attainment assessments in this chapter to reduce PM_{10} concentrations to below the NAAQS.

E. Relating Design Values to Emission Inventories: High-Wind Design Day

This process consists of two phases. First the 24-hour emissions for the design days are calculated; then, the total reductions needed are determined. The total 24-hour base year emissions for the high-wind design day are 2690 tons/day. Table 5-1 shows the details of the calculation, which is summarized in Table 6-1 below. The second phase is described in the paragraph below and Table 6-2 shows the reduction calculations. This attainment demonstration methodology was discussed with EPA.[22]

[22] Telephone communications between Scott Bohning, EPA Region 9, and NDEP between 10/2003 and 12/2003.

The background concentration for the area was calculated using monitoring data from the Linda monitor site located at the northern part of the valley. The background concentration was determined to be 16.5 $\mu g/m^3$ (*see* Appendix L - PM_{10} Background Concentrations). As discussed in Chapter 5 and detailed in Table 5-3, the background concentration is subtracted from the 24-hour concentration value (360-16.5 = 343.5). A safety margin of 10 $\mu g/m^3$ was used to calculate the NAAQS target (150 $\mu g/m^3$ -10 $\mu g/m^3$ = 140 $\mu g/m^3$). Thus, the total reduction needed is 203.5 $\mu g/m^3$. The percent reduction necessary to attain the standard is 203.5/343.5, or 59%. Table 6-2 shows the emissions reduction calculations.

Table 6-1. 2001 24-Hour Emission Inventory for the High-Wind Design Day

Baseline 2001 24-Hour Emission Inventory High-Wind Design Day May 2, 2002 - concentration 360 $\mu g/m^3$					
Mobile Sources	**Road Length (miles)**	**Average Annual Daily Trips**	**VMT (Vehicle miles/day)**	**Emission Factor (lb/VMT)**	**Emissions (tons/day)**
Vehicle Exhaust-On-road					0.04
Vehicle Exhaust-Nonroad					0.03
Fugitive Dust-Paved Highway	24.0		207,105.4	0.0123	1.27
Fugitive Dust-Paved Arterial Roads	62.8	1500	94,245.00	0.082	3.86
Fugitive Dust-Paved Local Roads	254.5	60	15,271.80	0.082	0.63
Fugitive Dust-Unpaved Arterial Roads	21.4	1500	32,085.00	3.27	52.46
Fugitive Dust Unpaved Local Roads	752.6	60	45,154.20	3.27	73.83
Area and Other Sources			**Area (acres)**	**Emission Factor (tons/acre)**	
Fugitive Dust-Disturbed Vacant Lands			23,276.9	0.104826	2440.02
Fugitive Dust-Native Desert Lands			30,390.2	0.003648	110.86
Fugitive Dust-Stabilized Lands			32,783.8	0.00019	6.23
Fugitive Dust-Construction					0.49
Fires residential burning					0.39
Stationary Sources					0.04
Total					**2690.15**

Table 6-2. Total Reductions Needed on the High-Wind Design Day

Background Value	16.5	$\mu g/m^3$
Design Value	360	$\mu g/m^3$
24-Hour Emissions	2690	tons
Adjusted Design Value	343.5	$\mu g/m^3$
NAAQS Target with Safety Margin	140	$\mu g/m^3$
Difference (reduction needed)	*203.5*	*$\mu g/m^3$*
Percent Reduction Necessary	**59.24%**	
Emissions Reduction Necessary	**1,594**	**tons**

F. Relating Design Values to Emission Inventories: Low-Wind Design Day

The total 24-hour base year emissions for the low-wind design day are 1835 tons/day. Table 5-2 shows the details of the 24-hour emissions inventory for September 18, 2001, which is summarized in Table 6-3 below. The second phase is described in the paragraph below, and Table 6-4 shows the emissions reduction calculations. The background concentration is calculated the same as for the high-wind day.

Table 6-3. 2001 24-Hour Emission Inventory for the Low-Wind Design Day

Baseline 2001 24-Hour Emission Inventory Low-Wind Design Day September 18, 2002 - concentration 286 µg/m^3					
Mobile Sources	**Road Length (miles)**	**Average Annual Daily Trips**	**VMT (Vehicle miles/day)**	**Emission Factor (lb/VMT)**	**Current Emissions (tons/day)**
Vehicle Exhaust-On-road					0.04
Vehicle Exhaust-Nonroad					0.03
Fugitive Dust-Paved Highway	24.0		207,105.4	0.0123	1.27
Fugitive Dust-Paved Arterial Roads	62.8	1500	94,245.00	0.082	3.86
Fugitive Dust-Paved Local Roads	254.5	60	15,271.80	0.082	0.63
Fugitive Dust-Unpaved Arterial Roads	21.4	1500	32,085.00	3.27	52.46
Fugitive Dust Unpaved Local Roads	752.6	60	45,154.20	3.27	73.83
Area and Other Sources			**Area (acres)**	**Emission Factor (tons/acre)**	
Fugitive Dust-Disturbed Vacant Lands			23,276.9	0.068846	1602.52
Fugitive Dust-Native Desert Lands			30,390.2	0.00306	92.99
Fugitive Dust-Stabilized Lands			32,783.8	0.00019	6.23
Fugitive Dust-Construction					0.49
Fires residential burning					0.39
Stationary Sources					0.04
Total					**1834.78**

Table 6–4. Total Reductions Needed on the Low-Wind Design Day

Background Value	16.5	µg/m^3
Design Value	286	µg/m^3
24-Hour Emissions	1835	tons
Adjusted Design Value	270	µg/m^3
NAAQS Target with Safety Margin	140	µg/m^3
Difference (reduction needed)	*130*	*µg/m^3*
Percent Reduction Necessary	**48.05%**	
Emission Reduction Necessary	**882**	**tons**

G. 24-Hour Attainment Demonstration in 2009 for the High-Wind Design Day

Table 6-5 shows the projected 2009 uncontrolled 24-hour inventory for the high-wind design day. The base year 2001 inventory was grown using the population growth factors (131%). The total miles of roads and the total acreage in the valley are assumed to stay the same as in the base year.

Table 6-5. 2009 Uncontrolled Emissions Inventory for High-Wind Design Day

Mobile Sources	**Road Length (miles)**	**Adj. Future Average Annual Daily Trips**	**VMT (Vehicle miles/day)**	**Emission Factor (lb/VMT)**	**Emissions (tons/day)**
Vehicle Exhaust-On-road					0.04
Vehicle Exhaust-Nonroad					0.03
Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7
Fugitive Dust-Paved Arterial Roads	62.8	1,968.8	123,702.7	0.082	5.1
Fugitive Dust-Paved Local Roads	254.5	78.8	20,045.2	0.082	0.8
Fugitive Dust-Unpaved Arterial Roads	21.4	1,968.8	42,113.6	3.27	68.9
Fugitive Dust Unpaved Local Roads	752.6	78.8	59,267.8	3.27	96.9
Area Sources		**Baseline Area (acres)**	**Adj. Future Area (acres)**	**Emission Factor (tons/acre/ day)**	**Emissions (tons/day)**
Fugitive Dust-Disturbed Vacant Lands		23,276.9	20,209.7	0.10483	2,118.5
Fugitive Dust-Native Desert Lands		30,390.2	27,323.0	0.00365	99.7
Fugitive Dust-Stabilized Lands		32,783.8	38,918.2	0.00129	50.2
Total Pahrump Valley Area		*86,450.9*	*86,450.9*		
Other Sources					**Emissions (tons/day)**
Fugitive Dust-Construction					0.6
Fires residential burning					0.5
Stationary Sources					0.0
Total					**2,443.0**

Table 6-6 shows the projected 2009 controlled 24-hour inventory for the high-wind design day. In Table 6-6, the selected control measures were applied to the 2009 projected 24-hour emissions inventory. The emissions reductions from the uncontrolled base year inventory to the 2009 controlled inventory correspond to an overall reduction of 1,753.7 tons, enough to demonstrate attainment by 2009 according the emission reductions necessary in Table 6-2.

Table 6-6. 2009 Controlled Emissions Inventory for High-Wind Design Day

Mobile Sources	Road Length (miles)	Adj. Future Average Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Emissions (tons/day)
Vehicle Exhaust-On-road					0.04
Vehicle Exhaust-Nonroad					0.03
Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7
Fugitive Dust-Paved Arterial Roads	84.2	1,968.8	165,816.3	0.082	6.8
Fugitive Dust-Paved Local Roads	553.1	78.8	43,561.1	0.082	1.8
Fugitive Dust-Unpaved Arterial Roads	0.0	1,968.8	.0	3.27	0.0
Fugitive Dust Unpaved Local Roads	454.0	78.8	35,751.9	3.27	58.5
Area Sources		**Baseline Area (acres)**	**Adj. Future Area (acres)**	**Emission Factor (tons/acre/ day)**	**Emissions (tons/day)**
Fugitive Dust-Disturbed Vacant Lands		23,276.9	6,669.2	0.10483	699.1
Fugitive Dust-Native Desert Lands		30,390.2	27,323.0	0.00365	99.7
Fugitive Dust-Stabilized Lands		32,783.8	52,458.7	0.00129	67.7
Total Pahrump Valley Area		*86,450.9*	*86,450.9*		
Other Sources					**Emissions (tons/day)**
Fugitive Dust-Construction					0.6
Fires residential burning					0.5
Stationary Sources					0.0
Total					**936.5**

Table 6-7 shows the comparison between the 2009 uncontrolled (Table 6-5) and 2009 controlled 24-hour emission inventories (Table 6-6) for the high-wind design day. With control measures in place, 2009 24-hour emissions equal 936.5 tons, which represents a 62% reduction from uncontrolled 2009 emissions or a 65% reduction from the base year emissions (Table 6-1).

Table 6-7. 2009 24-hour Emissions Inventory Source Contribution, High-Wind Day

High Wind Day	2009 No Controls (tons)	2009 Controlled (tons)	Percent Reduction[a]
Vehicle Exhaust-On-road	0.04	0.04	0%
Vehicle Exhaust-Nonroad	0.03	0.03	0%
Fugitive Dust-Paved Highway	1.7	1.7	0%
Fugitive Dust-Paved Arterial Roads	5.1	6.8	-33%
Fugitive Dust-Paved Local Roads	0.8	1.8	-125%
Fugitive Dust-Unpaved Arterial Roads	68.9	0	100%
Fugitive Dust-Unpaved Local Roads	96.9	58.5	40%

High Wind Day	2009 No Controls (tons)	2009 Controlled (tons)	Percent Reduction[a]
Fugitive Dust-Disturbed Vacant Lands	2118.5	699.1	67%
Fugitive Dust-Native Desert Lands	99.7	99.7	0%
Fugitive Dust-Stabilized Lands	50.2	67.7	-35%
Fugitive Dust-Construction	0.6	0.6	0%
Fires residential burning	0.5	0.5	0%
Stationary Sources	0	0	
Total	2,443.00	936.50	62%
Reductions (tons)	**1,506.50**		

[a] A negative percent reduction indicates an increase in emissions.

H. 24-Hour Attainment Demonstration in 2009 for the Low-Wind Design Day

Table 6-8 shows the 2009 projected uncontrolled 24-hour inventory for the low-wind design day. The base year 2001 inventory was grown using the population growth factors (131%). The total miles of roads and the total acreage in the valley are assumed to stay the same as in the base year.

Table 6-8. 2009 Uncontrolled Emissions Inventory for Low-Wind Design Day

Mobile Sources	Road Length (miles)	Adj. Future Average Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Emissions (tons/day)
Vehicle Exhaust-On-road					0.04
Vehicle Exhaust-Nonroad					0.03
Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7
Fugitive Dust-Paved Arterial Roads	62.8	1,968.8	123,702.7	0.082	5.1
Fugitive Dust-Paved Local Roads	254.5	78.8	20,045.2	0.082	0.8
Fugitive Dust-Unpaved Arterial Roads	21.4	1,968.8	42,113.6	3.27	68.9
Fugitive Dust Unpaved Local Roads	752.6	78.8	59,267.8	3.27	96.9
Area Sources		**Baseline Area (acres)**	**Adj. Future Area (acres)**	**Emission Factor (tons/acre/day)**	**Emissions (tons/day)**
Fugitive Dust-Disturbed Vacant Lands		23,276.9	20,209.7	0.06885	1,391.4
Fugitive Dust-Native Desert Lands		30,390.2	27,323.0	0.00306	83.6
Fugitive Dust-Stabilized Lands		32,783.8	38,918.2	0.00019	7.4
Total Pahrump Valley Area		86,450.9	86,450.9		
Other Sources					**Emissions (tons/day)**
Fugitive Dust-Construction					0.6

Fires residential burning					0.5
Stationary Sources					0.0
Total					**1,656.9**

In Table 6-9, the selected control measures were applied to the 2009 projected 24-hour emissions inventory. The difference between uncontrolled and controlled 2009 emissions is 1,034.2 tons, enough to demonstrate attainment by 2009 (*see* Table 6-4).

Table 6-9. 2009 Controlled Emissions Inventory for Low-Wind Design Day

Mobile Sources	**Road Length (miles)**	**Adj. Future Average Annual Daily Trips**	**VMT (Vehicle miles/day)**	**Emission Factor (lb/VMT)**	**Emissions (tons/day)**
Vehicle Exhaust-On-road					0.04
Vehicle Exhaust-Nonroad					0.03
Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7
Fugitive Dust-Paved Arteria l Roads	84.2	1,968.8	165,816.3	0.082	6.8
Fugitive Dust-Paved Local Roads	553.1	78.8	43,561.1	0.082	1.8
Fugitive Dust-Unpaved Arterial Roads	0.0	1,968.8	.0	3.27	0.0
Fugitive Dust Unpaved Local Roads	454.0	78.8	35,751.9	3.27	58.5
Area Sources		**Baseline Area (acres)**	**Adj. Future Area (acres)**	**Emission Factor (tons/acre/ day)**	**Emissions (tons/day)**
Fugitive Dust-Disturbed Vacant Lands		23,276.9	6,669.2	0.06885	459.1
Fugitive Dust-Native Desert Lands		30,390.2	27,323.0	0.00306	83.6
Fugitive Dust-Stabilized Lands		32,783.8	52,458.7	0.00019	10.0
Total Pahrump Valley Area		86,450.9	86,450.9		
Other Sources					**Emissions (tons/day)**
Fugitive Dust-Construction					0.6
Fires residential burning					0.5
Stationary Sources					0.0
Total					**622.7**

Table 6-10 shows the comparison between the 2009 controlled and uncontrolled emission inventories for the low-wind day. The total reduction is 1034.2 tons or 62%.

Table 6-10. 2009 24-hour Emissions Inventory Source Contribution, Low-Wind Day

Low-Wind Day	2009 No Controls (tons)	2009 Controlled (tons)	Percent Reduction[a]
Vehicle Exhaust-On-road	0.04	0.04	0%
Vehicle Exhaust-Nonroad	0.03	0.03	0%
Fugitive Dust-Paved Highway	1.7	1.7	0%
Fugitive Dust-Paved Arterial Roads	5.1	6.8	-33%
Fugitive Dust-Paved Local Roads	0.8	1.8	-125%
Fugitive Dust-Unpaved Arterial Roads	68.9	0	100%
Fugitive Dust Unpaved Local Roads	96.9	58.5	40%
Fugitive Dust-Disturbed Vacant Lands	1391.4	459.1	67%
Fugitive Dust-Native Desert Lands	83.6	83.6	0%
Fugitive Dust-Stabilized Lands	7.4	10.0	-35%
Fugitive Dust-Construction	0.6	0.6	0%
Fires residential burning	0.5	0.5	0%
Stationary Sources	0	0	
	1,656.9	622.7	62%
Reductions	**1,034.2**		

[a] A negative percent reduction indicates an increase in emissions.

Chapter 7 Maintenance of PM_{10} NAAQS and Natural Events

This chapter reviews PM_{10} emissions projections from 2009 to 2014 for the high-wind and low-wind design days taking into consideration expected changes in population and VMT. It further considers the continued application of the control measures selected in Chapter 5 for attaining and maintaining the NAAQS. A few examples of these control measures include continued implementation of the road paving/chip sealing program, enforcement of control requirements on land use development, and stabilization of disturbed areas.

A. Maintenance of PM_{10} NAAQS through 2014

This section demonstrates continued maintenance of the PM_{10} NAAQS through 2014 by projecting emission inventories for the high-wind and low-wind design days and comparing projected emissions with the NAAQS.

1. High-Wind Design Day

Table 7-1 presents the projected 2014 maintenance year emission inventory for the high-wind design day. The projections assume continuation of the road paving/chip seal program, increased VMT based on population growth estimates, and estimated adjusted future acres for the land type categories. The estimated adjusted acres for land types are based on population and construction growth estimates. These calculations can be found in Appendix F.

Table 7-1. 2014 24-hour Emissions Inventory for High-Wind Design Day

Mobile Sources	Road Length (miles)	Adj. Future Average Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Emissions (tons/day)
Vehicle Exhaust-On-road					0.04
Vehicle Exhaust-Nonroad					0.03
Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7
Fugitive Dust-Paved Arterial Roads	84.2	2,333.7	196,540.9	0.082	8.1
Fugitive Dust-Paved Local Roads	753.1	93.3	70,302.0	0.082	2.9
Fugitive Dust-Unpaved Arterial Roads	0.0	2,333.7	0.0	3.27	0.0
Fugitive Dust Unpaved Local Roads	254.0	93.3	23,707.2	3.27	38.8
Area Sources		**Baseline Area (acres)**	**Adj. Future Area (acres)**	**Emission Factor (tons/acre/ day)**	**Emissions (tons/day)**
Fugitive Dust-Disturbed Vacant Lands		23,276.9	4,820.6	0.10483	505.3
Fugitive Dust-Native Desert Lands		30,390.2	25,474.4	0.00365	92.9
Fugitive Dust-Stabilized Lands		32,783.8	56,155.9	0.00129	72.5
Total Pahrump Valley Area		*86,450.9*	*86,450.9*		
Other Sources					**Emissions (tons/day)**
Fugitive Dust-Construction					0.6

Fires Residential Burning					0.5
Stationary Sources					0.0
Total					**723.53**

Table 7.2 reflects a 23% reduction from the 2009 attainment inventory to the 2014 maintenance inventory estimates for the high-wind design day. This 2014 emissions projection demonstrates that the PM_{10} NAAQS will maintained with the continued implementation of the control measures described in Chapter 5.

Table 7.2. Percent Reduction from 2009 to 2014 Emissions on High-Wind Design Day

High-Wind Design Day	2009 Controlled (tons)	2014 Controlled (tons)	Percent Reduction
Vehicle Exhaust-On-road	0.04	0.04	0%
Vehicle Exhaust-Nonroad	0.03	0.03	0%
Fugitive Dust-Paved Highway	1.7	1.7	0%
Fugitive Dust-Paved Arterial Roads	6.8	8.1	-19%
Fugitive Dust-Paved Local Roads	1.8	2.9	-61%
Fugitive Dust-Unpaved Arterial Roads	0	0	
Fugitive Dust Unpaved Local Roads	58.5	38.8	34%
Fugitive Dust-Disturbed Vacant Lands	699.1	505.3	28%
Fugitive Dust-Native Desert Lands	99.7	92.9	7%
Fugitive Dust-Stabilized Lands	67.7	72.5	-7%
Fugitive Dust-Construction	0.6	0.6	0%
Fires Residential Burning	0.5	0.6	-20%
Stationary Sources	0	0.1	
Total	*936.50*	*723.53*	*23%*
Reductions	**212.97**		

2. Low-Wind Design Day

Table 7-3 presents the projected 2014 maintenance year emission inventory for the low-wind design day. The projections assume continuation of the road paving/chip seal program, increased VMT based on population growth estimates, and estimated adjusted future acres for the land type categories. The estimated adjusted acres for land types are based on population and construction growth estimates. These calculations can be found in Appendix F.

Table 7-3. 2014 24-hour Emissions Inventory for Low-Wind Design Day

Mobile Sources	Road Length (miles)	Adj. Future Average Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Emissions (tons/day)
Vehicle Exhaust-On-road					0.04

Mobile Sources	Road Length (miles)	Adj. Future Average Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Emissions (tons/day)
Vehicle Exhaust-Nonroad					0.03
Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7
Fugitive Dust-Paved Arterial Roads	84.2	2,333.7	196,540.9	0.082	8.1
Fugitive Dust-Paved Local Roads	753.1	93.3	70,302.0	0.082	2.9
Fugitive Dust-Unpaved Arterial Roads	0.0	2,333.7	0.0	3.27	0.0
Fugitive Dust Unpaved Local Roads	254.0	93.3	23,707.2	3.27	38.8
Area Sources		**Baseline Area (acres)**	**Adj. Future Area (acres)**	**Emission Factor (tons/acre/day)**	**Emissions (tons/day)**
Fugitive Dust-Disturbed Vacant Lands		23,276.9	4,820.6	0.06885	331.9
Fugitive Dust-Native Desert Lands		30,390.2	25,474.4	0.00306	78.0
Fugitive Dust-Stabilized Lands		32,783.8	56,155.9	0.00019	10.7
Total Pahrump Valley Area		*86,450.9*	*86,450.9*		
Other Sources					**Emissions (tons/day)**
Fugitive Dust-Construction					0.6
Fires Residential Burning					0.5
Stationary Sources					0.0
Total					**473.28**

Table 7.4 shows a 24% reduction from the 2009 attainment inventory to the 2014 maintenance emissions inventory estimates for the low-wind design day. The 2014 emissions projections demonstrate that the PM_{10} NAAQS will be maintained with the continued implementation of the control measures described in Chapter 5.

Table 7.4. Percent reduction from 2009 to 2014 Emissions on Low-Wind Design Day

Low-Wind Design Day	2009 Controlled (tons)	2014 Controlled (tons)	Percent Reduction
Vehicle Exhaust-On-road	0.04	0.04	0%
Vehicle Exhaust-Nonroad	0.03	0.03	0%
Fugitive Dust-Paved Highway	1.7	1.7	0%
Fugitive Dust-Paved Arterial Roads	6.8	8.1	-19%
Fugitive Dust-Paved Local Roads	1.8	2.9	-61%
Fugitive Dust-Unpaved Arterial Roads	0	0	
Fugitive Dust Unpaved Local Roads	58.5	38.8	34%
Fugitive Dust-Disturbed Vacant Lands	459.1	331.9	28%
Fugitive Dust-Native Desert Lands	83.6	78	7%
Fugitive Dust-Stabilized Lands	10	10.7	-7%
Fugitive Dust-Construction	0.6	0.6	0%

Low-Wind Design Day	2009 Controlled (tons)	2014 Controlled (tons)	Percent Reduction
Fires Residential Burning	0.5	0.6	-20%
Stationary Sources	0	0.1	
Total	*622.70*	*473.28*	*24%*
Reductions	**149.42**		

B. Natural Events

1. Introduction

As mentioned in Chapter 3, exceedances of the PM_{10} NAAQS may continue to occur on occasion in Pahrump Valley under certain persistent wind conditions, even with the implementation of BACM.

Recognizing the effect that uncontrollable natural events, such as high winds, wildfires, and volcanic/seismic activity, can have on complying with the PM_{10} NAAQS, EPA issued a memorandum setting forth a Natural Events Policy on May 30, 1996.[23] A copy of this memorandum is included in Appendix M. The Natural Events Policy sets forth procedures for protecting public health in areas where the PM_{10} standard may be violated due to uncontrollable natural events. The guiding principles of the policy are as follows:

- Federal, state, and local air quality and government agencies must protect public health.
- The public must be informed whenever air quality is unhealthy.
- All valid ambient air quality data should be submitted to the AQS database and available for public access.
- Reasonable measures safeguarding public health must be taken regardless of the source of the PM_{10} emissions.
- Emission controls should be applied to sources that contribute to exceedances of the PM_{10} NAAQS when those controls will result in fewer violations of the standard. Natural Events Policy Memorandum at 4-5.

This section of the CAAP provides a strategy, consistent with EPA's Natural Events Policy, for addressing PM_{10} exceedances in Pahrump Valley caused by natural events (generally, high wind) that overwhelm implementation of BACM.

2. Natural Events Policy

Under the CAA, the usual consequence when pollutant levels in an area violate one of the NAAQS is that the area is designated "nonattainment" for that pollutant. The state must then develop and implement a revision to the SIP with measures that will be taken to reduce emissions of the

[23] May 30, 1996 memorandum from Mary D. Nichols to EPA Regional Offices, "Areas Affected by PM-10 Natural Events." http://denr.sd.gov/des/aq/neap/nep.aspx#Documentation (last viewed 3/4/2015)

pollutant and bring the ambient levels of the pollutant back within standards. Such SIP revisions must include stringent pollution control measures for new and existing sources of the pollutant.

Federal law and policies recognize that designating an area nonattainment and requiring stringent controls on stationary sources is not appropriate when natural events contribute significantly to exceedances of the standard. EPA's Natural Events Policy memorandum sets forth the principles for a more appropriate approach for these natural events. Due to the passage of time and the deadlines established in the policy, the Natural Events Policy was unavailable as a regulatory approach for addressing the PM_{10} NAAQS violations that were measured in Pahrump Valley. Rather, the Pahrump Valley MOU provides the blueprint for addressing those violations.

However, over the long-term, the Natural Events Policy will be available as a regulatory approach for addressing future PM_{10} NAAQS exceedances that are caused by natural events and that occur after implementation of BACM in the valley. Assuming that BACM is implemented by the end of 2006, the approach set forth in the Natural Events Policy may be relied upon beginning in January 2007.

Under the Natural Events Policy, three categories of natural events are identified as affecting the PM_{10} NAAQS: (1) volcanic and seismic activity; (2) wildland fires; and (3) high wind events. Only high wind events are addressed here, since only these events are relevant to the exceedances experienced in Pahrump Valley.[24] The policy defines high wind events as follows:

> High winds: Ambient PM_{10} concentrations due to dust raised by unusually high winds will be treated as due to uncontrollable natural events under the following conditions: (1) the dust originated from nonanthropogenic sources, or (2) the dust originated from anthropogenic sources controlled with best available control measures (BACM)." Natural Events Policy Memorandum at *7*.

The following summarizes EPA guidance regarding the elements needed to address PM_{10} violations due to natural events under the Natural Events Policy:

> Analysis and documentation of the event should show a clear causal relationship between the measured exceedance and the natural event. The type and amount of documentation provided should be sufficient to demonstrate that the natural event occurred, and that it impacted a particular monitoring site in such a way as to cause the elevated PM_{10} concentrations measured. Documentation of natural events and their impact on measured air quality should be made available to the public for review. Natural Events Policy Memorandum at 11.

[24] Unlike high wind events, wildland fire events are not known to be independent causes of PM_{10} exceedances in the valley. The one significant wildland fire event affecting PM_{10} in the valley over the past several years (October 29th and 30th, 2003) coincided with a period of sustained high winds that would likely have caused PM_{10} exceedances in any event.

C. CAAP Strategy

The monitoring data discussed in Chapter 3 and documented in Appendix B support the conclusion that persistent high winds cause or contribute to PM_{10} NAAQS exceedances in Pahrump Valley. Chapter 6 and Section A, above, conclude that, even after implementation of BACM, persistent high winds will likely continue to cause PM_{10} exceedances in the valley. It is, therefore, important to have a strategy for continued review and implementation of appropriate CAAP strategies.

1. Identifying and Flagging Exceedances

Wind data for each of the five highest PM_{10} concentrations (measured over the 2001-2003 period) known to have been affected by high winds was reviewed to identify the specific wind conditions that are likely to overwhelm BACM and cause exceedances of the PM_{10} NAAQS. During each of these high-wind days, hourly average wind speeds equaled or exceeded 20 mph on more than 12 hours of the 24-hour calendar day. The wind speed of 20 mph is a key physical characteristic affecting ambient PM_{10} conditions in the valley given that 20 mph represents the initial wind threshold for the most significant source category of PM_{10} emissions, i.e., wind-blown (fugitive) dust from disturbed vacant land.

Therefore, the following high wind criterion is hereby established as the basis for identifying uncontrollable high-wind natural events in Pahrump Valley for the purposes of the Natural Events Policy:

- Wind speeds equal to or greater than 20 mph on an hourly average occurring on more than 12 hours during a calendar day.

The NDEP will be responsible for identifying exceedances monitored at one or more of the PM_{10} monitoring stations in Pahrump Valley that are caused by high winds. Beginning in January 2007, the NDEP will mark the exceedances due to high winds (i.e., wind conditions that meet the above wind criterion) with a special notation called a "flag" in EPA's AQS database. The NDEP will then prepare and maintain documentation supporting the flagged data. The NDEP will send a copy of the documentation to the EPA Region 9 Air Division monitoring representative no later than 180 days from the time the exceedance occurred. The EPA Region 9 Air Division monitoring representative will acknowledge receipt of the documentation and, within 60 days of receipt, add a "concurrence" flag within AQS if the documentation shows that the "flag" is warranted and adequately supported.

2. Public Notification and Education Programs

Public notification and education programs may be designed to educate the public about the short-term and long-term harmful effects that high concentrations of PM_{10} could have on their health. Such programs can inform the public (1) that certain types of natural events periodically affect air quality in Pahrump, (2) when a natural event is imminent, and (3) specific actions are being taken to minimize the health impacts of events.

As part of the CAAP strategy, the NDEP and Nye County have implemented the following public education and notification projects in the course of developing the MOU and CAAP:

a. The BAQP developed a website specific to the Pahrump PM_{10} issues. This website has three sections: General Information on PM_{10} Nonattainment, the Near-Real Time Monitoring Data, and Pahrump Regional Planning District Dust Control Program. (http://ndep.nv.gov/baqp/monitoring.html, last viewed 3/4/2015)

b. BAQP staff have attended the Earth Day Activities in the Town of Pahrump and displayed information regarding PM_{10} monitoring, dust control activities, etc.

c. The BAQP and Nye County have conducted a number of workshops on the dust control program in Pahrump, as well as designed and distributed a Dust Management Handbook. These workshops include information about the new ordinances, dust control plans, and the Dust Management Handbook.

d. The BAQP and Nye County have developed a High-Wind Advisory Fax that they distribute to contractors and Dust Control Permit holders. This fax informs contractors and permittees of high wind advisories and reminds them to take actions to stabilize their projects.

e. A television commercial and 30 minute talk show segment informing the public on general information regarding the PM_{10} issues in Pahrump.

3. Minimizing Public Exposure to High Concentrations of PM_{10} Due to Future Natural Events

Programs to minimize public exposure should (1) identify the people most at risk, (2) notify the at-risk population that a natural event is imminent or currently taking place, (3) suggest actions to be taken by the public to minimize their exposure to high concentrations of PM_{10}, and (4) suggest precautions to take if exposure cannot be avoided.

As part of the CAAP strategy, the NDEP and Nye County have identified the following measures related to natural events that will be continually implemented:

a. Amendments to the county and town ordinances,
b. Educational curriculum with the school district,
c. Continual updates to the dust control management handbook,
d. Working with the agricultural community on dust control, and
e. Another television commercial.

4. Abating or Minimizing Appropriate Contributing Controllable Sources of PM_{10}

Programs to minimize PM_{10} emissions from high winds may include the application of BACM 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 for all significant contributing sources.

The CAAP strategy in Chapter 5 outlines the methodology for the selection of BACMs for the Pahrump Regional Planning District. Tables 5-5 and 5-6 list the BACM selections chosen to

reduce PM_{10} emissions from unpaved roads and disturbed lands in Pahrump. Examples of these control measures include:

a. For unpaved roads, paving and chip sealing, watering unpaved county roads, reducing the speed limit, and prohibiting any new unpaved roads.

b. For disturbed lands, limiting off-road use of vehicles, surface stabilization techniques, and dust control plans.

5. Periodic Reevaluation

The CAAP strategy for periodic review and reevaluation of the adequacy of the plan for addressing PM_{10} NAAQS violations includes continued monitoring and analysis of the hourly and monthly monitoring data for spikes due to natural events or other non-anthropogenic sources. This tracking and evaluation of the air quality in Pahrump will be used to assess the adequacy of the control measures adopted in the CAAP for attaining and maintaining the PM_{10} NAAQS. The State and County will review the natural events plan and the CAAP every five years at a minimum and make any appropriate changes to address any PM_{10} NAAQS violations.

List of Appendices[25]

Appendix A – Memorandum of Understanding, September 2003

Appendix B – 2001-2003 Monitoring Data, Pool Site

Appendix C – Monitor Station Locations and Photographs

Appendix D – Traffic Count Locations, 2004

Appendix E – Mobile Files; Housing Data

Appendix F – 24-Hour Emission Inventories

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Appendix H –Fugitive Dust Regulations, Guidance

Appendix I – Road Paving and Chip Seal Program Priority Maps

Appendix J – Pahrump and Nye County Ordinances/Regulations

Appendix K –Control Measures for Fall Festival

Appendix L – PM_{10} Background Concentrations

Appendix M – 1996 EPA Memorandum, Natural Events Policy

[25] The appendices are located in a separate document.

APPENDIX A

Pahrump Valley Clean Air Action Plan

Memorandum of Understanding

The purpose of this memorandum of understanding (MOU) is to formalize an understanding among the Nevada Division of Environmental Protection (NDEP), the Nye County Board of Commissioners (NCBOC), the Pahrump Town Board (PTB) and the U.S. Environmental Protection Agency (EPA). This MOU describes the duties and responsibilities of these agencies in a cooperative effort to bring about an expeditious resolution to the PM-10 air pollution problem in the Nye County portion of State hydrographic area #162 ("Pahrump Valley"). If this effort is successful, Pahrump Valley may avoid being redesignated as a nonattainment area for PM-10. This MOU is the first step in accelerating the development and implementation of a locally-initiated PM-10 control plan ("Pahrump Valley Clean Air Action Plan", or CAAP) designed to attain and maintain the national ambient air quality standard (NAAQS) for PM-10 in that area.

General Provisions

1. EPA has authority under section 107(d) of the Clean Air Act ("Act") to redesignate Pahrump Valley to "nonattainment" based on monitored violations of the PM-10 NAAQS in that area over the past several years. After notice to the State of Nevada, EPA intends to propose such redesignation through publication of a notice in the *Federal Register*. However, EPA will defer final action on redesignation to allow NDEP and NCBOC the opportunity to prepare, adopt, and implement a Pahrump Valley CAAP that provides for

earlier implementation of control measures and attainment of the NAAQS than would otherwise be expected through the redesignation and nonattainment planning process under Title I of the Act. EPA's deferral on taking final action on the redesignation proposal and EPA's participation as a signatory to this MOU are not a guarantee that EPA will not ultimately exercise its statutory discretion to redesignate Pahrump Valley to nonattainment for PM-10, but they do reflect EPA's current intention to work together with the signatories to resolve the PM-10 air pollution problem in Pahrump Valley through the process set forth in this MOU rather than through the formal nonattainment planning process in Part D of Title I of the Act. The circumstances under which EPA will take final action on its proposal to redesignate Pahrump Valley to nonattainment for PM-10 include, but are not limited to, the following:

- NDEP and NCBOC fail to meet any of the requirements, milestones, or due dates set forth in this MOU, without prior written approval from EPA;
- EPA determines that the control measures submitted by NDEP are inadequate to achieve a net environmental benefit in addition to attainment and maintenance of the PM-10 NAAQS; or
- EPA's discretion to defer taking final action on the proposal to redesignate is constrained by judicial or Congressional action.

2. NDEP and NCBOC agree to meet the requirements, milestones and due dates listed below. NDEP and NCBOC understand that failure to meet the requirements, milestones and due dates without prior written approval from EPA is sufficient evidence that a net

environmental benefit and improvement in air quality is not occurring and will cause EPA to take final action on its proposal to redesignate the Pahrump Valley as "nonattainment," which will begin the planning process under Title I of the Act.

3. EPA will provide technical assistance to NDEP and NCBOC in the development of the CAAP and will take action on related State Implementation Plan (SIP) submittals in accordance with statutory deadlines for such submittals. This MOU anticipates one comprehensive planning cycle, culminating in local and State adoption of a Final CAAP in 2005 and EPA approval of the Final CAAP into the Nevada SIP, as well as on-going review by NDEP to ensure continued progress toward attainment and maintenance of the PM-10 NAAQS. The on-going review process may lead to proposals to revise, delete, or substitute individual control measures included in the Final CAAP. NDEP and NCBOC acknowledge that any revisions to, deletions of, or substitutions for, individual control measures previously approved by EPA into the Nevada SIP must be submitted to EPA consistent with EPA requirements for SIP revisions.

4. NDEP agrees to maintain air quality monitors, reporting and analysis of monitoring data.

5. NDEP will coordinate communication between NCBOC and EPA to facilitate continuing EPA review of local work. NCBOC will coordinate communication among the PTB, the Pahrump Regional Planning Commission (PRPC), and NDEP.

6. This MOU shall be effective upon signature by all four parties, may be amended by mutual consent, and may be terminated by any party after giving thirty days written notice to each of the other parties. This MOU shall expire on December 31, 2014, or on the

effective date of a final rule (or other final action) addressing EPA's proposed redesignation of the Pahrump Valley to nonattainment, whichever is sooner, unless the MOU is amended by the agencies or superseded by a new MOU.

State and Local Government Responsibilities

NDEP will be the lead agency for all tasks under this MOU and will work with NCBOC to develop and implement a CAAP that includes the control measures necessary to demonstrate attainment and maintenance of the PM-10 standard. NDEP will develop the CAAP in coordination with NCBOC, EPA, stakeholders and the public. MOU tasks are described in detail in the following sections. Significant milestones are as follows:

APPENDIX A

CAAP Milestones		
1	February 28, 2003	NDEP completed initial base year (2001) emissions inventory.
2	May 31, 2003	NDEP completed refined base year (2001) emissions inventory.
3	October 31, 2003	NDEP and NCBOC select potential control measures for further study.
4	November 30, 2003	NDEP completes future year (2009) baseline and control case inventories and an initial draft attainment assessment. Draft assessment is sent to EPA for their review.
5	April 30, 2004	NDEP, NCBOC and PTB select emission reduction strategy, including specific State and local control measures.
6	June 30, 2004	NDEP submits list of proposed control measures to EPA that were agreed upon by NDEP, NCBOC, PTB, including description of the measure, emission reduction potential, cost effectiveness, and schedule for adoption and implementation.
7	August 31, 2004	NDEP completes Draft CAAP and distributes the draft plan to NCBOC, PTB, EPA and public.
8	October 31, 2004	NDEP presents Draft CAAP at meetings with NCBOC and PTB in the town of Pahrump. NCBOC and PTB complete public hearings and adopts control measures and ordinances.
9	December 31, 2004	NDEP completes Final CAAP.
10	January 31, 2005	The State Environmental Commission (SEC) holds public hearing on Final CAAP. SEC adopts regulations. NDEP submits Final CAAP to EPA as SIP revision.
11	December 31, 2006	NDEP and NCBOC implement all adopted control measures from Final CAAP.
12	December 31, 2009	PM-10 NAAQS attained.
13	December 31, 2014	Maintenance period ends.

In the event an issue arises that may impact performance or progress toward milestones, the signatory party responsible will notify all other signatories as soon as possible.

Reporting

To facilitate self-evaluation and communication among EPA, NDEP, stakeholders, and the public, NDEP will assess and report progress towards the milestones, and implementation of control strategies during the NCBOC meetings every 6 months after signature of the MOU.

Emissions Inventories

NDEP will be the lead agency in preparing emissions inventories for the CAAP. Nye County Staff will provide technical assistance in the development of emissions inventories, trend analysis and quantification and comparison of emission reduction strategies.

1. By February 28, 2003, NDEP prepared an initial base year (2001) emissions inventory. This inventory included:
   - MOBILE6 data and transportation information for 2001;
   - NONROAD model data adjusted for local equipment populations and usage rates;
   - Stationary source data based on NDEP database information and local survey; and
   - Area source data, based on local survey data, when possible.
2. By May 31, 2003, NDEP prepared a more refined base year (2001) emission inventory. The refined base year inventory was based on additional surveys performed by NDEP staff and input from the local community.
3. As noted below under “Emission Reduction Strategy”, by October 31, 2003, NDEP and

NCBOC will select potential control measures for further study.

4. By November 30, 2003, NDEP will prepare future year (2009) baseline and control case inventories. The future-year (2009) baseline inventory will account for growth and for currently adopted regulations that would affect future PM-10 emissions in Pahrump Valley. The control case (2009) inventories will show the relative effectiveness of potential control measures selected for study by NDEP and NCBOC.

5. By August 31, 2004, and based upon selection of the emission reduction strategy, including the specific State and local control measures, NDEP will prepare a future year (2009) baseline and control case inventory for the Draft CAAP that reflects implementation of selected emission reduction strategy, including the specific State and local control measures that are to be adopted and implemented.

6. By December 31, 2004, NDEP will revise the inventories, as appropriate, based on comments received on the Draft CAAP, and will include the revised inventories in the Final CAAP.

7. By January 31, 2005, NDEP will submit the emissions inventories to EPA as an element of the Final CAAP.

Emission Reduction Strategies

NDEP will be the lead agency in developing an emissions reduction strategy. Nye County Staff will provide technical and strategic assistance in the selection and implementation of this strategy.

1. By October 31, 2003, NDEP, in consultation with NCBOC, stakeholders, and other

participants, will develop an initial list of potential control measures, including, but not limited to, reasonably available control technology for existing stationary sources in the Pahrump Valley.

2. By April 30, 2004, NDEP, NCBOC and local stakeholders and participants will agree on an emission reduction strategy, including specific State and local control measures.

3. By June 30, 2004, NDEP will submit a list of control measures to EPA, including description of the measure, emission reduction potential, cost effectiveness, schedule for adoption and implementation, and reporting processes. All control measures will be specific, quantified, permanent, and enforceable.

4. As noted below under "Draft and Final CAAP", by August 31, 2004, NDEP will complete the Draft CAAP, which includes control measures, and distributes the draft plan to NCBOC, PTB, EPA and public.

5. By October 31, 2004, NCBOC will adopt ordinances, as applicable, to support selected local control measures. NCBOC will design and implement local measures through the Master Plan process.

6. By December 31, 2004, NDEP will revise the control measures as appropriate based on comments received on the Draft CAAP, and will include the revised measures in the final CAAP.

7. By January 31, 2005, State Environmental Commission (SEC) will adopt regulations, as applicable, to support selected State control measures.

8. By January 31, 2005, NDEP will submit all adopted control measures, as an element of

the Final CAAP, to EPA for approval into the Nevada SIP.

9. All CAAP control measures will be implemented as soon as practicable, but no later than December 31, 2006.

Attainment Assessment

NDEP will be the lead agency in preparing the attainment assessment for the CAAP.

1. By November 30, 2003, NDEP will prepare an initial attainment assessment based on base year (2001), future year (2009) baseline, and control case inventories and submit the assessment to EPA for its review.
2. By August 31, 2004, for the Draft CAAP, NDEP will prepare a refined attainment assessment based on the selected emission control strategy, including the specific State and local control measures.
3. By December 31, 2004, NDEP will revise the attainment assessment, as appropriate, based on comments received on the Draft CAAP, and will include the revised assessment in the Final CAAP.
4. By January 31, 2005, NDEP will submit the attainment assessment to EPA as an element of the Final CAAP.

Draft and Final CAAP

NDEP will be the lead agency in preparing a Draft CAAP that consolidates the above tasks (emissions inventories, control measures, attainment assessment, and maintenance element) into a single document setting forth the PM-10 control strategy for Pahrump Valley. NDEP will also be the lead agency in preparing a Final CAAP that reflects comments received on the Draft

CAAP and that documents public involvement, including responses to comments made on the Draft.

1. By August 31, 2004, NDEP will circulate the Draft CAAP for review by NCBOC, PRPC, PTB, EPA and the public.
2. October 31, 2004, NDEP will present the Draft CAAP at a meeting in the Town of Pahrump. NCBOC will complete public hearings, adopt the control measures, and enact the necessary ordinances to implement the local measures.
3. By December 31, 2004, NDEP will complete the Final CAAP and submit it to the State SEC.
4. By January 31, 2005, the SEC will hold a public hearing on the Final CAAP and will adopt the Final CAAP, as revised appropriately to reflect public comments, and will enact regulations to implement the State control measures. As soon as practicable thereafter, NDEP will submit the Final CAAP to EPA for approval into the Nevada SIP.

Maintenance for Growth

NDEP will be the lead agency in evaluating the need for additional, or more stringent, control measures to ensure maintenance of the PM-10 NAAQS at least five years beyond December 31, 2009. Nye County Staff will provide technical and planning assistance in developing and implementing processes to address the impact of emissions growth beyond the attainment date.

1. By August 31, 2004, NDEP will prepare the element of the Draft CAAP that addresses emissions growth at least five years beyond December 31, 2009. The related analysis will employ one or more of the following or any other appropriate techniques necessary

to make such a demonstration:

- An annual review of growth to ensure emission reduction strategies and growth assumptions are adequate; or
- Identification and quantification of Federal, State, and/or local measures indicating sufficient reductions to offset growth estimates.

2. A continuing planning process will be conducted concurrent with the tracking and reporting process for the CAAP. This update and verification will be an ongoing process between the signatories, stakeholders and the public. Planning processes must consider and evaluate:

- All relevant actual new point sources;
- Impacts from potential new source growth; and
- Future transportation patterns and their impact on air quality in a manner that is consistent with the most current adopted local transportation plan and most current trend and projections of local motor vehicle emissions.

3. If the review of emissions growth in conjunction with the continuing planning process demonstrates that adopted emission reductions strategies are inadequate to address growth in emissions, additional measures will be added to the CAAP.

4. In the event that the continuing planning process identifies the need to add, delete, or substitute control measures from the CAAP that have been incorporated into the SIP, NDEP will facilitate SIP revisions to accommodate changes.

Public Involvement

APPENDIX A

NCBOC will be the lead agency in implementing the tasks for public involvement. NCBOC will coordinate communication between NDEP and local agencies and will provide support for public education efforts.

1. Public involvement will occur in all stages of planning by the signatory parties. Outreach may include one or more of the following techniques: public meetings and presentations, stakeholder meetings, websites, print advertising and radio.
2. Public education programs will be used to raise awareness regarding issues, opportunities for involvement in the planning process, implementation of emission reduction strategies, and any other issues important to the area.
3. The Town of Pahrump will be included throughout the process.
4. Interested stakeholders will be involved in the planning process as early as possible. Planning meetings will be open to the public, with posted meeting times and locations. The Draft CAAP will be distributed to the public, and the drafting process will have sufficient opportunities for comment from all interested stakeholders.
5. Public comment on the proposed Final CAAP will follow the normal SIP revision process as implemented by the State.
6. NDEP will prepare semi-annual reports detailing, at a minimum, progress toward milestones, will be publicly presented and publicly available.

Signatures:

BY: _____
Henry Neth, Chairman Date
Nye County Board of
County Commissioners

ATTEST: _____
Sandra "Sam" Merlino Date
Clerk and Ex-Officio
Clerk of the Nye County Board of County Commissioners

BY: _____
Joni Eastley, Vice-Chairman Date
Nye County Board of
County Commissioners

BY: _____
Midge Carver, Nye County Board Date
of County Commissioners

BY: _____
Patricia Cox, Nye County Board Date
of County Commissioners

BY: _____
Candice Trummell, Nye County Board Date
of County Commissioners

BY: _____
Richard Ewing, Chairman Date
Town of Pahrump Board

BY: _____
Charlotte LeVar, Clerk Date
Town of Pahrump Board

BY: _____
Allen Biaggi, Administrator Date
Nevada Division of Environmental Protection

BY: _____
Wayne Nastri, Regional Administrator Date
U. S. Environmental Protection Agency, Region IX

APPENDIX B
Monitoring Data for the 2001-2003 Period

Table B-1. 2001 Monitoring Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1		18.80	14.50	71.70	79.30		36.10	44.20	33.80		12.40	16.70
2		24.20	20.90	181.80	360.30		96.70	37.50	31.10	99.00	20.50	17.20
3		17.90	9.10	104.40	51.90		56.40	40.50	50.20		25.30	8.50
4		16.70	15.10	66.40	64.20		78.90	29.60	20.70	66.80	26.10	22.60
5		24.90	20.50	44.20	43.60		77.30	28.40		122.50	26.50	25.80
6		107.50	17.90	67.10	58.10		112.70	52.60		241.70	24.30	37.40
7		29.60	16.40	25.90	93.90		136.00	128.50	25.50	102.00	31.80	62.50
8		68.00	20.00	13.30	67.70	48.90	89.50	48.20		49.50	22.00	37.40
9		25.80	26.80	22.30	79.60	31.60	39.40	46.30		177.10	36.20	31.70
10		19.60	8.50	39.90	73.30	32.80	47.80	45.90	41.50	40.80	47.30	31.40
11		6.70	19.60	89.90	84.50	50.70	51.10	43.40		54.20	30.00	48.80
12		9.80	13.60	29.20	109.80	69.40	61.30	74.20		202.30	62.70	46.20
13		14.80	38.60	46.70	63.60	214.50	45.20	36.20	25.90	33.90	5.80	41.80
14		11.60	25.90	167.80	63.50	30.50	51.40	39.10		41.00	15.90	63.40
15		8.80	28.30	125.50	58.40	43.80	28.90	46.90		34.40	26.30	67.30
16		11.20	30.40	93.40	71.80	51.10	50.30	41.20	33.40	44.60	32.50	6.20
17		20.80	51.10	82.60	38.10	34.50	53.90	47.50		47.70	25.30	14.30
18		18.90	31.10	74.80	107.30	45.70	52.50	53.10		55.10	42.00	25.20
19		18.80	23.30	154.20	52.50	56.00	46.30	39.30	48.70	87.10	45.20	35.20
20		12.10	36.50	49.00	52.60	50.00	52.90	59.90		51.00	45.80	37.80
21		17.70	47.80	62.70	50.60	49.00	48.40	48.80		35.60	36.40	12.10
22		45.90	30.60	105.40	67.10	63.10	36.70	51.20	64.80	37.70	36.30	17.00
23		37.30	32.00	55.80	52.20	55.30	48.10	43.50		39.50	71.20	22.60
24		21.00	39.30	91.20	77.30	56.10	49.00	104.70		47.40	93.20	13.70
25	21.90	11.80	36.70	45.10	62.20	101.40	85.60	57.40	61.60	72.50	7.10	14.10
26	14.40	9.90	51.00	61.20	78.20	53.80	47.80	45.40		52.50	3.50	32.30
27	11.70	10.40		69.50	53.30	37.10	42.70	47.90		60.00	8.40	43.50
28	8.40	9.60		97.90	45.90	43.60	97.80	45.60	53.40	27.90	13.90	37.80
29	14.00			80.40	76.70	44.70	87.60	57.30	35.00	42.90	15.00	11.10
30	40.50			91.00	74.50	30.10	111.50	46.60	42.00	30.40	20.60	20.00
31	16.50			N/D	74.00	N/D	40.30	52.80		7.80		17.40

APPENDIX B
Monitoring Data for the 2001-2003 Period

Table B-2. 2002 Monitoring Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	12.10		253.80	41.20	18.10	108.90		54.40	30.50	70.90	27.00	7.00
2	16.90		22.00	35.10	19.90	23.30		88.70	84.20	82.00	26.00	14.00
3	20.00		26.30	36.90	38.90	84.80		44.30	33.50	23.90	14.00	20.00
4	36.30		22.80	46.30	54.30	97.70		42.60	53.10	74.90	32.00	57.00
5	44.30			94.10	41.60	43.90		31.90	64.60	293.00	48.00	24.00
6	32.40	34.60		49.40	62.50	55.70		57.20	35.90	111.90	44.00	26.00
7	55.30	46.50		53.80	74.10	69.30		38.20	22.80	59.10	101.00	10.00
8	53.30	47.20	118.40	53.00	166.90	244.70		44.50	48.30	42.20	64.00	13.00
9	35.90	22.20	18.90	60.00	70.30	182.10		26.60	33.90	39.80	66.00	38.00
10	43.00	13.10	34.90	32.50	70.10	28.30		39.30	42.00	83.10	16.00	22.00
11	61.00	36.40	31.10	32.90	190.80	25.80		33.80	18.80	56.30	19.00	26.00
12	58.30	39.90	46.70	64.70	24.40	80.50		49.20	32.70	37.20	31.00	42.00
13	25.60	53.70	234.10	62.20	33.20	48.10		57.60	36.60	26.70	36.00	37.00
14	81.00	48.90	40.20	118.00	36.70	35.10		59.90	32.20	41.70	134.00	48.00
15	43.50	48.90	30.90	319.10	61.80	28.80		66.60	51.60	49.40	31.00	45.00
16	18.00	26.20	10.20	70.70	51.50	21.50	56.10	64.50	34.30	95.20	47.00	70.00
17	33.30	80.50	17.20	92.90	61.20	53.00	103.30	48.30	51.10	78.40	35.00	52.00
18	35.20	14.10	14.00	29.00	45.70	49.20	54.60	52.40	286.30	27.40	33.00	63.00
19	28.70	27.40	12.10	163.60	144.80	52.00	33.60	172.20	39.90	47.60	63.00	18.00
20	25.30	41.50	15.50	25.50	126.40	84.40	42.90	74.60	53.30	21.40	36.00	9.00
21	29.50	36.00	29.20	23.60	27.10	68.80	19.60	59.40	50.10	51.90	50.00	5.00
22	58.30	50.00	49.50	30.50	37.00	62.40	31.80	40.10	40.70	41.80	47.00	6.00
23	143.20	151.30	53.30	42.60	44.10	26.40	38.20	24.10	50.80	45.60	36.00	12.00
24	35.70	250.60	53.00	82.00	24.90	52.00	97.50	55.80	66.10	43.50	16.00	11.00
25	46.30	25.90	24.10	23.80	42.50	49.80	76.80	35.60	48.10	46.20	528.00	5.00
26	50.80	51.60	24.00	42.80	23.30	41.80	54.00	46.50	31.90	11.70	49.00	12.00
27	43.50	60.00	29.50	45.30	27.30	53.50	63.20	56.00	133.20	9.00	36.00	20.00
28	7.20	72.20	44.00	14.50	43.00	56.10	54.30	76.60	30.80	18.00	14.00	15.00
29	7.80		78.30	76.50	46.40	57.60	28.10	78.60	20.70	32.80	61.00	5.00
30	40.00		75.50	68.60	40.00	32.00	50.80	55.30	40.30	56.30	6.00	17.00
31	18.70		23.50		60.60		56.70	41.20				31.00

APPENDIX B
Monitoring Data for the 2001-2003 Period

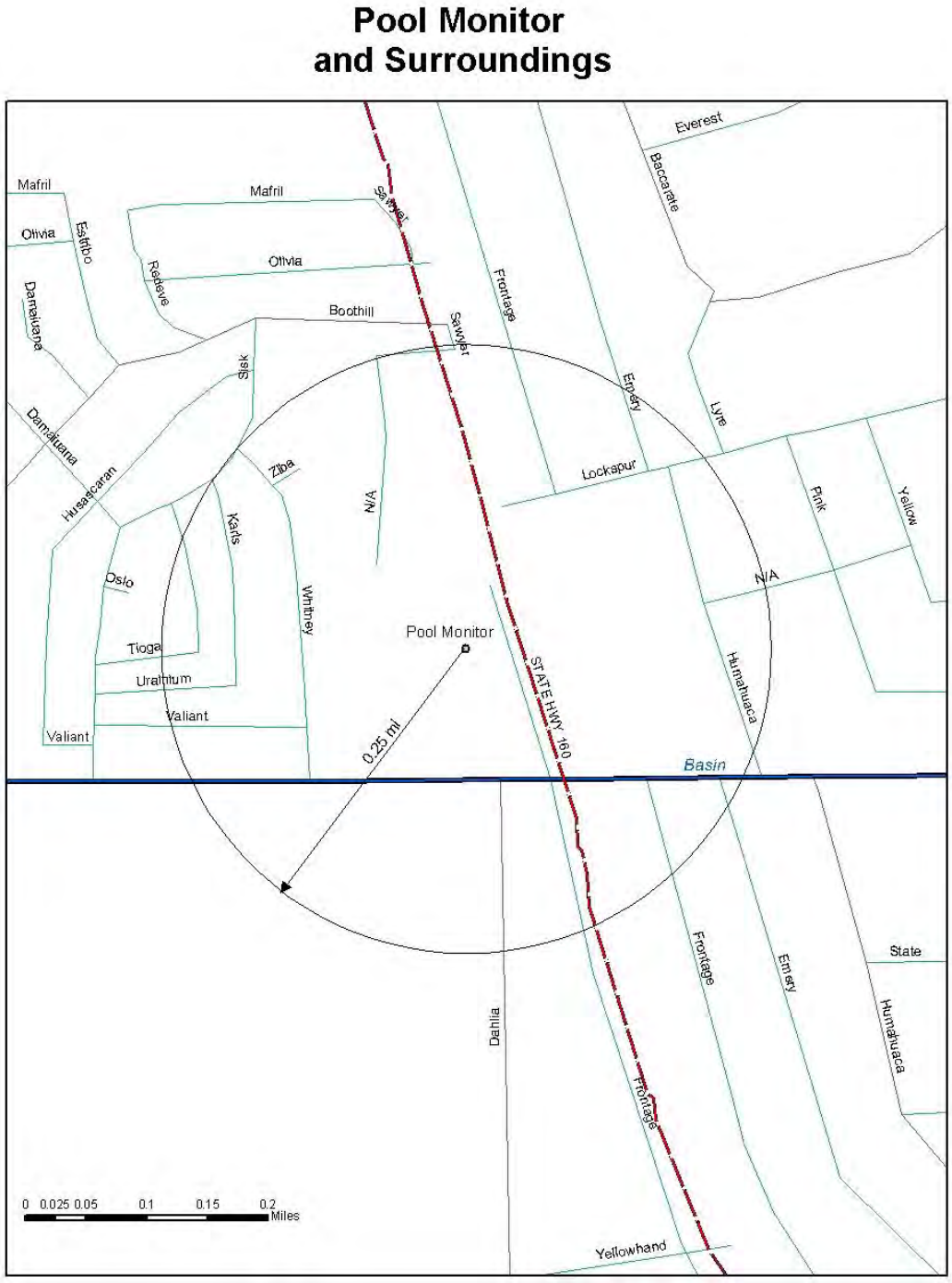
Table B-3. 2003 Monitoring Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	15.40	139.90	9.50	59.29	27.35		24.47	39.17	25.04	59.75		41.49
2	25.00	359.70	6.80	64.82	36.01		24.73	24.01	141.82	68.11		35.53
3	40.10	36.50	19.20	18.00	7.05		42.66	22.68	120.64	118.32		37.55
4	29.90	39.60	15.80	34.76	7.00		80.00	32.31	37.90	236.98		40.41
5	210.40	172.50	13.40	67.23	14.55	45.49	55.91	39.14	65.30	124.98	45.49	43.11
6	88.80	36.00	17.60	13.93	32.27	80.66	32.40	32.10	64.54	67.50	80.66	55.07
7	22.60	29.80	24.10	22.73	17.66	61.79	43.00	40.13	42.88	47.80	61.79	17.25
8	10.70	24.00	18.50	23.54	26.23	46.51	44.88	55.23	77.96	39.10	46.51	63.01
9	21.60	17.40	15.90	26.77	17.52	62.13	36.78	48.15	70.46	110.61	62.13	22.69
10	30.90	44.90	28.20	72.12	23.86	56.04	49.18	32.67	75.63	101.95	56.04	30.84
11	24.70	26.90	29.90	64.68	11.47	35.12	51.68	30.25	45.26	67.20	35.12	13.37
12	27.60	4.30	32.50	43.62	38.26	35.09	69.36	39.27	50.79	40.88	35.09	15.70
13	23.60	5.40	44.10	24.37	43.05	40.95	33.63	30.56	40.57	60.15	40.95	16.03
14	30.20	7.10	46.00	18.45	61.52	42.79	42.70	38.15	31.82	66.48	42.79	14.89
15	30.20	8.30	35.80	2.47	46.71	31.05	62.74	66.85	95.97	55.59	31.05	14.91
16	38.80	13.60	2.90	7.05	48.38	57.02	136.90	47.79	45.74	63.54	57.02	17.95
17	43.10	9.70	5.80	20.74	46.60	36.23	62.40	36.63	47.15	65.07	36.23	30.66
18	24.30	10.00	28.60	14.10	44.98	47.50	61.79	43.55	48.27	66.95	47.50	23.29
19	18.80	29.40	24.90	7.93	52.56	48.98	44.01	101.95	53.14	28.91	48.98	32.47
20	28.80	18.70	19.30	8.74	46.09	46.41	71.16	18.71	76.09	40.13	46.41	29.86
21	30.00	14.70	19.60	29.36	41.05	42.88	74.13	24.58	34.53	60.11	42.88	13.52
22	44.80	8.40	20.10	7.57	46.73	30.89	76.21	40.15	84.91	56.91	30.89	22.48
23	64.90	12.80	30.80	6.33		52.73	89.85	40.05	52.54	49.55	52.73	24.31
24	51.80	24.30	44.80	26.50		59.48	74.09	32.50	62.43	51.61	59.48	7.94
25	53.40	8.10	30.20	29.85		26.72	80.80	31.23	59.20	97.73	26.72	7.04
26	17.00	9.30	46.60	13.82		39.20	63.59	23.30	88.73	30.12	39.20	4.97
27	37.60	10.20	172.10	22.28		45.97	21.62	28.77	43.76	45.40	45.97	5.30
28	38.50	6.10	10.80	55.78		38.16	36.70	32.48	36.18	40.59	38.16	7.42
29	46.60		25.90	17.97		56.82	42.88	36.98	53.62	273.18	56.82	14.85
30	49.40		24.10	18.81		30.13	31.72		66.95	361.71	30.13	9.65
31	54.30		28.60				22.42			39.13		17.49

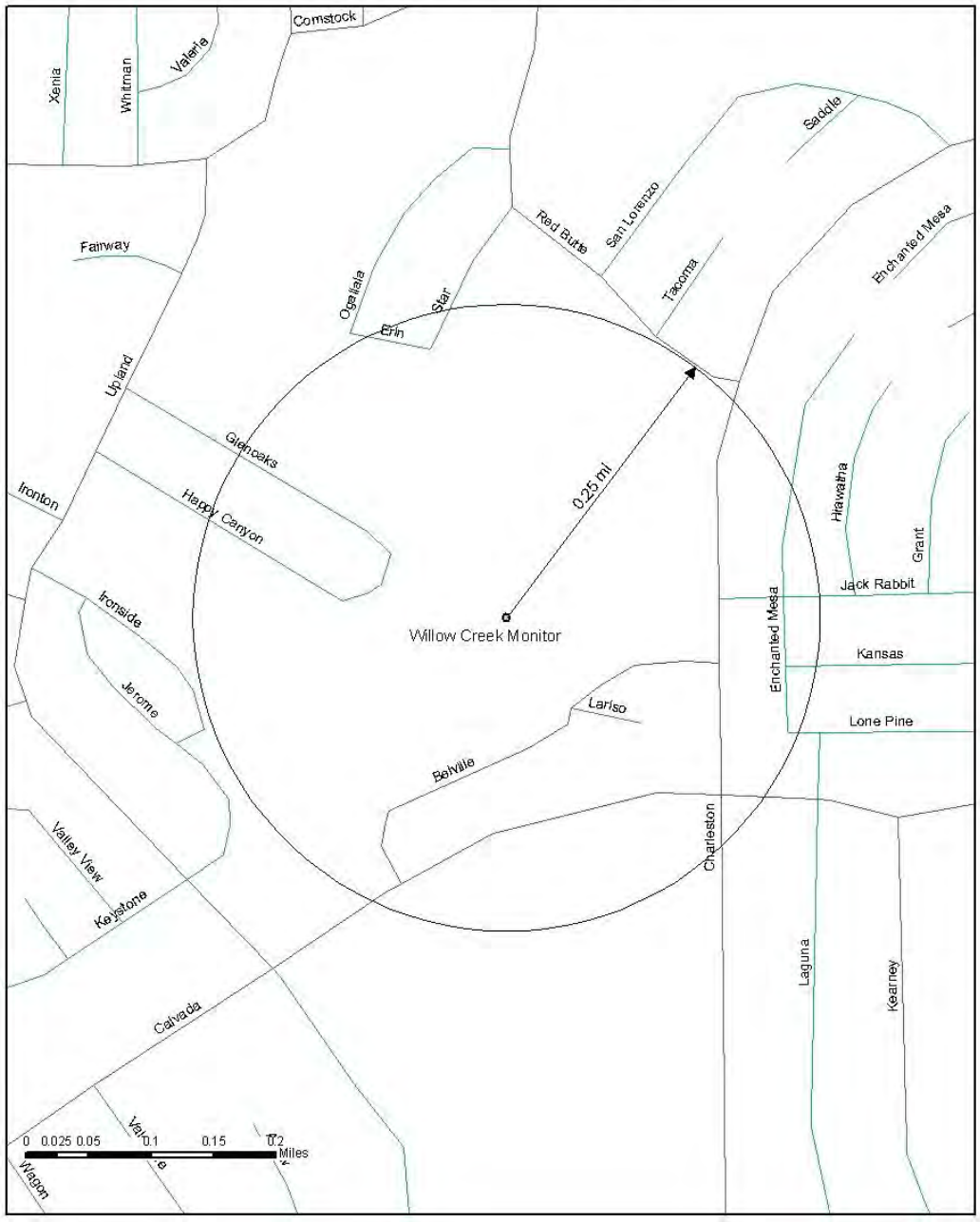
APPENDIX C

Site Specific Monitoring Locations.

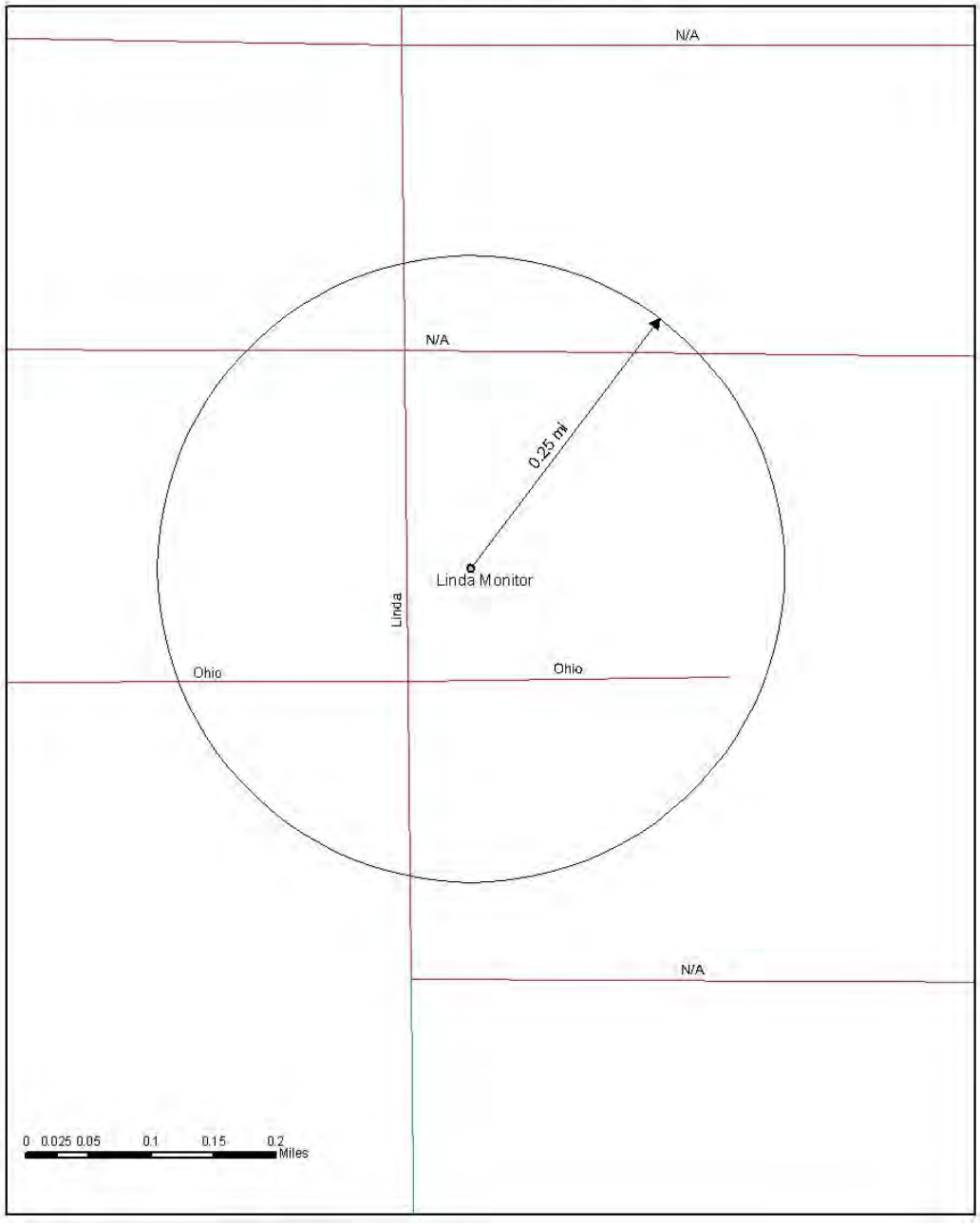
The red or blue lines are unpaved roads (dirt or gravel). The heavier blue lines are arterial roads. Highway 160 is marked in red.



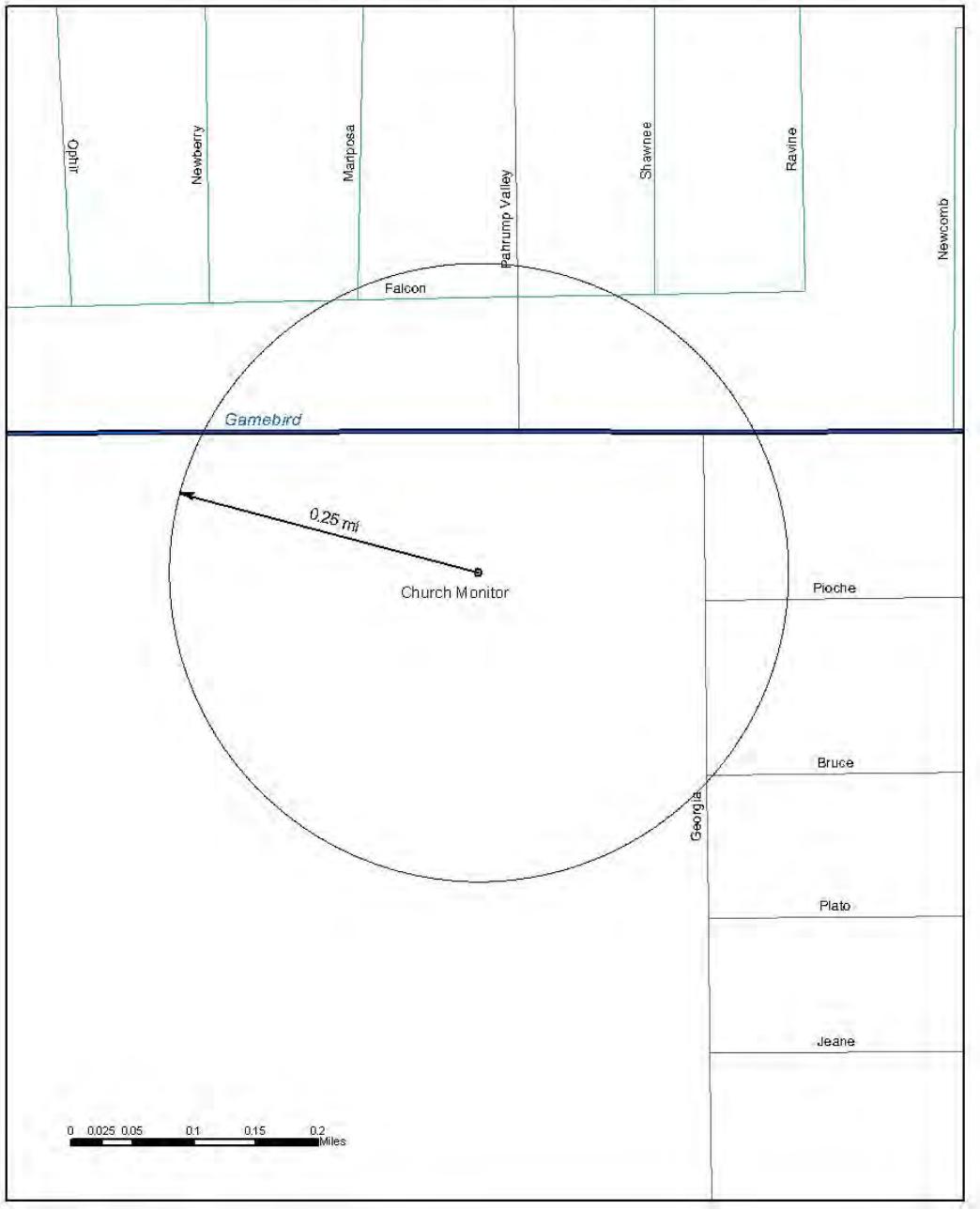
Willow Creek Monitor and Surroundings



Linda Monitor and Surroundings



Church Monitor and Surroundings



Manse Monitor and Surroundings

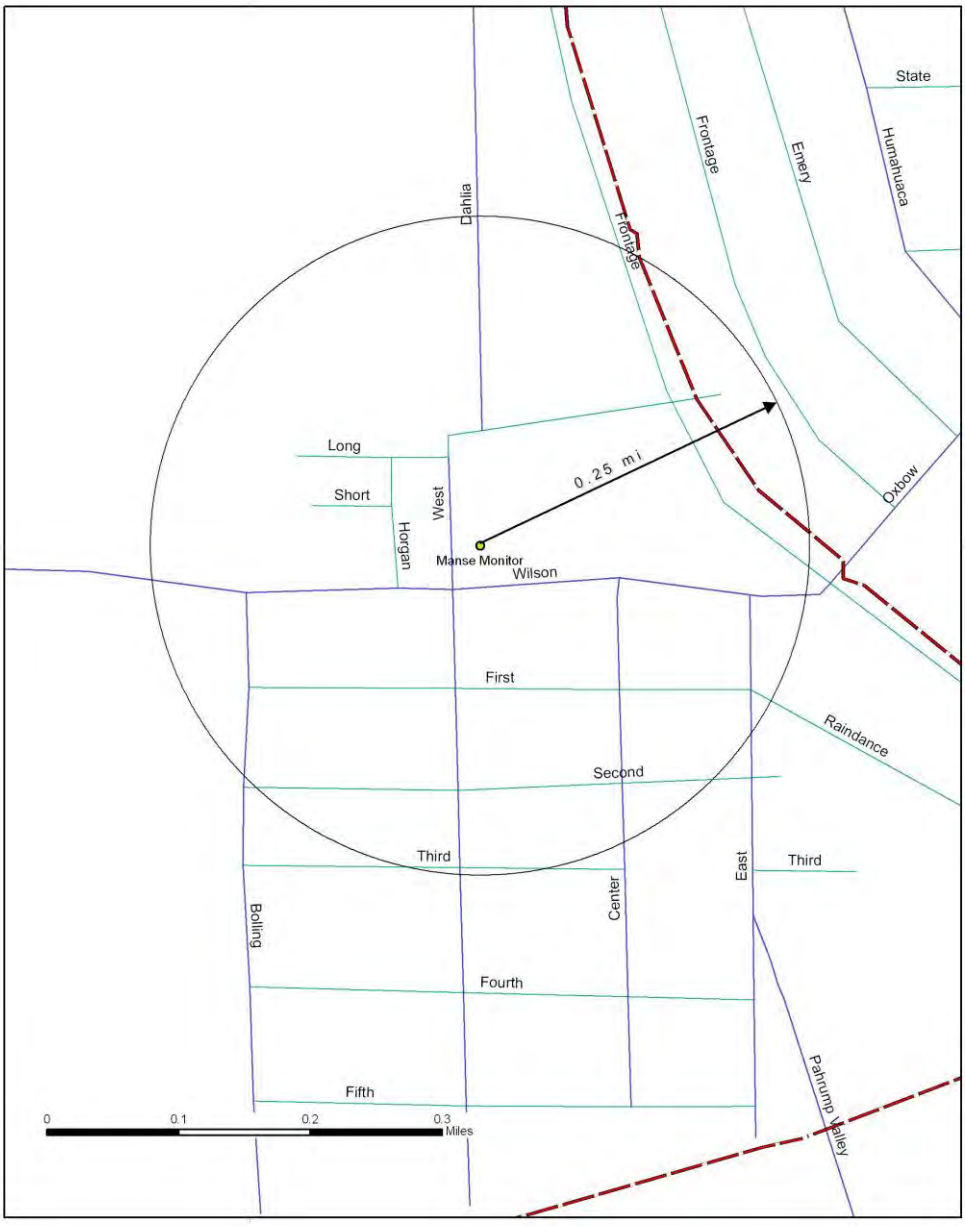


Figure 1. Municipal Pool Monitor. This site has been operational since 2001. Nearby land use is predominately recreational and includes irrigated parkland, rodeo ring, and paved parking lots. Additionally, the county offices and State Highway 160 are within ¼ mile. There are no trees or buildings close enough to affect siting criteria, and the monitor has a 360° unrestricted airflow.

Figure 2. Photo of the Willow Creek monitoring site. Note the instrumentation for Wind Speed, Wind Direction, Temperature and PM_{10} measurements. The land use around this site is predominately irrigated golf course. The monitor does have a 270º of unrestricted airflow, and is an acceptable distance from the closest road.

Figure 3. The Linda monitoring site, looking south toward Pahrump. Note the land use surrounding the monitor – the vegetation is typical of the northern Mohave region. Although there is some disturbed land around the monitor (dirt roads, cleared vegetation) we expect that air quality will more closely represent native desert conditions. There are no trees or buildings close enough to affect siting criteria, and the monitor has 360° unrestricted airflow.

Figure 4. The Church monitor site at 781 E Gamebird Road. Note the proximity of the dry lakebed, and relatively undisturbed land from the direction of the prevailing wind. This monitor location was chosen to estimate the impact of the dry lakebed on PM_{10} concentrations. A church and building are nearby, but are not too close per the siting criteria. The monitor has 360° unrestricted airflow.

Figure 5. The official 10-meter MET tower to collect meteorological data at the Pool site. Met data will also be collected at each PM_{10} monitor to compare against the 10m tower.

Figure 6. The Manse Elementary School is located at 1020 E. Wilson Street. This monitor will replace the Pool Site monitor that was shut down. This location is approximately 1 mile south of the Pool Site. This monitor will estimate the impacts on the downtown area.

APPENDIX D

Traffic Count Locations.

	Street
1	Roadrunner & East Hwy 160
2	Linda at Harris Farms
3	Corbin south of Bell Vista
4	Lola, between Bell Vista & Blosser
5	Corbin, between Irene & Basin
6	Lola, between Irene & Basin
7	Bannovich, South of Charleston park
8	Flamingo at Barney
9	David, between Charleston & Hwy 372
10	Panorama, between Hwy 160 & Crawford
11	Hichory, west of Blagg
12	Spy Glass South of Charleston
13	Pahrump Valley south of Thousandaire
14	Heritage at Malibou
15	Quarter Horse at Turner Blvd

The 24-hour count for the location is in parenthesis

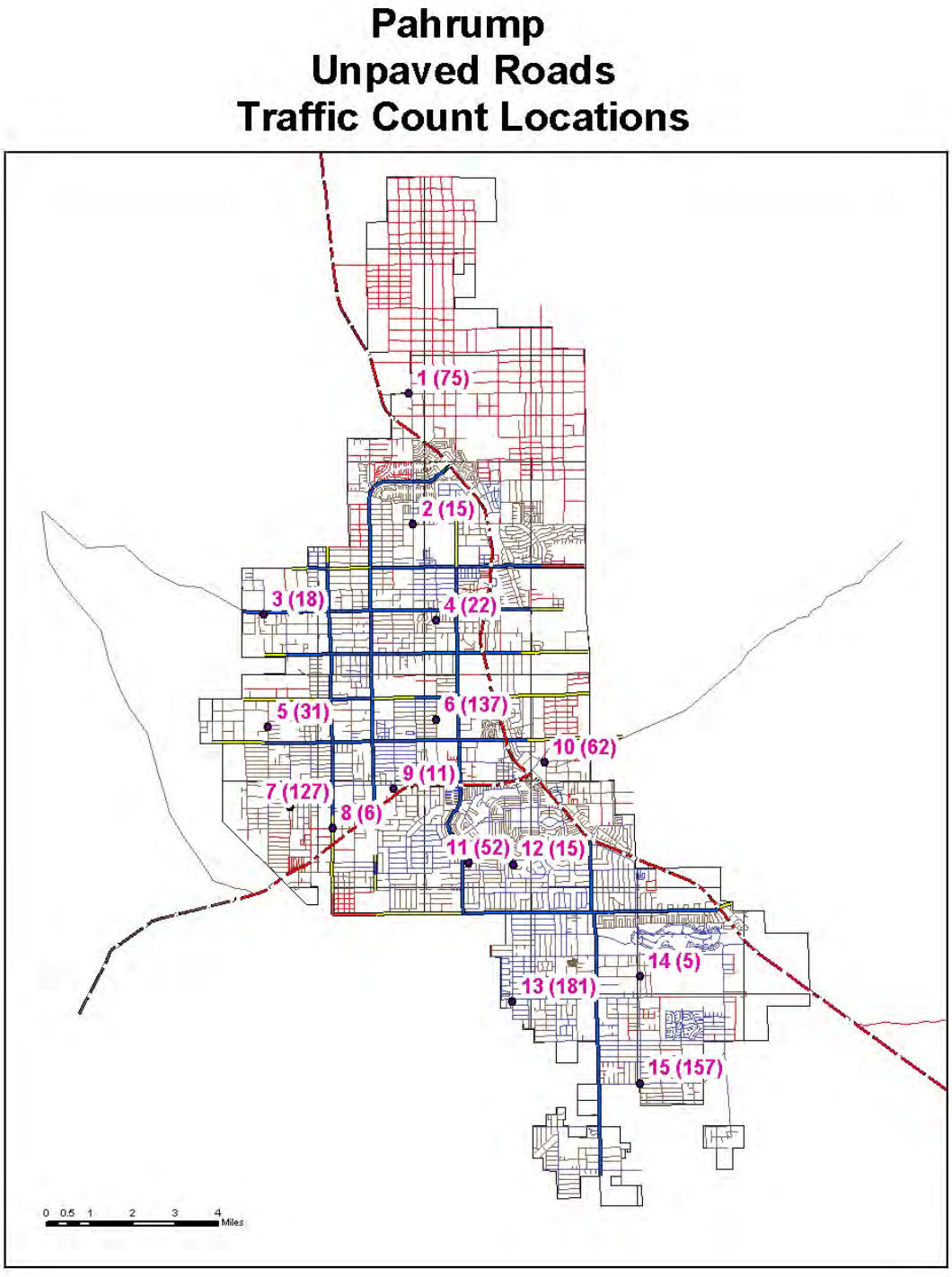


Table 1 – AVMT by County

PAHRUMP URBAN
2001 AVMT'S BY CO BY FC

county	rururbcd:	fclass	route	gorown:	beg_mile	sectlngth		AMVTMS
23	2	17	000160	1	46.826	0.22	8400	513,920.000
23	2	17	000160	1	47.046	0.694	8400	2,066,364.000
23	2	17	000160	1	47.840	2.168	16400	12,977,648.000
23	2	17	000160	1	50.108	0.869	16400	5,321,564.000
23	2	17	000160	1	50.997	0.5	16400	2,993,000.000
23	2	17	000160	1	51.497	0.5	16400	2,993,000.000
23	2	17	000160	1	51.997	0.93	16400	5,566,960.000
23	2	17	000160	1	52.927	0.156	16400	933,816.000
23	2	17	000160	1	53.083	6.257	15000	34,257,075.000
23	2	17	000160	1	59.340	3.3	1400	1,688,300.000
23	2	17	000160	1	62.640	6.888	1400	3,824,878.000
23	2	17	000372	1	0.000	1.204	1000	439,460.000
23	2	17	000372	1	1.204	2.855	1000	1,042,075.000
23	2	17	000372	1	4.059	2.95	1000	1,076,750.000
23	2	17	000372	1	7.008	0.761	9800	2,722,097.000
23	2	17	005208	2	0.000	3.996	2100	3,062,634.000
23	2	17	005208	2	9.000	7.954	2100	6,098,741.000
23	2	17	005227	2	0.000	2.777	2100	2,128,670.500
					length	45.209	avmts	89,425,182.500

county	rururbcd:	fclass	route	govown:	beg_mile	sectlngth	aadt	AVMS
23	2	19	023124	2	304.000	87	220	6,986,100.000
23	2	19	023125	2	305.000	315	220	25,294,500.000
					length	402.000	avmts	32,280,600.000
				Co. Length	447.209	Co. AVMTS		121,705,782.500
				avmts grand total		121,705,782.500		

Table 2

2001 AVMT'S for the Pahrump Regional Planning District							
county	route	sectlength (miles)	**paved (miles)**	**unpaved (miles)**	aadt	VMT's (paved)	VMT's (unpaved)
23	160	2.14	**2.14**		6400	13,696.00	
23	160	0.22	**0.22**		6400	1,408.00	
23	160	0.894	**0.894**		6400	5,721.60	
9	160	1.56	**1.56**		16400	25,584.00	
23	160	0.889	**0.889**		16400	14,579.60	
23	160	0.5	**0.5**		16400	8,200.00	
23	160	0.5	**0.5**		16400	8,200.00	
23	160	0.93	**0.93**		16400	15,252.00	
23	160	0.156	**0.156**		16400	2,558.40	
23	160	6.257	**6.257**		15000	93,855.00	
23	160	3.3	**3.3**		1400	4,620.00	
23	160	0.12	**0.12**		1400	168.00	
Total (160)		17.466	**17.466**			193,842.60	
23	372	2.855	**2.855**		1000	2,855.00	
23	372	2.95	**2.95**		1000	2,950.00	
23	372	0.761	**0.761**		9800	7,457.80	
Total (372)		6.566	**6.566**			13,262.80	
Total Highway		24.032	**24.032**			**207,105.40**	**0**
23 Barney		8.59	**5.91**	**2.68**	1500		
23 Basin		8.83	**6.42**	**2.41**	1500		
23 Bel Vista		7.48	**6.74**	**0.74**	1500		
23 Blagg		9.78	**8.28**	**1.50**	1500		
23 Gamebird		9.33	**6.04**	**3.29**	1500		
23 Homestead		6.90	**6.90**	**0.00**	1500		
23 Irene		8.07	**2.78**	**5.29**	1500		
23 Leslie		10.85	**9.82**	**1.03**	1500		
23 Mesquite		7.55	**5.50**	**2.05**	1500		
23 Simkins		6.84	**4.44**	**2.40**	1500		
Total Arterial		84.22	**62.83**	**21.39**	1500	**94,245.00**	**32,085.00**
Total Local *		1,007.10	**254.53**	**752.57**	60	**15,271.80**	**45,154.20**

MOBILE6.2 Input Files

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REPORT FILE        : pahrump.txt
DAILY OUTPUT       :
WITH FIELDNAMES    :
DATABASE EMISSIONS : 2222 2222 22
DATABASE FACILITIES: Arterial Local None
DATABASE VEHICLES  : 22222 22222222 2 222 22222222 222
PARTICULATES       :
RUN DATA           :
REG DIST           : PAHRUMP.D
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SCENARIO RECORD    : PAHRUMP Arterial MOBILE62 Run
VMT BY FACILITY    : arfvmt.def
SPEED VMT          : arsvmt.def
CALENDAR YEAR      : 2001
MIN/MAX TEMP       : 26.9 57.3
FUEL RVP           : 9.5
EVALUATION MONTH   : 1
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PMDDR2.CSV1
PARTICLE SIZE      : 10.0
DIESEL SULFUR      : 200.0
FUEL PROGRAM       : 4
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30.0  30.0 30.0  30.0  30.0  30.0 30.0 30.0
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80.0   80.0   80.0   80.0   80.0  80.0  80.0 80.0
**SECOND SCENARIO DATA SECTION WINTER 2001 LOCAL ROADS
SCENARIO RECORD    : PAHRUMP Local MOBILE62 Run
VMT BY FACILITY    : lofvmt.def
SPEED VMT          : arsvmt.def
CALENDAR YEAR      : 2001
MIN/MAX TEMP       : 26.9 57.3
FUEL RVP           : 9.5
EVALUATION MONTH   : 1
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV1
PARTICLE SIZE      : 10.0
DIESEL SULFUR      : 200.0
FUEL PROGRAM       : 4
300.0 50.0 279.0 259.0 121.0 92.0 33.0 33.0
30.0  30.0 30.0  30.0  30.0  30.0 30.0 30.0
1000.0 500.0 1000.0 1000.0 303.0 303.0 87.0 87.0
80.0   80.0   80.0   80.0   80.0  80.0  80.0 80.0
**THIRD SCENARIO DATA SECTION SUMMER 2001 ARTERIAL ROADS
SCENARIO RECORD    : PAHRUMP Arterial MOBILE62 Run
VMT BY FACILITY    : arfvmt.def
SPEED VMT          : arsvmt.def
CALENDAR YEAR      : 2001
MIN/MAX TEMP       : 66.8 101.1
FUEL RVP           : 9.5
FUEL PROGRAM       : 4
300.0 50.0 279.0 259.0 121.0 92.0 33.0 33.0
30.0  30.0 30.0  30.0  30.0  30.0 30.0 30.0
1000.0 500.0 1000.0 1000.0 303.0 303.0 87.0 87.0
80.0   80.0   80.0   80.0   80.0  80.0  80.0 80.0
EVALUATION MONTH   : 7
                                        Page 1
```

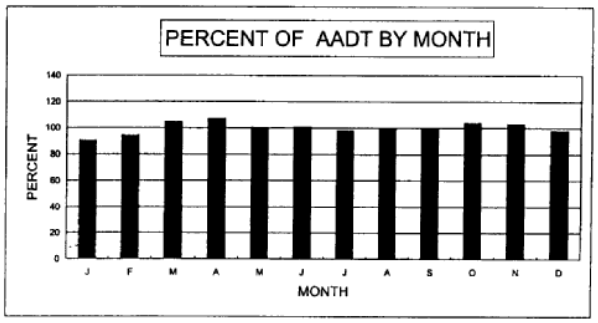
Specific VMT counts
Clark County

ATR 0331809

SR-160 25 KM (16 MI) W. OF SR-159

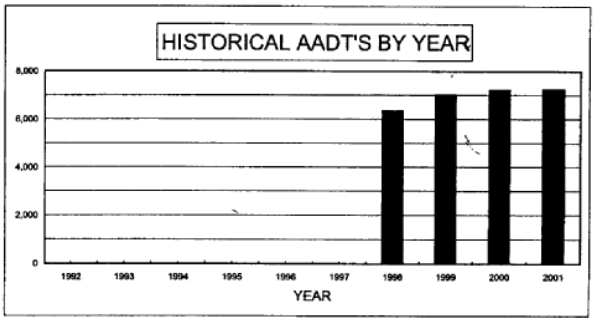
MONTHLY PERCENT

MONTH	MADT	% OF AADT
JANUARY	6,572	90.3%
FEBRUARY	6,862	94.3%
MARCH	7,611	104.5%
APRIL	7,803	107.2%
MAY	7,306	100.4%
JUNE	7,339	100.8%
JULY	7,128	97.9%
AUGUST	7,274	99.9%
SEPTEMBER	7,245	99.5%
OCTOBER	7,557	103.8%
NOVEMBER	7,505	103.1%
DECEMBER	7,144	98.1%



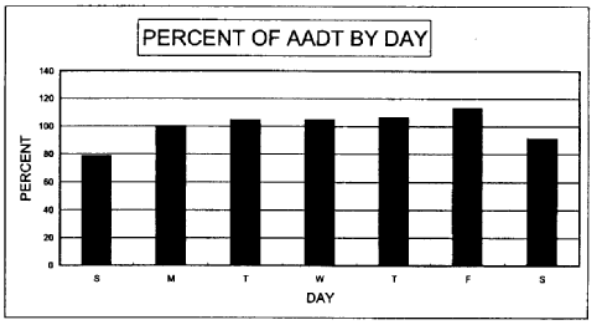
HISTORICAL RECORD

YEAR	AADT	% OF PREVIOUS YEAR
2001	7,280	100.6%
2000	7,235	102.9%
1999	7,030	110.5%
1998	6,360	
1997		
1996		
1995		
1994		
1993		
1992		



DAY OF WEEK

DAY	ADT	% OF AADT
SUN	5,731	78.7%
MON	7,311	100.4%
TUE	7,616	104.6%
WED	7,620	104.7%
THU	7,767	106.7%
FRI	8,243	113.2%
SAT	6,664	91.5%
AVG WEEKDAY	7,579	104.1%
AVG WEEKEND	6,198	85.1%



PERCENT DESIGN HOUR VOLUME (DHV) IS OF ANNUAL AVERAGE	9.8%
PERCENT HIGH DIRECTION IS OF DHV	69.9%

27

MOBILE6.2 Input Files

pahfinal.in

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PMDDR2.CSV1
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SCENARIO RECORD     : PAHRUMP Local MOBILE62 Run
VMT BY FACILITY     : lofvmt.def
SPEED VMT           : arsvmt.def
CALENDAR YEAR       : 2001
MIN/MAX TEMP        : 66.8 101.1
FUEL RVP            : 9.5
FUEL PROGRAM        : 4
300.0 50.0 279.0 259.0 121.0 92.0 33.0 33.0
30.0  30.0 30.0  30.0  30.0  30.0 30.0 30.0
1000.0 500.0 1000.0 1000.0 303.0 303.0 87.0 87.0
80.0   80.0   80.0   80.0   80.0  80.0  80.0 80.0
EVALUATION MONTH    : 7
PARTICULATE EF      : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV
PMDDR2.CSV1
PARTICLE SIZE       : 10.0
DIESEL SULFUR       : 200.0
END OF RUN          :
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Page 2

MOBILE6.2 – Output Files

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* MOBILE6.2 Draft (21-Mar-2002)                                           *
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* PAHRUMP WINTER 2001 HIGHWAY MOBILE62
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2001
                                      Month:  Jan.
              Gasoline Fuel Sulfur Content:    50. ppm
                Diesel Fuel Sulfur Content:   200. ppm
                      Particle Size Cutoff: 10.00 Microns
                          Reformulated Gas:   No

      Vehicle Type:     LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:              <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:   0.4943    0.2743    0.0934              0.0391    0.0023    0.0018    0.0897    0.0051    1.0000
------------------------------------------------------------------------------------------------------------------------
Composite Emission Factors (g/mi):
              Lead:   0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:   0.0051    0.0073    0.0373    0.0149    0.0967    ------    ------    ------    0.0254    0.0119
           ECARBON:   ------    ------    ------    ------    ------    0.2506    0.1122    0.3380    ------    0.0311
           OCARBON:   ------    ------    ------    ------    ------    0.0707    0.1615    0.1656    ------    0.0153
               SO4:   0.0008    0.0011    0.0010    0.0011    0.0012    0.0024    0.0036    0.0128    0.0002    0.0020
  Total Exhaust PM:   0.0059    0.0084    0.0383    0.0160    0.0979    0.3237    0.2773    0.5164    0.0255    0.0603
             Brake:   0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
              Tire:   0.0080    0.0080    0.0080    0.0080    0.0089    0.0080    0.0080    0.0263    0.0040    0.0097
          Total PM:   0.0265    0.0290    0.0589    0.0365    0.1193    0.3443    0.2979    0.5553    0.0421    0.0825
               SO2:   0.0117    0.0136    0.0200    0.0153    0.0298    0.0465    0.0680    0.1829    0.0055    0.0292
               NH3:   0.0956    0.0896    0.0806    0.0873    0.0451    0.0068    0.0068    0.0270    0.0113    0.0836
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* # # # # # # # # # # # # # # # # # # # # # # # # #
* PAHRUMP WINTER 2001 ARTERIAL MOBILE62
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2001
                                      Month:  Jan.
              Gasoline Fuel Sulfur Content:    50. ppm
                Diesel Fuel Sulfur Content:   200. ppm
                      Particle Size Cutoff: 10.00 Microns
                          Reformulated Gas:   No

      Vehicle Type:     LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:              <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
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MOBILE6.2– Output Files

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g/mi):									
0	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
1	0.0073	0.0373	0.0149	0.0967	------	------	------	0.0254	0.0119
-	------	------	------	------	0.2506	0.1122	0.3380	------	0.0311
-	------	------	------	------	0.0707	0.1615	0.1656	------	0.0153
9	0.0011	0.0010	0.0011	0.0012	0.0024	0.0036	0.0128	0.0002	0.0020
9	0.0084	0.0383	0.0160	0.0979	0.3237	0.2773	0.5164	0.0256	0.0604
5	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
0	0.0080	0.0080	0.0080	0.0089	0.0080	0.0080	0.0263	0.0040	0.0097
5	0.0290	0.0589	0.0366	0.1193	0.3443	0.2979	0.5553	0.0421	0.0826
7	0.0136	0.0200	0.0153	0.0298	0.0465	0.0680	0.1829	0.0055	0.0292
6	0.0896	0.0806	0.0873	0.0451	0.0068	0.0068	0.0270	0.0113	0.0836

\# # # # # # # # # # #
OBILE62

\# # # # # # # # # # #

Calendar Year: 2001
Month: Jan.
Sulfur Content: 50. ppm
Sulfur Content: 200. ppm
le Size Cutoff: 10.00 Microns
formulated Gas: No

V	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
-	------	------	------	------	------	------	------	------	------
3	0.2743	0.0934		0.0391	0.0023	0.0018	0.0897	0.0051	1.0000
g/mi):									
0	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
1	0.0073	0.0373	0.0149	0.0967	------	------	------	0.0254	0.0119
-	------	------	------	------	0.2506	0.1122	0.3380	------	0.0311
-	------	------	------	------	0.0707	0.1615	0.1656	------	0.0153
0	0.0012	0.0011	0.0011	0.0011	0.0024	0.0036	0.0128	0.0003	0.0021
1	0.0085	0.0384	0.0161	0.0978	0.3237	0.2773	0.5164	0.0257	0.0605
5	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
0	0.0080	0.0080	0.0080	0.0089	0.0080	0.0080	0.0263	0.0040	0.0097
7	0.0290	0.0589	0.0366	0.1192	0.3443	0.2979	0.5553	0.0422	0.0827
6	0.0136	0.0200	0.0152	0.0299	0.0465	0.0680	0.1829	0.0054	0.0292
6	0.0896	0.0806	0.0873	0.0451	0.0068	0.0068	0.0270	0.0113	0.0836

\# # # # # # # # # # #
MOBILE62

\# # # # # # # # # # #

MOBILE6.2– Output Files

Calendar Year: 2001
Month: July
Gasoline Fuel Sulfur Content: 50. ppm
Diesel Fuel Sulfur Content: 200. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.4906	0.2776	0.0947		0.0392	0.0023	0.0018	0.0887	0.0050	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0051	0.0073	0.0373	0.0149	0.0967	------	------	------	0.0255	0.0120
ECARBON:	------	------	------	------	------	0.2506	0.1120	0.3384	------	0.0308
OCARBON:	------	------	------	------	------	0.0707	0.1611	0.1660	------	0.0152
SO4:	0.0008	0.0011	0.0010	0.0011	0.0012	0.0024	0.0036	0.0128	0.0002	0.0020
Total Exhaust PM:	0.0059	0.0084	0.0383	0.0160	0.0980	0.3237	0.2767	0.5172	0.0257	0.0599
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0089	0.0080	0.0080	0.0263	0.0040	0.0096
Total PM:	0.0265	0.0289	0.0589	0.0365	0.1194	0.3443	0.2972	0.5560	0.0422	0.0821
SO2:	0.0117	0.0136	0.0200	0.0153	0.0298	0.0465	0.0681	0.1829	0.0055	0.0291
NH3:	0.0956	0.0897	0.0806	0.0874	0.0451	0.0068	0.0068	0.0270	0.0113	0.0837

* #
* PAHRUMP SUMMER 2001 ARTERIAL MOBILE62
* File 1, Run 1, Scenario 5.
* #

Calendar Year: 2001
Month: July
Gasoline Fuel Sulfur Content: 50. ppm
Diesel Fuel Sulfur Content: 200. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.4906	0.2776	0.0947		0.0392	0.0023	0.0018	0.0887	0.0050	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0051	0.0073	0.0373	0.0149	0.0967	------	------	------	0.0255	0.0120
ECARBON:	------	------	------	------	------	0.2506	0.1120	0.3384	------	0.0308
OCARBON:	------	------	------	------	------	0.0707	0.1611	0.1660	------	0.0152
SO4:	0.0009	0.0011	0.0010	0.0011	0.0012	0.0024	0.0036	0.0128	0.0002	0.0020
Total Exhaust PM:	0.0059	0.0084	0.0384	0.0160	0.0979	0.3237	0.2767	0.5172	0.0257	0.0599

MOBILE6.2 – Output Files

Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0089	0.0080	0.0080	0.0263	0.0040	0.0096
Total PM:	0.0265	0.0289	0.0589	0.0366	0.1194	0.3443	0.2972	0.5560	0.0423	0.0821
SO2:	0.0117	0.0136	0.0200	0.0153	0.0298	0.0465	0.0681	0.1829	0.0055	0.0291
NH3:	0.0956	0.0897	0.0806	0.0874	0.0451	0.0068	0.0068	0.0270	0.0113	0.0837

```
* # # # # # # # # # # # # # # # # # # # # # # # # #
* PAHRUMP SUMMER 2001 LOCAL MOBILE62
* File 1, Run 1, Scenario 6.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                 Calendar Year:  2001
                         Month:  July
     Gasoline Fuel Sulfur Content:   50. ppm
       Diesel Fuel Sulfur Content:  200. ppm
            Particle Size Cutoff: 10.00 Microns
                Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.4906	0.2776	0.0947		0.0392	0.0023	0.0018	0.0887	0.0050	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0051	0.0073	0.0373	0.0149	0.0967	------	------	------	0.0255	0.0120
ECARBON:	------	------	------	------	------	0.2506	0.1120	0.3384	------	0.0308
OCARBON:	------	------	------	------	------	0.0707	0.1611	0.1660	------	0.0152
SO4:	0.0010	0.0012	0.0011	0.0011	0.0011	0.0024	0.0036	0.0128	0.0003	0.0021
Total Exhaust PM:	0.0061	0.0084	0.0384	0.0161	0.0978	0.3237	0.2767	0.5172	0.0258	0.0600
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0089	0.0080	0.0080	0.0263	0.0040	0.0096
Total PM:	0.0267	0.0290	0.0590	0.0366	0.1192	0.3443	0.2972	0.5560	0.0424	0.0822
SO2:	0.0116	0.0136	0.0200	0.0152	0.0299	0.0465	0.0681	0.1829	0.0054	0.0290
NH3:	0.0956	0.0897	0.0806	0.0874	0.0451	0.0068	0.0068	0.0270	0.0113	0.0837

Table 3 Housing Data

	2001 Pahrump Housing					
	Single Family Detached	Single Family Attached	Mobile Home Housing Units	Multi-Family Housing Units	=	Totals
	484	20	1945	29		
	428	38	2686	18		
	1809	313	1233	205		
	236	2	1250	6		
	379	6	983	4		
Total	3336	379	8097	262	=	12074
% of Total	27.6%	3.1%	67.1%	2.2%	=	100.0%
	Total for Nye County					
	4469	503	10620	601	=	16193
	% of County total in Pahrump					
	74.6%	**75.3%**	**76.2%**	**43.6%**	**#**	**74.6%**

	2002 Pahrump Housing					
	Single Family Detached	Single Family Attached	Mobile Home Housing Units	Multi-Family Housing Units	=	Totals
	502	20	2008	28		
	458	42	2865	21		
	1961	343	1272	214		
	288	2	1294	8		
	439	6	1042	4		
Total	3648	413	8481	275	=	12817
% of Total	28.5%	3.2%	66.2%	2.1%	=	100.0%
	Total for Nye County					
	4778	535	11024	622	=	16959
	% of County total in Pahrump					
	76.3%	**77.2%**	**76.9%**	**44.2%**		**75.6%**

Average % of County total in Pahrump in 2001				
74.6%	**75.3%**	**76.2%**		**75.4%**
Average % of County total in Pahrump in 2002				
76.3%	**77.2%**	**76.9%**		**76.8%**

Information obtained from Nye County Assessor's Office

NONROAD MODEL - NONROAD ASSUMPTIONS:

	Season	Winter	Spring	Summer	Autumn
*	***Fuel RVP for gas***	10.0	9.5	9.5	9.5
*	***Oxygen weight %***	0.0	0.0	0.0	0.0
*	***Gas Sulfur %***	0.005	0.005	0.005	0.005
*	***Diesel Sulfur %***	0.2	0.02	0.02	0.02
	CNG/LPG Sulfur %	0.003	0.003	0.003	0.003
	Minimum temp (F)	26.9	43	66.8	44.6
	Maximum temp (F)	57.3	75.7	101.1	81.5
	Average temp (F)	42.1	59.4	84	63.1
	Stage II Control %	0	0	0	0

* Data obtained from Nevada Department of Agriculture, State Fuel Chemist, V. Miller

Appendix B – NONROAD MODEL (page 2) - **NONROAD OUTPUTS:**

Emission Totals by County and Pollutant

All Fuels **Tons/Season**

PAHRUMP VALLEY NONROAD MODEL
WINTER 2001

Total for Winter Season, 2001

Date of Model Run: Feb 13 11:38:28: 2003 Today's Date: 2/13/2003

County	Exhaust PM10	Exhaust PM2.5
Nye County	1.96	1.81
Totals:	**1.96**	**1.81**

Emission Totals by County and Pollutant

All Fuels **Tons/Season**

PAHRUMP VALLEY NONROAD MODEL
SPRING 2001

Total for Spring Season, 2001

Date of Model Run: Feb 13 11:47:02: 2003 Today's Date: 2/13/2003

County	Exhaust PM10	Exhaust PM2.5
Nye County	3.24	2.98
Totals:	**3.24**	**2.98**

NONROAD MODEL (page 3)- **NONROAD OUTPUTS:**

Emission Totals by County and Pollutant

All Fuels **Tons/Season**

PAHRUMP VALLEY NONROAD MODEL
SUMMER 2001

Total for Summer Season, 2001

Date of Model Run: Feb 13 11:34:38: 2003 Today's Date: 2/13/2003

County	Exhaust PM10	Exhaust PM2.5
Nye County	4.98	4.58
Totals:	**4.98**	**4.58**

Emission Totals by County and Pollutant

All Fuels **Tons/Season**

PAHRUMP VALLEY NONROAD MODEL
AUTUMN 2001

Total for Fall Season, 2001

Date of Model Run: Feb 13 11:29:01: 2003 Today's Date: 2/13/2003

County	Exhaust PM10	Exhaust PM2.5
Nye County	3.24	2.98
Totals:	**3.24**	**2.98**

High Wind Design Day

Baseline 24-hour Emission Inventory - May 2, 2001 - concentration 360 ug/m^3

Source	Road Length (miles)	Ave, Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Current Emissions (tons/day)	Percent of Total Emissions
Vehicle Exhaust-On-road					0.04	0.0%
Vehicle Exhaust-Nonroad					0.03	0.0%
Fugitive Dust-Paved Highway	24.0		207,105.4	0.0123	1.27	0.0%
Fugitive Dust-Paved ArterialRoads	62.8	1500	94,245.00	0.082	3.86	0.1%
Fugitive Dust-Paved Local Roads	254.5	60	15,271.80	0.082	0.63	0.0%
Fugitive Dust-Unpaved Arterial Roads	21.4	1500	32,085.00	3.27	52.46	2.0%
Fugitive Dust Unpaved Local Roads	752.6	60	45,154.20	3.27	73.83	2.7%
	1115.4				132.11	4.9%
			Area (acres)	**Emission Factor (tons/acre)**		
Fugitive Dust-Disturbed Vacant Lands			23,276.90	0.104826	2,440.02	90.7%
Fugitive Dust-Native Desert Lands			30,390.20	0.003648	110.86	4.1%
Fugitive Dust-Stabilized Lands			32,783.80	0.00019	6.23	0.2%
Fugitive Dust-Construction					0.49	0.0%
Fires residential burning					0.39	0.0%
Stationary Sources					0.04	0.0%
					2,558.03	
Total			86,450.90		2,690.15	100.0%

Wind speed and emission factor calculations:

Table 2. Wind Speed Data

Day: May 2, 2001	Conc. µg/m3	Wind speed (m/sec)	Wind speed (mile/hr)
0	52.0	3	7
1	42.1	4	9
2	43.1	4	8
3	57.7	3	6
4	72.7	5	12
5	513.8	14	32
6	995.0	16	36
7	995.0	15	34
8	995.0	17	38
9	995.0	19	42
10	995.0	19	42
11	750.0	16	36
12	995.0	18	40
13	479.5	16	36
14	294.2	15	33
15	62.5	14	31
16	72.6	14	31
17	57.0	12	28
18	47.9	12	27
19	48.6	11	25
20	25.2	8	18
21	19.4	8	18
22	20.5	8	18
23	18.4	9	20

Table 3. Emission Factor Calculations

Disturbed Land					
Mph	# Hrs in range	# days in range	Sustained EF	Spike EF	EF
15-20	3				
20-25	1	1	0.00521	0.000816	0.006026
25-30	3	1	0.00640	0.00194	0.02114
30-35	5	1	0.00462	0.00141	0.02451
35-40	7	1	0.00705	0.0038	0.05315
Total	19				0.10483
Native Desert					
Mph		# days in range	Sustained EF	Spike EF	EF
15-20		1			
20-25		1			0
25-30		1	0.00257	0.00049	0
30-35		1	0.00316	0.000488	0.003648
35-40		1	0.00299	0.000924	0
Total					0.003648
Stabilized Land					
Mph		# days in range	Sustained EF	Spike EF	EF
15-20		1	0.000420	n/a	0.00042
20-25		1	0.000340	n/a	0.00034
25-30		1	0.000190	n/a	0.00019
30-35		1	0.000151	n/a	0.000151
35-40		1	0.000190	n/a	0.00019
					0.00129

Low Wind Design Day

Baseline 24-hour Emission Inventory - September 18, 2002 - concentration 286 ug/m^3

Source	Road Length (miles)	Ave, Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Current Emissions (tons/day)	Percent of Total Emissions
Vehicle Exhaust-On-road					0.04	0.0%
Vehicle Exhaust-Nonroad					0.03	0.0%
Fugitive Dust-Paved Highway	24.0		207,105.4	0.0123	1.27	0.1%
Fugitive Dust-Paved ArterialRoads	62.8	1500	94,245.00	0.082	3.86	0.2%
Fugitive Dust-Paved Local Roads	254.5	60	15,271.80	0.082	0.63	0.0%
Fugitive Dust-Unpaved Arterial Roads	21.4	1500	32,085.00	3.27	52.46	2.9%
Fugitive Dust Unpaved Local Roads	752.6	60	45,154.20	3.27	73.83	4.0%
	1115.4				132.11	7.2%
			Area (acres)	**Emission Factor (tons/acre)**		
Fugitive Dust-Disturbed Vacant Lands			23,276.90	0.068846	1,602.52	87.3%
Fugitive Dust-Native Desert Lands			30,390.20	0.00306	92.99	5.1%
Fugitive Dust-Stabilized Lands			32,783.80	0.00019	6.23	0.3%
Fugitive Dust-Construction					0.49	0.0%
Fires residential burning					0.39	0.0%
Stationary Sources					0.04	0.0%
					1,702.66	
Total			86,450.90		1,834.78	100.0%

Wind speed and emission factor calculations:

Table 5. Wind Speed Data

Day: Sept 18, 2002	Conc. µg/m3	Wind speed (m/sec)	Wind speed (mile/hr)
0	79.1	3.4	8
1	83.2	0.2	0
2	66.9	0.2	0
3	61.2	0	0
4	72	0	0
5	85.3	1.5	3
6	210	1.5	3
7	243.4	8.5	19
8	995	10.9	24
9	995	11.7	26
10	995	11.7	26
11	926	11.1	25
12	745	10.9	24
13	443.4	10.6	24
14	198.3	9.3	21
15	392.4	10.6	24
16	78.4	9	20
17	60.5	9.5	21
18	93.1	6.6	15
19	2.4	5.5	12
20	0	5.3	12
21	33.3	10.1	23
22	5.8	5	11
23	8.9	9	20

Table 6. Emission Factor Calculations

Disturbed Vacant Land					
Mph	# Hrs in range	# days in range	Sustained EF	Spike EF	EF
15-20	2				
20-25	9	1	0.00521	0.000816	0.047706
25-30	3	1	0.00640	0.00194	0.02114
30-35	0	0	0.00462	0.00141	0
35-40	0	0	0.00705	0.0038	0
Total	14				0.06885
Native Desert					
Mph		# days in range	Sustained EF	Spike EF	EF
15-20		0			
20-25		0			0
25-30		1	0.00257	0.00049	0.00306
30-35		0	0.00316	0.000488	0
35-40		0	0.00299	0.000924	0
Total					0.00306
Stabilized Land					
Mph		# days in range	Sustained EF	Spike EF	EF
15-20		0	0.000420	n/a	0
20-25		0	0.000340	n/a	0
25-30		1	0.000190	n/a	0.00019
30-35		0	0.000151	n/a	0
35-40		0	0.000190	n/a	0
					0.00019

2009 **High Wind Design Day**

no controls **Concentration 360 ug/m3**

	Growth		
1	Inventory Year	2009	
2	Population Annual Growth Rate	3.458	percent
3	Population Change 2001-to Projected Year	131.26	percent

	Mobile Sources	Road Length (miles)	Adj Future Average Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Emissions (tons/day)	Percent of Total Emissions
9	Vehicle Exhaust-On-road					0.04	0.0%
10	Vehicle Exhaust-Nonroad					0.03	0.0%
11	Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7	0.1%
12	Fugitive Dust-Paved ArterialRoads	62.8	1,968.8	123,702.7	0.082	5.1	0.2%
13	Fugitive Dust-Paved Local Roads	254.5	78.8	20,045.2	0.082	0.8	0.0%
14	Fugitive Dust-Unpaved Arterial Roads	21.4	1,968.8	42,113.6	3.27	68.9	2.8%
15	Fugitive Dust Unpaved Local Roads	752.6	78.8	59,267.8	3.27	96.9	4.0%
16						173.4	7.1%

	Area Sources	Baseline Area (acres)	Adj Future Area (acres)	Emission Factor (tons/acre/ day)	Emissions (tons/day)	
17	Fugitive Dust-Disturbed Vacant Lands	23,276.9	20,209.7	0.10483	2,118.5	86.7%
19	Fugitive Dust-Native Desert Lands	30,390.2	27,323.0	0.00365	99.7	4.1%
20	Fugitive Dust-Stabilized Lands	32,783.8	38,918.2	0.00129	50.2	2.1%
21						0.0%
	Total Pahrump Valley Area	86,450.9	86,450.9		2,268.4	92.9%

	Other Sources	Baseline Emissions (tons/day)	Emissions (tons/day)	
22	Fugitive Dust-Construction	0.5	0.6	0.0%
23	Fires residential burning	0.4	0.5	0.0%
24	Stationary Sources	0.0	0.0	0.0%
	Total		1.1	0.0%

Total Emissions	2443.0
Emissions Reductions	**247.02**

2009 Controlled — **High Wind Design Day Concentration 360 ug/m3**

Growth

Inventory Year	2009	
Population Annual Growth Rate	3.458	percent
Population Change 2001-to Projected Year	131.26	percent

Mobile Sources	Road Length (miles)	Adj Future Average Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Emissions (tons/day)	Percent of Total Emissions
Vehicle Exhaust-On-road					0.04	0.0%
Vehicle Exhaust-Nonroad					0.03	0.0%
Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7	0.2%
Fugitive Dust-Paved ArterialRoads	84.2	1,968.8	165,816.3	0.082	6.8	0.7%
Fugitive Dust-Paved Local Roads	553.1	78.8	43,561.1	0.082	1.8	0.2%
Fugitive Dust-Unpaved Arterial Roads	0.0	1,968.8	0.0	3.27	0.0	0.0%
Fugitive Dust Unpaved Local Roads	454.0	78.8	35,751.9	3.27	58.5	6.2%
					68.8	7.3%

Area Sources	Baseline Area (acres)	Adj Future Area (acres)	Emission Factor (tons/acre/ day)	Emissions (tons/day)	
Fugitive Dust-Disturbed Vacant Lands	23,276.9	6,669.2	0.10483	699.1	74.7%
Fugitive Dust-Native Desert Lands	30,390.2	27,323.0	0.00365	99.7	10.6%
Fugitive Dust-Stabilized Lands	32,783.8	52,458.7	0.00129	67.7	7.2%
					0.0%
Total Pahrump Valley Area	86,450.9	86,450.9		866.5	92.5%

Other Sources	Baseline Emissions (tons/day)	Emissions (tons/day)	
Fugitive Dust-Construction	0.5	0.6	0.1%
Fires residential burning	0.4	0.5	0.1%
Stationary Sources	0.0	0.0	0.0%
Total		1.1	0.1%

Total Emissions	936.5
Emissions Reductions	**1,753.55**

2009
No Controls

Low-Wind Design Day
Concentration 286 ug/m3

Growth

Inventory Year	2009	
Population Annual Growth Rate	3.458	percent
Population Change 2001-to Projected Year	131.26	percent

Mobile Sources	Road Length (miles)	Adj Future Average Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Emissions (tons/day)	Percent of Total Emissions
Vehicle Exhaust-On-road					0.04	0.0%
Vehicle Exhaust-Nonroad					0.03	0.0%
Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7	0.1%
Fugitive Dust-Paved ArterialRoads	62.8	1,968.8	123,702.7	0.082	5.1	0.3%
Fugitive Dust-Paved Local Roads	254.5	78.8	20,045.2	0.082	0.8	0.0%
Fugitive Dust-Unpaved Arterial Roads	21.4	1,968.8	42,113.6	3.27	68.9	4.2%
Fugitive Dust Unpaved Local Roads	752.6	78.8	59,267.8	3.27	96.9	5.8%
					173.4	10.5%

Area Sources	Baseline Area (acres)	Adj Future Area (acres)	Emission Factor (tons/acre/ day)	Emissions (tons/day)	
Fugitive Dust-Disturbed Vacant Lands	23,276.9	20,209.7	0.06885	1,391.4	84.0%
Fugitive Dust-Native Desert Lands	30,390.2	27,323.0	0.00306	83.6	5.0%
Fugitive Dust-Stabilized Lands	32,783.8	38,918.2	0.00019	7.4	0.4%
					0.0%
Total Pahrump Valley Area	86,450.9	86,450.9		1,482.4	89.5%

Other Sources	Baseline Emissions (tons/day)	Emissions (tons/day)	
Fugitive Dust-Construction	0.5	0.6	0.0%
Fires residential burning	0.4	0.5	0.0%
Stationary Sources	0.0	0.0	0.0%
Total		1.1	0.1%

Total Emissions	1,656.9
Emissions Reductions	**177.86**

2009
Controlled

Low-Wind Design Day
Concentration 286 ug/m3

Growth

Inventory Year	2009	
Population Annual Growth Rate	3.458	percent
Population Change 2001-to Projected Year	131.26	percent

Mobile Sources	Road Length (miles)	Adj Future Average Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Emissions (tons/day)	Percent of Total Emissions
Vehicle Exhaust-On-road					0.04	0.0%
Vehicle Exhaust-Nonroad					0.03	0.0%
Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7	0.3%
Fugitive Dust-Paved ArterialRoads	84.2	1,968.8	165,816.3	0.082	6.8	1.1%
Fugitive Dust-Paved Local Roads	553.1	78.8	43,561.1	0.082	1.8	0.3%
Fugitive Dust-Unpaved Arterial Roads	0.0	1,968.8	0.0	3.27	0.0	0.0%
Fugitive Dust Unpaved Local Roads	454.0	78.8	35,751.9	3.27	58.5	9.4%
					68.8	11.1%

Area Sources	Baseline Area (acres)	Adj Future Area (acres)	Emission Factor (tons/acre/ day)	Emissions (tons/day)	
Fugitive Dust-Disturbed Vacant Lands	23,276.9	6,669.2	0.06885	459.1	73.7%
Fugitive Dust-Native Desert Lands	30,390.2	27,323.0	0.00306	83.6	13.4%
Fugitive Dust-Stabilized Lands	32,783.8	52,458.7	0.00019	10.0	1.6%
Total Pahrump Valley Area	86,450.9	86,450.9		552.7	88.8%

Other Sources	Baseline Emissions (tons/day)	Emissions (tons/day)	
Fugitive Dust-Construction	0.5	0.6	0.1%
Fires residential burning	0.4	0.5	0.1%
Stationary Sources	0.0	0.0	0.0%
Total		1.1	100.0%

Total Emissions	622.7
Emissions Reductions	**1,212.10**

2014

High Wind Design Day

Concentration 360 ug/m3

Input Variables

Growth

Inventory Year	2014	
Population Annual Growth Rate	3.458	percent
Population Change 2001-to Projected Year	155.58	percent

Mobile Sources	Road Length (miles)	Adj Future Average Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Emissions (tons/day)	Percent of Total Emissions
Vehicle Exhaust-On-road					0.04	0.0%
Vehicle Exhaust-Nonroad					0.03	0.0%
Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7	0.2%
Fugitive Dust-Paved ArterialRoads	84.2	2,333.7	196,540.9	0.082	8.1	1.1%
Fugitive Dust-Paved Local Roads	753.1	93.3	70,302.0	0.082	2.9	0.4%
Fugitive Dust-Unpaved Arterial Roads	0.0	2,333.7	0.0	3.27	0.0	0.0%
Fugitive Dust Unpaved Local Roads	254.0	93.3	23,707.2	3.27	38.8	5.4%
					51.5	7.1%

Area Sources	Baseline Area (acres)	Adj Future Area (acres)	Emission Factor (tons/acre/day)	Emissions (tons/day)	
Fugitive Dust-Disturbed Vacant Lands	23,276.9	4,820.6	0.10483	505.3	69.8%
Fugitive Dust-Native Desert Lands	30,390.2	25,474.4	0.00365	92.9	12.8%
Fugitive Dust-Stabilized Lands	32,783.8	56,155.9	0.00129	72.5	10.0%
					0.0%
Total Pahrump Valley Area	86,450.9	86,450.9		670.8	92.7%

Other Sources	Baseline Emissions (tons/day)	Emissions (tons/day)	
Fugitive Dust-Construction	0.5	0.6	0.1%
Fires residential burning	0.4	0.6	0.1%
Stationary Sources	0.0	0.1	0.0%
Total		1.3	100.0%

Total Emissions	723.53

2014

Low Wind Design Day

Concentration 286 ug/m3

Input Variables

Growth

Inventory Year	2014	
Population Annual Growth Rate	3.458	percent
Population Change 2001-to Projected Year	155.58	percent

Mobile Sources	Road Length (miles)	Adj Future Average Annual Daily Trips	VMT (Vehicle miles/day)	Emission Factor (lb/VMT)	Emissions (tons/day)	Percent of Total Emissions
Vehicle Exhaust-On-road					0.04	0.0%
Vehicle Exhaust-Nonroad					0.03	0.0%
Fugitive Dust-Paved Highway	24.0		279,451.1	0.0123	1.7	0.4%
Fugitive Dust-Paved ArterialRoads	84.2	2,333.7	196,540.9	0.082	8.1	1.7%
Fugitive Dust-Paved Local Roads	753.1	93.3	70,302.0	0.082	2.9	0.6%
Fugitive Dust-Unpaved Arterial Roads	0.0	2,333.7	0.0	3.27	0.0	0.0%
Fugitive Dust Unpaved Local Roads	254.0	93.3	23,707.2	3.27	38.8	8.2%
					51.5	10.9%

Area Sources	Baseline Area (acres)	Adj Future Area (acres)	Emission Factor (tons/acre/day)	Emissions (tons/day)	
Fugitive Dust-Disturbed Vacant Lands	23,276.9	4,820.6	0.06885	331.9	70.1%
Fugitive Dust-Native Desert Lands	30,390.2	25,474.4	0.00306	78.0	16.5%
Fugitive Dust-Stabilized Lands	32,783.8	56,155.9	0.00019	10.7	2.3%
					0.0%
Total Pahrump Valley Area	86,450.9	86,450.9		420.5	88.8%

Other Sources	Baseline Emissions (tons/day)	Emissions (tons/day)	
Fugitive Dust-Construction	0.5	0.6	0.1%
Fires residential burning	0.4	0.6	0.1%
Stationary Sources	0.0	0.1	0.0%
Total		1.3	100.0%

Total Emissions	473.28

2009
286 ug/m3 design day

	E F	2001 baseline acres	distrubution of new construction	2009 acres built	2009 acres left	% controlled	final 2009 acres	2009 Emissions
				9,294.62				
Disturbed Vacant Lands	0.06885	23,277	33%	3,067.22	20,209.68	33%	6,669.19	459.15
Native Desert Lands	0.00306	30,390	33%	3,067.22	27,322.98	33%	27,322.98	83.61
Stabilized Lands	0.00019	32,784	33%	3,067.22	38,918.25	33%	52,458.73	9.97
		86,451			86,451		86,451	552.7
				9,201.67				

2009 projected acres

35,677.00	2009 pop est
26,470.00	2001 pop
9,207.00	pop growth from 2001-2009
2,301.75	# new families
9,207.00	# acres for new families
87.62	# acres for commercial bldg
9,294.62	total acres for new construction

2009 commercial projection

65.00	2001 acres
134.80	growth factor from 2001-2009
87.62	2009 acres

2009
360 ug/m3 design day
Controlled

	E F	2001 baseline acres	distrubution of new construction	2009 acres built	2009 acres left	% controlled	final 2009 acres	2009 Emissions
				9,294.62				
Disturbed Vacant Lands	0.104826	23,277	33%	3,067.22	20,209.68	33%	6,669.19	699.10
Native Desert Lands	0.003648	30,390	33%	3,067.22	27,322.98	33%	27,322.98	99.67
Stabilized Lands	0.001291	32,784	33%	3,067.22	38,918.25	33%	52,458.73	67.72
		86,451			86,451		86,451	866.5
				9,201.67				

2009 projected acres		2009 commercial projection	
35,677.00	2009 pop est		
26,470.00	2001 pop	65.00	2001 acres
9,207.00	pop growth from 2001-2009	134.80	growth factor from 2001-2009
2,301.75	# new families	87.62	2009 acres
9,207.00	# acres for new families		
87.62	# acres for commercial bldg		
9,294.62	total acres for new construction		

2014
360 ug/m3 design day
Controlled

	E F	final controlled2009 acres	distrubution of new construction	2014 acres built	2014 acres left	2014 Emissions
				5,601.76		
Disturbed Vacant Lands	0.104826	6,669	33%	1,848.58	4,820.61	505.33
Native Desert Lands	0.003648	27,323	33%	1,848.58	25,474.40	92.93
Stabilized Lands	0.001291	52,459	33%	1,848.58	56,155.89	72.50
		86,451	0.99		86,451	670.8
				5,545.74		

2014 projected acres		2014 commercial projection	
	2014 pop		
41,173.00	est		
35,677.00	2009 pop	87.62	2009 acres
5,496.00	pop growth from 2009-2014	120.70	growth factor from 2009-2014
1,374.00	# new families	105.76	2014 acres
5,496.00	# acres for new families		
105.76	# acres for commercial bldg		
5,601.76	total acres for new construction		

2014
286 ug/m3 design day
Controlled

	E F	final controlled2009 acres	distrubution of new construction	2014 acres built	2014 acres left	2014 Emissions
				5,601.76		
Disturbed Vacant Lands	0.068846	6,669	33%	1,848.58	4,820.61	331.88
Native Desert Lands	0.00306	27,323	33%	1,848.58	25,474.40	77.95
Stabilized Lands	0.00019	52,459	33%	1,848.58	56,155.89	10.67
		86,451	0.99		86,451	420.5
				5,545.74		

2014 projected acres		2014 commercial projection	
41,173.00	2014 pop est		
35,677.00	2009 pop	87.62	2009 acres
5,496.00	pop growth from 2009-2014	120.70	growth factor from 2009-2014
1,374.00	# new families	105.76	2014 acres
5,496.00	# acres for new families		
105.76	# acres for commercial bldg		
5,601.76	total acres for new construction		

APPENDIX G

Costs Estimates for Emission Reductions from Control Measures

Local Roads

	A	B	C=A*B	D=B-C	E	F	G=D*F*365/2000	H=E/G
	Control Efficiency	Uncontrolled Emission Rate	Controlled Emission Rate	Emission Reduction	Annualized Cost	Reduced Emissions	Emission Reduction	Cost of Emission Reduction
		(lbs/vehicle mile)	(lbs/vehicle mile)	(lbs/vehicle mile)	($/mile)	@ (# trips)	(tons/mile/year)	($/ton)
Paving	97%	3.27	0.082	3.19	$144,000	60	35	$4,125
Watering	30%	3.27	0.98	2.29	$9,125	60	25	$364
Chip Seal	97%	3.27	0.082	3.19	$65,000	60	35	$1,862
Chemical Dust Suppressants								
- Salts	30%	3.27	0.98	2.29	$11,100	60	25	$443
- Petroleum Emulsions	30%	3.27	0.98	2.29	$16,000	60	25	$638
- Lignin Sulfonates	30%	3.27	0.98	2.29	$8,000	60	25	$319
- Polymers	30%	3.27	0.98	2.29	$8,000	60	25	$319

Disturbed Vacant Lands

		(tons/acre)	(tons/acre)	(tons/acre)	($/acre/year)		(tons/acre/year)	($/ton)
Watering	96%	2.59	0.099	2.49	$500		2.49	$201
Revegetation	96%	2.59	0.099	2.49	$400		2.49	$161
Soil covers	96%	2.59	0.099	2.49	$700		2.49	$281
Dust suppressants	96%	2.59	0.099	2.49	$600		2.49	$241
Windbreaks		2.59	0.099	2.49	$6,000		2.49	$2,409

MEMORANDUM

TO: Mr. Ron Williams
Ms. MaryEllen Giampaoli
Ms. Colleen Cripps

FROM: Mr. Richard F. DeLong
Mr. Clay E. Postlethwaite

DATE: April 30, 2004

SUBJECT: Draft Pahrump Valley Air Quality Management; Best Available Control Measures Selection for Implementation

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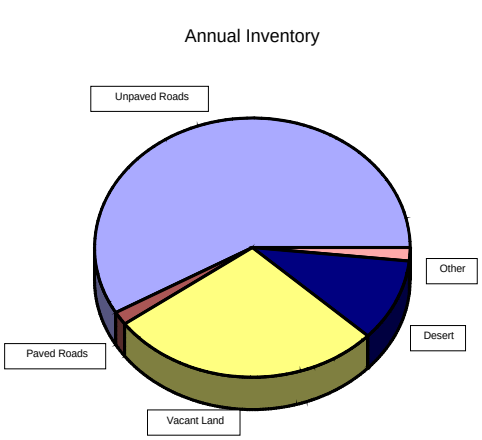
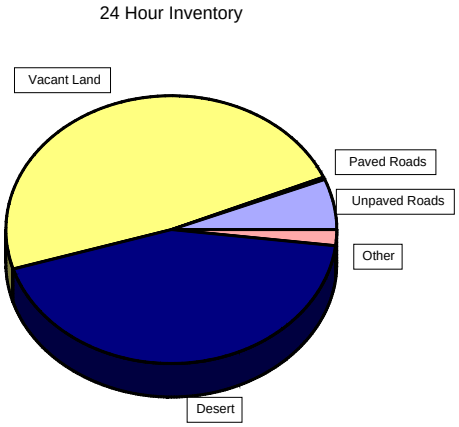
Introduction

Nye County, the Nevada Division of Environmental Protection (NDEP), the Town of Pahrump (Town), and the U.S. Environmental Protection Agency (EPA) have signed a Memorandum of Understanding (MOU) with the goal of demonstrating attainment of the federal air quality standards by 2009. This memorandum explains the Best Available Control Measures (BACM) selection process and describes the BACM chosen for implementation. The time frame under which BACM development was allowed under the MOU was short, so the control measure development relied heavily on the research and results presented in Clark County (2001) for the Las Vegas nonattainment area. This was deemed appropriate because of the recent date of the Clark County work, the fact that the two areas are adjacent, and the climate, weather, and soils are similar.

The charts below are based on Pahrump Valley emission inventories produced by the NDEP Bureau of Air Quality Planning (BAQP). The annual inventory is for 2001. The 24 hour inventory is for a windy day during which an exceedance was recorded at the monitoring station in the Town. They clearly demonstrate the four significant PM_{10} sources (unpaved roads, disturbed vacant land, desert, and paved roads), and the difference in their relative importance for the two time periods.





For each of the three largest anthropogenic sources identified in the emission inventory, potential BACMs had to be identified and analyzed for implementation. Research was conducted to identify potential control measures. Primary sources were the Clark County, Nevada PM_{10} Implementation Plan, the Maricopa County, Arizona PM_{10} Plan, and the San Joaquin Valley, California PM_{10} Plan. As a result of this research, a list of potential BACM was developed for each significant source and outlined in a memo dated September 22, 2003 (Enviroscientists, Inc., 2003a) and is included in Attachment A. Implementation strategies and ranking of the BACM were discussed in a subsequent memo dated October 9, 2003 (Enviroscientists, Inc., 2003b) included in Attachment B. Public comment during workshops on dust control and the Revised Pahrump Master Plan provided additional control measures for consideration. The proposed implementation of the selected BACM can be found in the draft ordinances included in Attachment C.

BACM Identification

Unpaved Roads

Research on BACM for unpaved roads resulted in the list of potential controls in Table 1. Four of the listed control measures were not considered appropriate for further consideration.

Private Roads are incompletely inventoried in the Pahrump Valley, but are expected to form a small fraction of the total road inventory. These roads are also expected to have low traffic loads, since they typically access one, or at most, a few parcels.

Table 1. Potential BACM for Unpaved Roads

Control Measure	Action
Paving	Potential BACM
Watering	Potential BACM
Chemical suppressants	Potential BACM
Prohibition on new unpaved roads	Potential BACM
Private road dust control	Not significant source
Reduced speed limits	Not enforceable
Limiting access to redundant roads	Not enforceable
Heavy vehicle routing	Not enforceable
Graveling	Not Effective

Reducing vehicle speeds, Limiting access to redundant roads, and heavy vehicle routing were all suggested at various workshops, but were ultimately not considered due to the difficulty of enforcement them. Graveling has not been found to be an effective dust control on roads, making it inappropriate for BACM (Clark County, 2001).

Disturbed Land

Listed in Table 2 are the potential control measures for emissions from disturbed vacant land identified as a result of the research performed as described above.

Table 2. Potential BACM for Disturbed Vacant Land

Control Measure	Action
Limit vehicle access	Potential BACM
Watering	Potential BACM
Revegetation	Not feasible as a stand alone control
Soil covers	Potential BACM
Dust suppressants	Potential BACM
Planning incentives	Not enforceable
Control mechanized weed abatement	Potential BACM

All but two potential BACM were found to be feasible over the time frame of the MOU. Revegetation requires initial soil stabilization by some other means, but might be am effective control measure over a longer period. Planning incentives to encourage development of disturbed parcels before development of other parcels were recommended in the Revised Pahrump Master Plan (2003), but fail as BACM because of enforceability.

Construction Activities

In Enviroscientists, Inc. 2003a and 2003b, construction activities were addressed under the heading of Future Disturbance. The potential BACM identified by research for control on significant construction activities are listed in Table 3.

Table 3. Potential BACM for Construction Activities

Control Measure	Action
Dust Control Plans for construction/land clearing projects	Potential BACM
Equipment and material storage areas	Potential BACM
High wind operating restrictions	Potential BACM
Phasing land development	Potential BACM
Stabilizing disturbed inactive surfaces	Potential BACM
Dust controls for construction traffic	Potential BACM
Dust controls for truck loading	Potential BACM
Dust controls for stockpiles	Potential BACM
Cease operations in high winds	Potential BACM

All of the identified BACM for construction activities were found to be feasible.

Paved Roads

Research on BACM for paved roads resulted in the list of potential controls in Table 4. Two control measures were not considered potential BACM, the purchase and operation of street sweeping equipment, and upgrading existing roads with stabilized shoulders. The Nevada Department of Transportation is responsible for sweeping and shoulder maintenance of the two state highways in the Pahrump Valley. Either of these control measures would constitute a major commitment from Nye County, and it was felt that their resources were better allocated to the paving program since the unpaved roads are a much larger source of PM_{10} than paved roads. Future road construction is expected to follow the Revised Pahrump Master Plan (2003), which recommends shoulders on all collector and arterial streets, but is not considered a BACM.

Table 4. Potential BACM for Paved Roads

Control Measure	Action
Track out controls	Potential BACM
Parking lot controls	Potential BACM
Street sweeping	Not economically feasible
Shoulder stabilization–existing roads	Not cost effective
Shoulder stabilization–future roads	Not enforceable

Control Measure Development

The original BACM list in Enviroscientists, Inc. (2003a) was refined by meetings and discussions with members of the MOU, and in public workshops on air quality as well as workshops for the coincident Pahrump Master Plan development process during the fall and early winter of 2003. The results of that effort are the selected BACM listed below. Most of the ordinances referenced below are in draft form.

Unpaved Roads

The BACM implemented for unpaved roads are listed in Table 5. A detailed description of these control measures is presented in Enviroscientists, Inc., 2003a.

Table 5. BACM for Unpaved Roads

Control Measure	Implemented	Draft Ordinance
Paving	Yes	County Program
Watering	No	
Chemical suppressants	No	
Prohibition on new unpaved roads in public thoroughfares	Yes	17.04.740.I.

Control measures for the existing unpaved roads will largely be implemented by Nye County. After discussions of implementation methods with MOU representatives, it was concluded that the monitoring requirements associated with the application of water and chemical suppressants to public rights of way would make enforcement too difficult for a BACM. The County has embarked on a paving program that it is documenting with BAQP and EPA. All new roads associated with future development will be paved as reflected in proposed ordinance 17.04.740.I. which requires all roads to be constructed to county specifications.

Disturbed Land

The BACM implemented for disturbed land are listed in Table 6. A detailed description of these control measures is presented in Enviroscientists, Inc., 2003a. Unpaved parking lots are addressed separately.

Table 6. BACM for Disturbed Land

Control Measure	Implemented	Draft Ordinance
Limit off-road use of vehicles on Vacant Land	Yes	15.28.120.A.1
Construct Windbreaks	Optional	15.28.120.A.5
Stabilize surface (suppressants, soil covers, watering to develop soil crust)	Yes	15.28.120.A.2,3,6
Revegetation	Optional	15.28.120.A.7
Control mechanized weed abatement	Yes	15.28.120.D

Stabilizing the soil surface and prohibiting new disturbance were determined to be key steps in controlling fugitive dust from vacant lots. Revegetation was left as a control measure subject to site-specific approval. Windbreaks were also an optional control strategy, as a subcategory of limiting vehicle access.

Unpaved Parking Lots and Storage Areas

The BACM implemented for unpaved parking lots and storage areas are listed in Table 7.

Table 7. BACM for Unpaved Parking Lots and Storage areas

Control Measure	Implemented	Draft Ordinance
Stabilize surfaces on unpaved parking areas	Yes	15.28.090.A-B.
Prohibition on new unpaved parking areas	Yes	17.04.910.G.1.

Construction Activities

The BACM implemented for construction activities are listed in Table 8. All construction activities that would disturb in aggregate 0.5 acre of land are required to file a Dust Control Plan along with their application for a site development, building, or conditional use permit. The Dust Control Handbook document is patterned after Clark County's Construction Activities Handbook and is currently being assembled from that template. It will be used to create the site-specific Dust Control Plan and will require controls on the listed activities in Table 8 that occur during the life the project.

Table 8. Potential BACM for Construction Activities

Control Measure	Implemented	Draft Ordinance
Dust Control Plans for construction/land clearing projects	Yes	15.28.110.C
Controls on Equipment and material storage areas	Yes	15.28.110.C by reference to Dust Control Handbook
High wind operating restrictions	Yes	15.28.110.C by reference to Dust Control Handbook
Phasing land development	Yes	15.28.110.C by reference to Dust Control Handbook
Stabilizing disturbed inactive surfaces	Yes	15.28.110.C by reference to Dust Control Handbook
Dust controls for construction traffic	Yes	15.28.110.C by reference to Dust Control Handbook
Dust controls for truck loading	Yes	15.28.220.I
Dust controls for stockpiles	Yes	15.28.110.C by reference to Dust Control Handbook

Paved Roads

The BACM implemented for paved roads are listed in Table 9.

Table 9. BACM for Paved Roads

Control Measure	Implemented	Draft Ordinance
Track out controls	Yes	15.28.110.F-G.
Parking lot controls	Yes	15.28.090.A-B.

References

Bureau of Air Quality Planning, Nevada Division of Environmental Protection. 2003. *Pahrump PM_{10} Emission Inventory (Draft).*

Clark County. 2001. *PM_{10} State Implementation Plan*. Clark County Department of Air Quality Management.

Enviroscientists, Inc. 2003a. *Memorandum on Pahrump Valley Air Quality Management: Best Available Control Measures Assessment.* Dated September 22, 2003.

_____. 2003b. *Memorandum on Pahrump Valley Air Quality Management; Control Measures Assessment.* Dated October 9, 2003.

Pahrump Regional Planning District Master Plan Update, November 19, 2003. Adopted December 15, 2003 by Nye County Resolution No. 2003-40.

ATTACHMENT A

Memorandum on Pahrump Valley Air Quality Management:
Best Available Control Measures Assessment,
Dated September 22, 2003

MEMORANDUM

TO: Mr. Ron Williams
Ms. MaryEllen Giampaoli
Ms. Colleen Cripps

FROM: Mr. Richard F. DeLong
Mr. Clay E. Postlethwaite

DATE: September 22, 2003

SUBJECT: Pahrump Valley Air Quality Management; Best Available Control Measures Assessment

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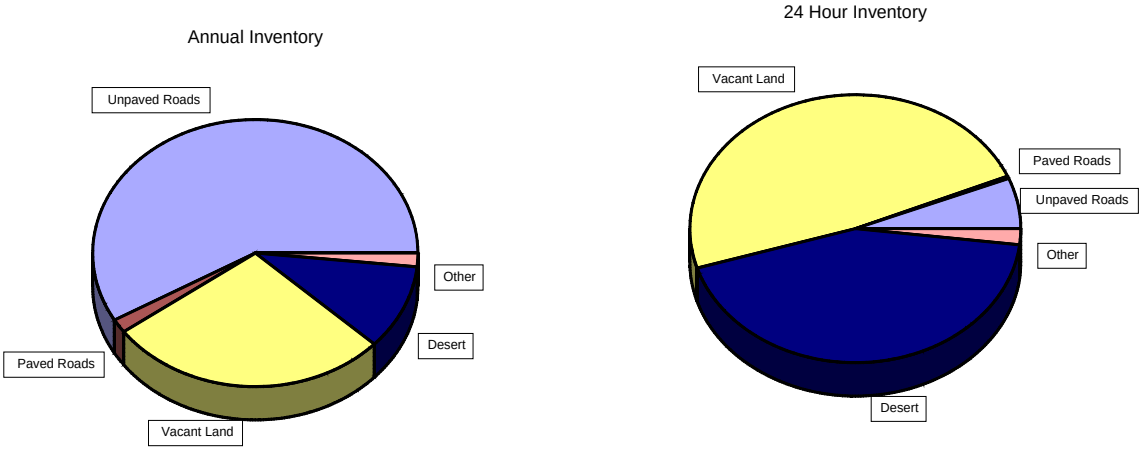
Introduction

Air pollutants are commonly thought of being emitted from exhaust pipes and smoke stacks. However, dust in significant amounts can become entrained in the atmosphere from the mechanical disturbance of granular material exposed to the air (EPA 1995). Dust generated from these open sources is termed "fugitive" because it is not discharged from a stack, exhaust pipe, or other confined flow stream. These airborne particulate emissions are of concern because the finest size particles pose a health risk. Through the implementation language in the Clean Air Act, as amended, the EPA regulates the emission of particulates smaller than ten microns in diameter (PM_{10}). The EPA has set 24-hour and annual standards for the concentration of PM_{10} in the air to insure that the air is not unhealthy. These standards have been exceeded in the Pahrump area, based on current PM_{10} monitoring in the Town of Pahrump (Town) and most of the sources of PM_{10} emissions are from fugitive sources.

The Town, Nye County, and the Nevada Division of Environmental Protection (NDEP) are under regulatory pressure to attain the federal PM_{10} standards in the Town. Failure to do so will lead to a PM_{10} nonattainment designation by the EPA, which would trigger a very restrictive regulatory system in the Pahrump Valley. The term Pahrump Valley, in this context, refers to that portion of the geographic Pahrump Valley that falls within Nye County, Nevada. Nye County, the NDEP, the Town, and the EPA have signed a

Memorandum of Understanding (MOU) with the goal of demonstrating attainment of the federal standards by 2007. In order to reduce PM_{10} emissions, the NDEP Bureau of Air Quality Planning (BAQP) is developing a Clean Air Action Plan (CAAP) that will include a set of Best Available Control Measures (BACMs), and an implementation program. This memorandum outlines potential BACMs.

The charts below are based on Pahrump Valley emission inventories produced by the BAQP. The annual inventory is for 2001. The 24 hour inventory is for a windy day during which an exceedance was recorded at the monitoring station in the Town. They clearly demonstrate the three significant PM_{10} sources (unpaved roads, disturbed vacant land, and desert), and the difference in their relative importance for the two time periods. For example, in order to attain the annual standard, unpaved road emissions will have to be reduced, and in order to attain the 24-hour standard, emissions from disturbed vacant lands will have to be reduced.



In the next section BACMs are described for the three major anthropogenic sources of PM_{10}: unpaved roads, disturbed vacant lands, and paved roads. Little can be done to reduce emissions from the undisturbed desert. Although paved roads currently constitute a minor source of fugitive emissions, as the Town grows, they will form a more significant portion of the inventory. The final section discusses the implementation of the BACMs, and attempts to rank the various implementation strategies. Since monitored exceedances have already occurred in the Town, controls will have to be applied to both the existing sources of PM_{10} in the Pahrump Valley, as well as to the future activities.

BACM Descriptions

Unpaved Roads

Dust on unpaved roads is suspended by natural winds and vehicular movement (Watson et al. 2000). The vehicle traffic adds to the suspended dust load because tire contact

creates a shearing force with the road that lifts particles into the air (Nicholson et al. 1989). These surfaces are an almost limitless reservoir of dust, because they are continuously being disturbed, and wind erosion seldom has the opportunity to deflate the fine particles from the surface (Watson et al. 1996). In addition to exposing new dust particles for suspension in the atmosphere by disturbing the surface of the roadbed, the grinding action of tires on coarse particles is continuously generating finer particles in the PM_{10} size range.

Moving vehicles create turbulent wakes that loft and suspend particles in the air column where they can be dispersed by the ambient winds. Dust emission rates have been found to be dependent on fine particle content of the roadbed, roadbed moisture content, as well as vehicle speed, size and shape (Gillies et al. 1999; Mollinger, et al. 1993). In order to limit vehicle-generated PM_{10} emissions from unpaved roads, controls affecting each of these factors can be considered.

Watering Unpaved Roads

Simple watering of unpaved roads is a very effective dust control measure, if only short-term control is necessary. The application of water clumps the fine particles together or adheres them to larger particles, temporarily eliminating the reservoir of PM_{10} particles. In hot, dry conditions, water application may have to be applied more than once a day. For 50 percent control, water application may be required daily or for every 75 to 100 vehicle trips. Surfactants may be applied with the water to reduce surface tension in the roadbed and increase the penetration of the water into the soil. The water application rate should be adequate to dampen the roadbed, but not sufficient to create muddy conditions that can allow the tracking particles onto paved surfaces.

Uncontrolled emission rate	3.27	pound/vehicle mile		
Minus controlled emission rate	1.63	pound/vehicle mile		
Emission reduction	1.64	pound/vehicle mile		
Annualized cost	2,000	dollars/mile	($5.00/mile, applications/yr)	400
Reduced emissions @ 210 trips	62.9	ton/mile/year		
Cost per ton of emission reduction	32	dollars/ton		

Application of Chemical Dust Suppressants

There is a variety of chemical dust suppressants available for application to unpaved roads. The optimum choice for a particular unpaved road depends on the composition of roadbed, climate, suppressant availability, and application and maintenance costs. The costs provided below are estimates. The general categories of chemical dust suppressants typically used in desert climates are salts, petroleum emulsions, lignin sulfonates, and polymers.

Salts

Salts as chemical dust suppressants generally refer to magnesium and calcium chloride. These are hygroscopic (water adsorbing) compounds that control dust by retaining moisture in the road bed. These salts will actually adsorb water from the atmosphere if there is sufficient relative humidity. Magnesium chloride is generally preferred in dry climates. However, roads treated with magnesium chloride may need supplemental watering during persistent dry conditions to retain maximum effectiveness. In the Pahrump Valley, light watering once or twice a month may be required outside of the winter season for optimal dust control. The San Joaquin Valley Air Pollution Control District (SJVAPCD), recommends daily watering of treated roads that receive more than 75 daily trips during periods of less than 30 percent average daily relative humidity. Reapplication may be necessary after heavy rains, which can leach the salts from the roadbed.

While magnesium chloride is the cheapest chemical surfactant to apply, the annualized costs include the potential need for multiple applications and periodic watering. Test applications may be necessary to evaluate the true cost of this control.

Uncontrolled emission rate	3.27	pound/vehicle mile
Minus controlled emission rate	0.98	pound/vehicle mile
Emission reduction	2.29	pound/vehicle mile
Annualized cost (two applications)	11,100	dollars/mile
Reduced emissions @ 210 trips	87.7	ton/mile/year
Cost per ton of emission reduction	126	dollars/ton

Petroleum Emulsions

Petroleum oils are nonwater-soluble carbon compounds that are suspended in water. They control dust by sticking particles together. The application of petroleum emulsions will tend to darken the road bed. These products are not as commonly used in southern Nevada because they tend to be more costly than other options.

Uncontrolled emission rate	3.27	pound/vehicle mile
Minus controlled emission rate	0.98	pound/vehicle mile
Emission reduction	2.29	pound/vehicle mile
Annualized cost	16,000	dollars/mile
Reduced emissions @ 210 trips	87.7	ton/mile/year
Cost per ton of emission reduction	182	dollars/ton

Lignin Sulfonates

Lignin sulfonate is an organic adhesive produced as a derivative of the paper industry and is the essentially the glue that holds wood fiber together. It is water soluble and environmentally safe, and very effective in dry conditions. Lignin sulfonate controls dust by cementing particles together. It is also used to stabilize roads by mixing into the top few inches of the road bed rather than using spray application. In this instance, dust is controlled, but the roads tend to develop pot holes. Heavy rains can wash lignin sulfonate out of the road bed, because it is water soluble.

Uncontrolled emission rate	3.27	pound/vehicle mile
Minus controlled emission rate	0.98	pound/vehicle mile
Emission reduction	2.29	pound/vehicle mile
Annualized cost	8000	dollars/mile
Reduced emissions @ 210 trips	87.7	ton/mile/year
Cost per ton of emission reduction	$91	dollars/ton

Polymers

Polymer dust suppressants are byproducts of the adhesives industry. They form an elastic seal on the surface of the road that binds particles together. They are very effective in dry conditions, nontoxic, and commonly require only annual applications to maintain their effectiveness unlike other suppressants. However, Gillies et al. (1999) found that one polymer dust suppressant retained 80 percent dust control a year after application on a lightly used unpaved road in the San Joaquin Valley of California. The Kern County Air Pollution Control District reported similar findings in a 1994-1995 field study. The costs below are based on an annual turnkey application of Soil Sement® by Midwest Industrial Supply, Inc.

Uncontrolled emission rate	3.27	pound/vehicle mile
Minus controlled emission rate	0.78	pound/vehicle mile
Emission reduction	2.49	pound/vehicle mile
Annualized cost	8,000	dollars/mile
Reduced emissions @ 210 trips	87.7	ton/mile/year
Cost per ton of emission reduction	$91	/ton

Some of these treatments require grading into the road surface, while others are simple spray applications. Data on the long-term effectiveness of these compounds are limited. The most effective compounds create an elastic surface that again eliminates the reservoir for PM_{10} particles. Those surfactants that were less effective in the long term typically formed a brittle crust that degraded with time and traffic.

Watson et al. (1996) provides a list of approximately 60 dust suppressant vendors. The San Joaquin Valley Air District provides a more current list of products that are approved to reduce fugitive dust emissions by at least 50 percent at: http://www.valleyair.org/busind/comply/PM10/compliance _PM10.htm.

Graveling

Graveling unpaved roads would seem at first glance to be excellent method of suppressing fugitive dust emissions; however, this has not been confirmed by field investigations. Flocchini et al. (1994), in a study of dust suppressants, found that graveling did not appear to reduce dust emissions at all. Rosbury and Zimmer (1983) had similar findings. The gravel appears to provide, in conjunction with its activation into movement by tires, a high-energy source that actively grinds the surface creating a source for fine particles. Before graveling can be accepted, some site-specific information will have to be collected to confirm how much control can realistically be expected.

Paving

Paving unpaved roads is an excellent fugitive dust control methodology. Based on emission factors used in their fugitive emission inventory for the Pahrump Valley, BAQP assigns paving a 97.5 percent control efficiency. Obviously, this methodology is also the most expensive in the short term, and as discussed below, paved streets are not without maintenance to maximize their impact on emission reduction. Monitoring of PM_{10} concentrations in Las Vegas demonstrated that the greatest impacts came from sources within one or two kilometers from the monitor site (Chow et al. 1999). While conditions are different in the Pahrump Valley, the reduction of PM_{10} emissions from highly traveled unpaved roads adjacent to, and upwind from sensitive areas will yield the greatest cost benefit.

Clark County (2001) chose paving as the primary control for dust from unpaved roads in the Las Vegas area. Their cost estimate was $50,000 per mile of road per year, assuming a five-year road life. The PM_{10} inventory compiled by BAQP includes approximately 28.6 miles of arterial unpaved roads. These roads account for more than ten percent of the fugitive dust emissions. The cost per ton of PM_{10} controlled paving of the unpaved arterial and local roads is calculated as follows:

Arterial Roads

Uncontrolled emission rate	3.27	pound/vehicle mile
Minus controlled emission rate	0.082	pound/vehicle mile
Emission reduction	3.19	pound/vehicle mile
Annualized cost	25,000	dollars/mile (10 year road life)
Reduced emissions @ 2100 trips	1,222	ton/mile/year
Cost per ton of emission reduction	$21	/ton

Local Roads

Uncontrolled emission rate	3.27	pound/vehicle mile
Minus controlled emission rate	0.082	pound/vehicle mile
Emission reduction	3.19	pound/vehicle mile
Annualized cost	25,000	dollars/mile (10 year road life)
Reduced emissions @ 210 trips	122	ton/mile/year
Cost per ton of emission reduction	$205	/ton

Reduced Vehicle Speed/Traffic Loads

Reducing vehicle speed is an effective way to reduce PM_{10} emissions. Fucchini et al. (1994) recognized a 58 percent reduction in PM_{10} emissions by reducing vehicle speeds from 25 to ten miles per hour. EPA (1998) considered the percentage decrease in vehicle speed equal to the percentage decrease in emissions (i.e. reducing speeds from 50 miles per hour to 40 miles per hour should equal a 20 percent decrease in emissions). Many agencies do not consider mandating a vehicle speed reduction as a primary way to reduce emissions because it is difficult to enforce. Lowering speed limits is still an important component of the strategy to control fugitive dust.

Mollinger et al. (1993) found that vehicle size and shape have a significant impact on the amount of particulates lifted in their wake. Large, rectangular vehicles, such as tractor trailers and school buses will lift more particles and loft them further into the atmosphere than do smaller, more aerodynamic automobiles. Restricting the use of large vehicles to paved roads, to the degree feasible will help decrease PM_{10} emissions. Limiting their speeds on unpaved roads will also lead to a decrease in emissions.

Road Closures

Limiting access to redundant or unnecessary roads will not only decrease potential sources of emissions, but will lessen the amount of roadway potentially subject to other forms of emission control and ongoing maintenance.

Prohibit the Construction of New Unimproved Roads

Since unpaved roads are the most significant sources of PM_{10} emissions, disallowing the construction of new unpaved roads would, at a minimum, help stabilize the air quality in the Pahrump Valley. An ordinance to this effect is expected to be enacted by 2005. This would not necessarily apply to temporary or construction-related roads. All new housing and commercial sites would be accessed by paved or improved (chip sealed) roads.

Disturbed Land

Disturbed land is any area where the natural desert soils and vegetation have been removed or disrupted. The natural soils typically develop a wind resistant crust, or pebble lag that limits their ability to emit particulates. The vegetation hinders wind flow near the soil surface, decreasing the impacts of the wind. Dust emissions from disturbed land are the second highest source of particulates in the Pahrump Valley according to the BAQP emission inventory. The BAQP estimates that disturbed land has 20 times the potential to emit particulates as undisturbed desert on an acre-by-acre annual basis. Therefore controlling new disturbance and stabilizing already disturbed lands is important.

Fugitive dust emissions from the soil surface exclusive of vehicular action require wind to loft the particles into the air. The EPA (1995) stated that the wind threshold above which particles can become entrained in the atmosphere is approximately, on the average, 12 miles per hour. BAQP's inventory for the Pahrump Valley uses a threshold wind speed of 20 miles per hour for disturbed vacant land based on wind tunnel studies in Clark County (2001). The primary goal is to prevent particulate emissions from disturbed lands during high-wind events.

Any activity in the Pahrump area that requires more than five-acres of total disturbance are currently required to obtain a Surface Area Disturbance permit from BAPC and to file a Fugitive Dust Control Plan, which itemizes all of the dust control techniques to be employed. For disturbed lands not subject to this permit system, mechanisms do not exist to ensure the application of emission control measures. A variety of controls are discussed below to stabilize disturbed lands and minimize emissions.

Limiting Vehicle Access

Vehicular activity on disturbed lands is the activity with the highest emissions considered in this assessment. Continuing to disturb the soils creates a nearly limitless supply of fine particulates that can become airborne on high-wind days. In order for disturbed desert to stabilize, vehicular use must be curtailed, otherwise the four controls discussed below will be ineffective. This may require fencing, signs, or physical barriers.

Watering

Watering on windy days is a possibility for small areas, and is typically used as a solution during construction or other temporary activities. Intermittent watering of soils that otherwise remain undisturbed will eventually develop a crust that will inhibit dust generation.

Revegetation

Revegetation is perhaps the ultimate goal for disturbed lands not destined for development. Successful revegetation to a degree adequate for dust control is difficult in the Town's climate in a timely manner without special efforts on large tracts of land.

Revegetation is feasible on a residential scale. The current time frame in which Nye County has to demonstrate compliance with the PM_{10} standards requires that all control measures be in place by December 2006. In that time frame, revegetation is not likely to be a significant control on large, undeveloped properties, even if aggressively pursued by hydroseeding, etc.

Clark County (2001) does not consider revegetation as a significant dust control measure for disturbed land in the Las Vegas area, but would consider it on a case-by-case basis. This includes area coverage of brush and grasses as well as vegetative windbreaks.

Soil Covers

Any material applied to the surface of the soil that shields the soil from high winds can be an effective control. This includes covers of gravel or geotextiles, and organic mulches. Plas-Tex is a product used in many location in Las Vegas that consists of shredded news print in a plaster matrix. The dust control properties of Plas-Tex can last for over a year. Seed can be mixed with product to aid in revegetation. This estimate assumes annual applications, whic in practice may not be necessary.

Uncontrolled emission rate	2.59	ton/acre/year
Minus controlled emission rate	0.099	ton/acre/year
Emission reduction	2.49	ton/acre/year
Annualized cost	700	dollars/acre
Divided by emission reduction	2.49	ton/acre/year
Cost per ton of emission reduction	$281	/ton/year

Dust Suppressants

Dust suppressants, as discussed above under Unpaved Roads, can be very effective controls. They typically require periodic reapplication, but are less expensive to use on disturbed lands because they need not support vehicular traffic. Many dust suppressants do not inhibit revegetation, and can actually aid the process by retaining soil moisture. Clark County (2001) estimates the cost of stabilization of disturbed land with suppressants to be between $500 and $2000 dollars per acre per year. The hygroscopic, and petroleum emulsion suppressants are disallowed on disturbed land in Clark County because of pollution concerns and reapplication requirements.

The application of a polymer dust suppressant is estimated in the $500 to $800 dollar per acre range. If the surface remains undisturbed and the soil begins to develop a crust, then the suppressant may be effective for over a year. Manufacturers provided anecdotal evidence that some parcels in desert settings remain controlled for over two years from a single application. This would have to be evaluated on a case-by-case basis. The cost per ton of PM_{10} controlled is calculated as follows assuming control equivalent to that of stabilized land for the suppressant. The figures below are based on estimate by Midwest Industrial Supply, Inc. for annual applications of Soil Sement®.

Uncontrolled emission rate	2.59	ton/acre/year
Minus controlled emission rate	0.099	ton/acre/year
Emission reduction	2.49	ton/acre/year
Annualized cost	600	dollars/acre
Divided by emission reduction	2.49	ton/acre/year
Cost per ton of emission reduction	240	dollars/ton/year

Paved Roads

Emissions from vehicle traffic on paved roads have the third highest impacts of the anthropogenic sources. Studies have shown (e.g., Watson et al. 1996) that only the largest, fast-moving vehicles are capable of lifting particulates from the shoulder of paved roads and suspending them into the atmosphere. Most of the emissions from paved roads is from particulates deposited on the roads then entrained (or re-entrained) in the air. Therefore the control measures described below concentrate on limiting the deposition of PM_{10} on the road surface.

Shoulder Stabilization

Vehicles pulling off and on paved roads can track particulate matter from the shoulder onto the paved surface. Stabilizing the road shoulders can minimize this dust reservoir. The most effective controls are the same as those used on unpaved roads. Clark County (2001) estimates that paving of road shoulders cost between $2,500 and $25,000 per mile per year, while applying dust suppressants would cost between $1,100 and $3,200 per mile per year.

Street Sweeping

Periodic street sweeping will remove the accumulated particulates from the road surface and (depending on sweeping frequency) significantly reduce the potential for particulate emissions.

Trackout Controls

When vehicles pass from unpaved to paved surfaces, they carry particles onto the paved road. Trackout onto paved roads can be minimized by paving or stabilizing aprons at intersections that allow the deposition of particles on the less traveled road. The same control can be applied to industrial access points. Other controls such as steel grates that knock the particulates off of vehicle tires, or wheel washers can be installed at truck exits. Finally, washing the material off of the paved road at appropriate intervals can keep the particles from being carried into the atmosphere.

BACM Implementation

The process of selecting of the "best" control measures involves consideration of several criteria. The cost, effectiveness, enforceability, and implementation method must all be balanced. The implementation of BACMs for the three anthropogenic sources is discussed below. Sections on existing conditions and future activities are included for each source.

Unpaved Roads

Existing Unpaved Roads

Nye County should prioritize the existing unpaved roads in the Pahrump Valley for BACM implementation based on intensity of usage and proximity to sensitive receptors (schools, medical facilities, retirement homes, etc.). The highest priority roads with the will be candidates for the most effective controls, while the more economical (but less effective) controls may be considered for the mid-priority roads. The lowest-ranked roads, those that are traveled by less 100 vehicles per day in rural settings will not be considered for BACMs.

1. Paving. Nye County is spending considerable money on an ongoing paving program in Pahrump Valley. The benefits of this program should be maximized by paving the highest priority roads as determined above. This is a very economical way to reduce fugitive emissions from highly-used roads (those greater than 500 daily vehicle trips). Nye County is responsible for the implementation of this program, so enforcement is not an issue. BACMs for the paved roads are outlined later in this memorandum.

2. Watering. Watering of existing unpaved roads makes economic sense. Nevertheless, there are some shortcomings to using waterng as a BACM. The effectiveness of watering is not generally as good as other BACMs, and multiple applications per day may be necessary to retain optimal control, depending on traffic and weather. On windy days, when control is most important, watering is least effective. Also over watering leads to muddy roads which can increase trackout. Determining the watering frequency requires supervision, because the effectiveness of watering degrades over a period of hours. This is the principal reason that the EPA does not encourage the use of watering as a BACM. A general rule would be one watering for every 100 vehicle trips. For 100-200 vehicle trips per day, one watering is required and for zero to 100 vehicles per day, no watering is required. Two waterings per day would be required for roads receiving 200-300 trips per day.

3. Chemical Suppressants. The application chemical suppressants can provide good control of fugitive dust emissions on roadways with light to moderate traffic. As a group they are more expensive than watering, but more effective at controlling dust. Reapplication is required at least annually, possibly more frequently under greater traffic loads. Some suppressants require occasional light watering to retain effectiveness. Monitoring of road conditions is required to determine when reapplication or watering is

necessary. Grading of the road, or heavy rains can necessitate a new application of the suppressant.

4. Road Closure. Nye County should evaluate the existing road network for redundant or unnecessary unpaved roads and develop a process for temporarily or permanently closing these roads. Once closed, these roads would no longer be candidates for control measures, and traffic would be limited to fewer, more manageable routes.

5. Reduced Speed Limits. Reducing speed limits on unpaved roads will reduce emissions. Nye County can post reduced speed limits, but enforcement of the reduced speeds is difficult. The physical traffic controls necessary to ensure reduced vehicle speeds are expensive and unpopular, making this strategy least attractive.

Future Unpaved Roads

Attainment of the federal air quality standards by 2007 relies on the assumption that no new unpaved roads will be constructed in the Pahrump Valley. Nye County already has regulations in place requiring paved access to all new developments. This insures that no new permanent unpaved roads will be constructed associated with large scale projects. Accesss to small scale projects, such as parceled properties are only required to construct paved access if the parcel is within 660 feet of an existing paved road. Nye County needs to consider additional controls for these smaller projects. Three alternatives are presented here for consideration. To a certain extent these regulations would tend to limit sprawl in the Pahrump Valley by encouraging growth near the existing infrastructure. Nye County would have to monitor compliance with this regulation, no matter which alternative is selected.

Alternative 1. Paving all access. This alternative is the most effective dust control, but places the greatest burden on the developer if the parcel is a considerable distance from association with large scale projects.

Alternative 2. Paving interior roads and 660 feet of access. For those parcels more than 660 feet from a paved road, paving of the new access within the subdivided parcel and 660 feet of access road would be required. The county would have the discretion as to which portion of the access road to pave, and this strategy would supplement the Nye County's own paving program.

Alternative 3. Paving the interior roads only. For those parcels more than 660 feet from a paved road, only paving of the new access within the subdivided parcel would be required. This alternative would disallow new unpaved roads, but does not address the additional traffic that will be using the existing unpaved access to the parcel.

Disturbed Vacant Lands

Existing Disturbed Vacant Lands.

Although the decrease in emissions required by the EPA has yet to be determined, compliance with the ambient standards is unlikely without controls on disturbed vacant lands. This will be a significant effort by Nye County. In order to reduce emissions from the existing disturbed lands, Nye County needs to complete the following:

1. Define disturbed vacant land. This will have to include field tests, and an agricultural exemption.
2. Compile a database of disturbed acreage and underlying parcel information.
3. Contact the property owners and notify them of the determination.
4. Based on emission inventories, select an acreage limit beyond which controls will be required.
5. Write regulations requiring controls on parcels above the acreage.

The first requirement for control will be limiting vehicle access to the vacant lands. Controls will be selected from a list of approved BACMs. Enforcement will be the responsibility of Nye County, and will necessitate frequent field inspections. Nye County will need to consider developing an enforcement structure involving the assessment and collection of fines or other measures.

Future Land Disturbance

The BAPC currently requires a dust control plan for all projects involving disturbance of more than five acres on land in the Pahrump Valley. Nye County should adopt a more rigorous program via the building permit process that ultimately requires reclamation of all disturbance.

Paved Roads

Controls to be implemented on paved roads, existing or future are the same. The objective is to limit the quantity of particulates deposited on the road surface.

1. Nye County will implement regulations of parking lots. This actually addresses disturbed land emissions as well. Two alternatives are proposed.

Alternative 1. Nye County shall prohibit the use of unpaved parking areas for commercial businesses.

Alternative 2. Nye County shall prohibit the use of unpaved parking areas with a capacity of more than ___ vehicles. This alternative would affect churches and other non-profit organizations.

2. Nye County shall require all truck access onto paved roads from unpaved construction sites and loading facilities to have trackout controls.

3. Nye County shall institute a street sweeping program in the Pahrump Valley, using equipment approved for PM_{10} control. This program would be costly to Nye County and would not yield significant emission reductions until paved roads become a dominant portion of the emission inventory.

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ATTACHMENT B

Memorandum on Pahrump Valley Air Quality Management;
Control Measures Assessment,
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MEMORANDUM

TO: Mr. Ron Williams
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Ms. MaryEllen Giampaoli

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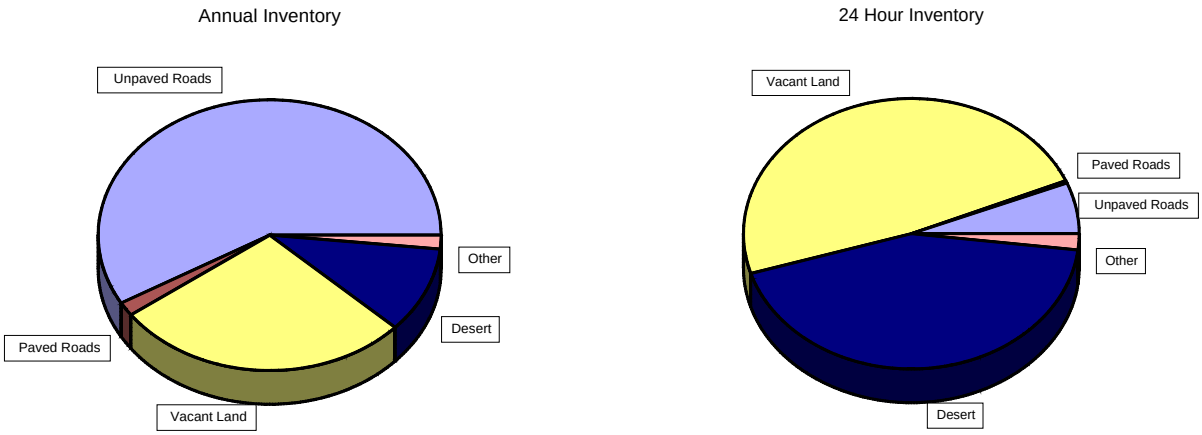
Introduction

Air pollutants are commonly thought of as being emitted from exhaust pipes and smoke stacks. However, dust in significant amounts can become entrained in the atmosphere from the mechanical disturbance of granular material exposed to the air (EPA, 1995). Dust generated from these open sources is termed "fugitive" because it is not discharged from a stack, exhaust pipe, or other confined flow stream. These airborne particulate emissions are of concern because the finest size particles pose a health risk. Through the implementation language in the Clean Air Act, as amended, the EPA regulates the emission of particulate matter smaller than ten microns in diameter (PM_{10}). The EPA has set 24-hour and annual standards for the concentration of PM_{10} in the air to ensure that the air is not unhealthy. These standards have been exceeded in the Pahrump area, based on current PM_{10} monitoring in the Town of Pahrump (Town) and most of the sources of PM_{10} emissions are from fugitive sources.

The Town, Nye County, and the Nevada Division of Environmental Protection (NDEP) are under regulatory pressure to attain the federal PM_{10} standards in the Town. Failure to do so will lead to a PM_{10} nonattainment designation by the EPA, which would trigger a very restrictive regulatory system in the Pahrump Valley. The term Pahrump Valley, in this context, refers to that portion of the geographic Pahrump Valley that falls within Nye County, Nevada. Nye County, the NDEP, the Town, and the EPA have signed a Memorandum of Understanding (MOU) with the goal of demonstrating attainment of the federal standards by 2009. In order to reduce PM_{10} emissions, the NDEP Bureau of Air Quality Planning (BAQP) is developing a Clean Air Action Plan (CAAP) that will include a set of Control Measures (CMs), and an implementation program. This memorandum outlines potential CMs to be evaluated for

incorporation in the CAAP. Approval for further evaluation of these CMs by Nye County constitutes milestone number three of the MOU. Any measures selected for the CAAP will be implemented in addition to existing EPA and state regulations. This proposed list of emission reduction measures is not final–Nye County may choose to modify this list.

The charts below are based on Pahrump Valley emission inventories produced by the BAQP. The annual inventory is for 2001. The 24 hour inventory is for a windy day during which an exceedence was recorded at the monitoring station in the Town. The charts clearly demonstrate the three significant PM_{10} sources (unpaved roads, disturbed vacant land, and desert), and the difference in their relative importance for the two time periods. For example, in order to attain the annual standard, unpaved road emissions must be reduced, and in order to attain the 24-hour standard, emissions from disturbed vacant lands must be addressed.



The next section presents the control measures, ranks the various implementation strategies described for the three major anthropogenic sources of PM_{10}: unpaved roads, disturbed vacant lands, and paved roads. Although paved roads currently constitute a minor source of fugitive emissions, as the Town grows, they will become a more significant percentage of the inventory. Since monitored exceedences have already occurred in the Town, controls must be applied to both the existing sources of PM_{10} in the Pahrump Valley, as well as to the future activities.

Control Measures Proposed for Further Study

The proposed CMs for the three anthropogenic sources are summarized in the tables below. The process of selecting of the control measures for further study involves consideration of the cost (direct and indirect), effectiveness, enforceability, and implementation method. For each source of particulate matter, separate tables of CMs being proposed for evaluation are included for existing sources and future activities. Some control measures have unspecified implementation thresholds (parcel size, traffic loads, etc.). Those thresholds will be established once NDEP has finalized the emission inventory, EPA has determined the amount that emissions must be

reduced to attain the federal air quality standards, and the effectiveness and method of implementation of each CM has been fully evaluated.

Unpaved Roads

Existing Unpaved Roads

Nye County should prioritize the existing unpaved roads in the Pahrump Valley for CM implementation based on intensity of usage and proximity to sensitive receptors (schools, medical facilities, retirement homes, etc.). The highest priority roads will be candidates for the most effective controls, while the more economical (but less effective) controls could be considered for the mid-priority roads.

Rank	Measure	Effectiveness	Implementation	Enforceability
1.	Paving	This is a very economical way to reduce fugitive emissions from highly-used roads.	Nye County continues the existing paving program in the Pahrump Valley. The program's impacts would be maximized by paving the highest priority roads.	Documentation of county paving program likely necessary for inclusion in the State Implementation Plan.
2.	Watering	Watering of existing unpaved roads makes economic sense. Nevertheless, there are some shortcomings to using watering as a CM. The effectiveness of watering is not generally as good as other CMs, and multiple applications per day may be necessary to retain optimal control, depending on traffic and weather. On windy days, when control is most important, watering is least effective. Also, over watering leads to muddy roads which can increase trackout. Determining the watering frequency requires supervision, because the effectiveness of watering degrades over a period of hours.	Watering would be used on existing unpaved roads. Recommendations would be made on miles of road to be controlled.	Enforcement of the program likely to fall to NDEP under its existing regulatory program.

Rank	Measure	Effectiveness	Implementation	Enforceability
3.	Chemical Suppressants	The application chemical suppressants can provide good control of fugitive dust emissions on roadways with light to moderate traffic. As a group they are more expensive than watering, but more effective at controlling dust. Reapplication is required at least annually, possibly more frequently under greater traffic loads. Some suppressants require occasional light watering to retain effectiveness. Monitoring of road conditions is required to determine when reapplication or watering is necessary. Grading of the road, or heavy rains can necessitate a new application of the suppressant.	Nye County would likely implement this program. Chemical dust suppressants would be applied to existing unpaved roads.	Formal enforcement of the program likely to fall to NDEP under its existing authorities and regulatory program.
4.	Private Road Dust Control Program	Overall emission reduction would depend on inventory and traffic loads on private roads.	Dust control measures (paving, chemical suppressants, watering) would be used on private roads that exceed a specified number of trips.	Formal enforcement would be required. The County has the option of assuming responsibility.
5.	Reduce Speed Limits	Reducing vehicle speeds on unpaved roads would reduce emissions. Variable depending on miles of road, and enforceability.	Post reduced speed limits on select roads and install traffic counting devices.	Enforcement of the reduced speeds is difficult, and generally ineffective. The physical traffic controls necessary to ensure reduced vehicle speeds would be enacted.
6.	Limiting Access to Redundant Roads	Variable, depending on miles of applicable roads, their traffic loads, and whether they provide access to disturbed lands.	Nye County would limit access to public roads it deems redundant, a potentially contentious process.	Limiting access would require signs and physical barriers. Formal enforcement would be required. The County has the option of assuming responsibility.
7.	Heavy Vehicle Routing	Variable.	Vehicles that exceed a specified gross vehicle weight would be required to limit their travel to paved roads major arterial roads.	Formal enforcement would be required. The County has the option of assuming responsibility.

Future Roads

Attainment of the federal air quality standards by 2009 relies on the assumption that no new unpaved roads would be constructed in the Pahrump Valley.

Rank	Measure	Effectiveness	Implementation	Enforceability
1.	Paved Access to New Development	Very effective.	Nye County would require paved access to, and within all new development of all roads with more than an as yet unspecified number of average daily vehicle trips.	Enforcement would occur through the building/land development permit process.

Disturbed Vacant Lands

Existing Disturbed Vacant Lands.

Compliance with the ambient standards is unlikely without controls on disturbed vacant lands. In order to reduce emissions from the existing disturbed lands, Nye County should evaluate the following CMs for further evaluation.

Rank	Control Measure	Effectiveness	Implementation	Enforceability
1.	Limit Access	The effectiveness of control measures depends on limiting vehicle and other access.	Regulations/ordinances would be implemented requiring fencing or other physical barriers to limit access to disturbed vacant lands.	Formal enforcement would be required. Nye County has the option of assuming responsibility.

Rank	Control Measure	Effectiveness	Implementation	Enforceability
2.	Vacant Land Dust Control Regulation	Most control measures for disturbed lands, (water, gravel, chemical suppressants, mulches, etc.) may be effective at controlling dust for up to 1 year if left undisturbed. Revegetation may also be an option provided that the land is stabilized in the near term while the vegetation is established.	A vacant land dust control program would be implemented that requires land owner to apply a dust control product from a County-recommended list.	Formal enforcement would be required. Nye County has the option of assuming responsibility.
3.	Planning Incentives	Developing the existing disturbed parcels would decrease the inventory of the most emissive lands.	Encourage development of existing disturbed lands through a Preferred Land Use Designation in accordance with the Master Plan.	Enforcement would occur possibly through the zoning process.

Future Land Disturbance

The BAPC currently requires a dust control plan for all projects involving disturbance of more than five acres on land in the Pahrump Valley. A more rigorous program that ultimately requires reclamation of all disturbance is being evaluated.

Rank	Control Measure	Effectiveness	Implementation	Enforceability
1.	Construction Project Dust Control Program	Variable with compliance rate.	A dust control program on any project which would disturb more than a specified cumulative number of acres would be required.	Formal enforcement would be required. Nye County would likely enforce the program through a construction/building permit process.

Paved Roads

Controls to be implemented on paved roads, existing or future are the same. The objective is to limit the quantity of particulate matter deposited on the road surface. Parking lot controls are considered here as method of controlling trackout on to paved roads. Two alternatives are proposed.

Rank	Control Measure	Effectiveness	Implementation	Enforceability
1a.	Commercial and Industrial Parking Lot Controls	Effective for both a trackout and unpaved road control.	A regulation/ordinance prohibiting the use of unpaved parking areas for commercial businesses would be implemented.	Formal enforcement would be required. Nye County has the option of assuming responsibility.
1b.	General Parking Lot Controls	More effective than the commercial lot alternative but could affect churches, Nye County, the Town and other non-profit organizations.	A regulation/ordinance prohibiting the use of unpaved parking areas with specified capacities or frequencies of use.	Formal enforcement would be required. Nye County has the option of assuming responsibility.
2.	Truck Access Track-out Controls	Track-out controls (grates, wheel washers, road washing, etc.) are effective methods of control on the primary sources of track-out.	A regulation/ordinance requiring the use of trackout controls on truck access onto paved roads from unpaved construction sites and loading facilities would be implemented.	Formal enforcement would be required. Nye County has the option of assuming responsibility.
3.	Road cleaning	The regular use street sweepers or washers is very effective in removing particulate matter from paved surfaces.	A street cleaning program would be implemented in the Pahrump Valley, on regular schedule as well as after any natural events, such as floods, which deposit silt and debris on road ways.	A street cleaning plan documenting the area to be addressed and resources available for implementation would need to be included in the CAAP.

Rank	Control Measure	Effectiveness	Implementation	Enforceability
4.	Shoulder Stabilization	Shoulder stabilization (paving, applying gravel or chemical suppressants, curbing, etc.) is most effective on high-volume, high-speed roads.	Road shoulders would be stabilized on selected paved roads.	A shoulder stabilization plan documenting the area to be addressed and resources available for implementation would need to be included in the CAAP.

Other Controls

Some control measures are not source specific. The EPA recognizes the development of mass transit as an emission reduction measure.

Rank	Control Measure	Effectiveness	Implementation	Enforceability
1.	Mass Transit	Mass transit is an EPA recognized control measure.	A mass transit system consistent with EPA requirements would be established. A cooperative effort with Clark County is possible.	Enforcement of the program would likely require documentation of implementation.

ATTACHMENT C

DRAFT ORDINANCES

NYE COUNTY ORDINANCE NO. 297
Pahrump Regional Planning District Dust Control Regulations

Disclaimer:
This is provided for informational purposes only. The formatting of this ordinance may vary from the official hard copy. In the case of any discrepancy between this ordinance and the official hard copy, the official hard copy will prevail.

BILL NO. 2005-04

SUMMARY: An Ordinance amending Nye County Code Chapter 15.28, the Pahrump Regional Planning District Dust Control Regulations, by amending the applicability, definitions, and appeal rights; and other matters properly related thereto.

TITLE: AN ORDINANCE AMENDING NYE COUNTY CODE CHAPTER 15.28, DUST CONTROL REGULATIONS EFFECTIVE WITHIN THE PAHRUMP REGIONAL PLANNING DISTRICT, BY AMENDING THE APPLICABILITY, DEFINITIONS, AND APPEAL RIGHTS; OTHER MATTERS PROPERLY RELATED THERETO.

WHEREAS, pursuant to NRS 278.020, for the purpose of promoting the health, safety and the general welfare of the residents of Nye County, the Nye County Board of County Commissioners (Board) is authorized and empowered to regulate and restrict the improvement of land and to control the location and soundness of structures; and

WHEREAS, it is recognized through air quality monitoring by the Nevada Division of Environmental Protection (NDEP) that, within the Nye County portion of State hydrographic area No. 162 (Pahrump Valley) federal PM10 air quality standards were exceeded several times over the last few years; and

WHEREAS, the Board entered into a Memorandum of Understanding with the U.S. Environmental Protection Agency (EPA), NDEP and the Town of Pahrump in order to defer action by EPA that would designate the Nye County portion of hydrographic area No. 162 as “nonattainment,”; and

WHEREAS, it is the responsibility of the Board to promote and protect the health and welfare of the inhabitants of the Pahrump Regional Planning District, which necessitates the control and regulation of activities affecting the quality of the air therein; and

WHEREAS, the purpose of these regulations to achieve and maintain levels of air quality which will protect human health and safety, prevent injury to plant and animal life, prevent damage to property, and preserve visibility and scenic, aesthetic and historic values of Pahrump Regional Planning District; and

WHEREAS, the quality of air is declared to be affected with the public interest and these regulations are enacted in the exercise of the police power of Nye County to protect the health, safety and general welfare of its people as required by State law;

NOW, THEREFORE, the Board of County Commissioners of the County of Nye, State of Nevada, in accordance with Chapter 445B of Nevada Revised Statutes, does hereby adopt, promulgate and order compliance therewith within the Pahrump Regional Planning District, the following regulations:

NYE COUNTY CODE CHAPTER 15.28 IS AMENDED AS FOLLOWS:

15.28 DUST CONTROL REGULATIONS WITHIN THE PAHRUMP REGIONAL PLANNING DISTRICT

ARTICLE I: GENERAL PROVISIONS

1 15.28.010 Short Title

This Chapter shall be known, and may be cited as: The Dust Control Regulations of the Pahrump Regional Planning District.

2 15.28.020 Authority and Purpose

A. B. This Chapter is adopted pursuant to Nevada Revised Statute 445B.500 **(Establishment and administration of program. . .) which at subsection 4 states, "Any county whose population**

is less than 100,000 or any city may meet the requirements of this section for administration and enforcement through cooperative or interlocal agreement with one or more other counties, or through agreement with the State, or may establish its own program for the control of air pollution. If the county establishes such a program, it is subject to the approval of the Commission."

C. D. The purpose of this Chapter is to:

1. 2. Control PM10 emissions at existing and active surface disturbance sites to achieve compliance with federal air quality standards;

3. E. Improve air quality in order to protect the health, safety and general welfare of the inhabitants of the Pahrump Regional Planning District;

315.28.030 Jurisdiction

A.

B. C. The provisions of this Chapter shall apply to the Pahrump Regional Planning District of Nye County, Nevada.

4 15.28.040 Enforcement and Penalties

5

A. B. Failure to comply with any requirement of this chapter constitutes a violation. The Nye County Planning Department shall issue a written Notice of Alleged Violation to any owner or operator for, including, but not limited to:

1. 2. Any violation of a provision of this Chapter;

3. 4. Any violation of any provision, term, or condition of any Plan that contains requirements stipulated in this Chapter;

5. 6. Failure to pay any fee; or

7. 8. Falsification of any material statement, representation or certification in any application, notice or report.

C. D. To the extent that a violation is not regulated by State regulation, whenever the Nye County Planning Department believes that a regulation for the prevention, abatement or control of fugitive dust has been violated, it shall cause written notice to be served upon the person or persons responsible for the alleged violation. The notice shall specify:

1. 2. The specific regulation violated;

3. 4. The facts constituting the violation; and

5. 6. The timeframe under which corrective action must taken.

E. F. Any person who violates any provision of this Chapter shall be punished by a fine of not more than $10,000 for each day of each violation.

G. H. If, in the judgment of the Nye County Planning Department, any person is engaged in a violation of any provision of this chapter, the Nye County Planning Department may request that the District Attorney institute by indictment or information a criminal prosecution of the person.

I. J. The Nye County Planning Department shall issue a Stop Order if the proposed construction, installation, alteration, or establishment will not be in accordance with the provisions of this Chapter, including all materials submitted to the Nye County Planning Department.

K. L. A person served with a Stop Order shall immediately stop all activities specified in the Stop Order, and may apply for its revocation at any time, setting forth the facts upon which he believes that the reasons for the issuance of the Stop Order no longer exist. If the Nye County Planning Department finds that the reasons for the issuance of the Stop Order no longer exist, the Nye County Planning Department shall withdraw the order promptly. If the Nye County Planning Department finds the reasons for the issuance of the order still exist, or that other reasons exist for continuing a Stop Order in effect, the Nye County Planning Department shall, within 48 hours issue a written statement of the Nye County Planning Department's reasons for so finding.

M. N. Any person who is not satisfied with the results of the Nye County Compliance Review Committee ruling on a Notice of Alleged Violation may request an appeal hearing. The appeal will be heard de novo. There is a 10-day time limit in which to appeal the decision(s) of the Compliance Review Committee.

615.28.050 Interpretation, Conflict, Severability and Constitutionality

A.

B. C. D. In their interpretation and application, the provisions of this Chapter shall be held to be the minimum requirements. More stringent provisions may be required if it is demonstrated that such provisions are necessary to promote the public health, safety and welfare.

E. F. The provisions of this Chapter are severable. If a section, sentence, clause, or phrase of this Chapter is adjudged by a court of competent jurisdiction to be invalid or unconstitutional, the decision shall not affect the remaining portions of this

Chapter.

ARTICLE II: G. DEFINITIONS

715.28.060 A. Generally

B. C. The words and terms used in this Chapter shall be defined as follows. All words used in the singular shall include the plural and the plural the singular. Each gender shall include the others; any tense shall include the other tenses. The word “shall” is mandatory and the words “may” and “should” are permissive.

815.28.070 A. Definitions

Agricultural Operations. The growing of crops for profit or the growing of crops for the purpose of providing life support to a considerable number of people, animals or fowl.

Best Practical Methods. Fugitive Dust Control Measures include, but are not limited to, phased clearing of the land; the use of dust palliative; the use of water; the use of snow fencing (a fencing material that inhibits the wind); the use of windbreaks; revegetation (excluding noxious weeds); the use of ground cover (e.g. gravel, decorative stone); physical barriers and signs to prohibit access to the disturbed areas by motorized vehicles; controls on single lot development approved as a part of a land division subject to these regulations; or cessation of operations when wind conditions exceed the operator’s ability to control fugitive dust. The term Best Practical Methods is synonymous with the Best Management Practices.

Burn Barrel. A container made of metal or other fire resistance substance used to hold vegetative material while burning.

Commercial and Residential Construction. Construction of structures intended to be utilized solely as personal dwellings, including but not limited to single family homes, duplexes, fourplexes, apartments, condominiums, town houses; construction of institutional structures, schools, libraries, churches, hospitals, parks, office structures; shopping malls; residential streets within a subdivision; improvements to existing curbed paved roads; parking lots, parking lot structures; and construction of underground utilities for sanitary sewer, water, electricity, natural gas and communication.

Construction Activity. Any component of the following including, but not limited to: commercial and residential construction, flood control construction, and highway construction, including land clearing, maintenance, and land cleanup using machinery; soil and rock excavation or removal; soil or rock hauling; soil or

rock crushing or screening; filling, compacting, stockpiling and grading; explosive blasting; demolition; implosion; handling of building materials capable of entrainment in air (e.g., sand, cement powder); dismantling or demolition of buildings; mechanized trenching; initial landscaping; operation of motorized machinery; driving vehicles on a construction site; or establishing and/or using staging areas, parking areas, material storage areas, or access routes to or from a construction site.

Control Measure. A technique, practice, or procedure used to prevent or minimize the generation, emission, entrainment, suspension, and/or airborne transport of fugitive dust.

Disturbed Area . A portion of the earth's surface (or material placed thereupon) which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed native condition, thereby increasing the potential for the emission of fugitive dust. Any area that fails the Drop Ball Test or Rock Test as defined in 15.28.140 is a Disturbed Area.

Dust Control Handbook. A guide used to select the appropriate Best Practical Methods appropriate for each construction activity that will be used to control fugitive dust and itemized in a Dust Control Plan.

Dust Control Plan. A plan to formalize the Best Practical Methods (all the selected Control Measures) for a project-specific fugitive dust control program.

Dust Palliative. Hygroscopic material, non-toxic chemical stabilizer or other material which is not prohibited for ground surface application by the federal Environmental Protection Agency (EPA) or the Nevada Department of Environmental Protection (NDEP) or any applicable law or regulation, used as a treatment material for reducing fugitive dust emissions. Water, solutions of water and chemical surfactants, and foam are not Dust Palliatives for the purpose of these Regulations.

Dust Suppressant. Water, hygroscopic material, solution of water and chemical surfactants, foam, non-toxic chemical stabilizer or any other dust palliative which is not prohibited for ground surface application by the federal Environmental Protection Agency (EPA) or the Nevada Department of Environmental Protection (NDEP) or any applicable law or regulation, used as a treatment material for reducing fugitive dust emissions.

Emergency . A situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including Acts of God, that requires

immediate corrective action to restore normal operations.

Fugitive Dust. Emissions of solid, airborne particulate matter which could not reasonably pass through a stack, chimney, vent or a functionally equivalent opening. Fugitive dust is entrained in the air and is caused from human and/or natural activities, such as but not limited to, movement of soil, vehicles, equipment, blasting, and wind.

Garbage. Putrescible animal and vegetable wastes resulting from the handling, storage, sale, preparation, cooking and serving of food.

Opacity. A measure of air visibility, or the degree to which an effluent plume or any emission of air contaminants reduces the transmission of light and obscures the view of an object in the background. Percent opacity refers to the degree in which the visible emission obscures the transmission of light from the view of background objects.

Open Areas and Vacant Lots. An undeveloped tract of land~~,~~ which contains no approved or permitted buildings or structures**.**

Open Burning. Any fire from which the products of combustion are emitted into the atmosphere without passing through a stack, chimney, or duct.

Particulate Matter. Any material except uncombined water that exists in a finely divided form as a liquid or solid at reference conditions. PM10 is any particulate matter in the atmosphere with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

Refuse. Refuse means any:

B. Garbage.

C. Sludge from a:

1. Plant that treats waste water.
2. Plant that treats the water supply.
3. Facility for controlling air pollution.

D. Other discarded material, except yard waste, including solid, semi-solid, liquid or contained gaseous material, resulting from industrial or commercial operations or community activities.

Roads. All publicly dedicated rights-of way within the Pahrump Regional Planning District.

Rubbish. N onputrescible solid waste, consisting of both combustible and noncombustible wastes such as paper, cardboard, abandoned automobiles, tin cans, wood, glass, crockery and similar materials.

Unpaved Parking and Storage Areas. Those parcels, or portions of parcels that include (but are not limited to) parking lots, automotive impound and/or dismantling yards, material and equipment handling and/or storage yards, salvage and/or wrecking yards, outside storage and/or display, and similar uses.

Visible Emission Evaluator. Individual currently certified in accordance with US EPA, 40 CFR Part 60, Appendix A, Method 9, to conduct visible emission evaluations.

ARTICLE III: E.	CONTROL MEASURE REQUIREMENTS
915.28.080 A.	Fugitive Dust
B. C.	Any person engaged in activities involving the handling, transportation or storage of any material; dismantling or demolition of buildings; grubbing; grading; clearing of land; public or private construction; the operation of machines and equipment; the grading of roads; trenching operations; the operation and use of unpaved parking facilities; and the organization and supervision of public outdoor events; shall take all reasonable precautions to prevent fugitive dust from becoming airborne from such activities at all times. Reasonable precautions may include, but are not limited to, sprinkling, compacting, enclosure, chemical, or asphalt sealing, cleaning up, sweeping, soil amendments, addition of non-emissible covers or such other measures as Nye County may specify. All control measures selected must be maintained to ensure the visible emissions do not exceed the 20% opacity limit as described in Section 15.28.150.A.
D. E.	Use and operation of livestock arenas, horse arenas, corrals, agricultural operations and feed lots, and raceways and rodeo grounds for animals or motor vehicles, should take all reasonable precautions to abate fugitive dust from becoming airborne from such activities. Reasonable precautions may include, but are not limited to, sprinkling, compacting, enclosure, chemical, or asphalt sealing, cleaning up, sweeping, soil

amendments addition of non-emisible covers or such other measures.

F. G. This Ordinance shall not apply to emergency activities conducted by any Fire Departments, utility, or government agency which are necessary to protect the health, safety and welfare of the public.

10 15.28.090 Construction Activities
11

A. A person engaged in Construction Activity shall employ Best Practical
B. Methods to prevent the generation of fugitive dust and submit a Dust Control Plan.

C. Except when engaged in agricultural operations, no person may initiate a
D. construction activity that results in Disturbed Areas unless Best Practical Methods are taken to prevent generation of fugitive dust during both the active development phases and thereafter if the property is to remain unoccupied, unused, vacant, or undeveloped.

E. For any project involving in aggregate one-half acre or more of Disturbed
F. Area, a Dust Control Plan must be submitted to the Nye County Planning Department along with the building permit application, conditional use permit application, zoning change application, or site development plan. The Dust Control Plan shall specify the use of Best Practical Methods to control the generation of fugitive dust from each construction activity. The owner/operator will:

1. File a complete Dust Control Plan with the Nye County Planning
2. Department before initiating Construction Activities.

3. Implement the Best Practical Methods as outlined in the Dust Control
4. Plan.

5. Maintain a written record of self inspection made each day when soil
6. disturbing work is conducted;

7. Retain records of site self inspections for a minimum of one (1) year or
8. for six (6) months beyond the project duration, whichever is longer. Self inspection records include daily inspections for crusted or damp soil, track-out conditions and cleanup measures, daily water usage, dust palliative application records, etc. For Control Measures involving chemical or organic soil stabilization, records shall indicate the type of product applied, vendor name, label instructions for approved usage, and the method, frequency, concentration, and quantity of application; and

9. Install a sign on said property prior to commencing construction activity
10. that is visible to the public and conforming to County policy on Dust

Control Permit Design and Posting of Signage as described in 15.28.160, Posting of Informational Signs on Construction Sites.

11. When a construction is complete, or a site or part thereof becomes
12. inactive for a period of thirty (30) days or longer, long-term stabilization shall be implemented within ten (10) days following the cessation of active operations.

G. The following construction type activities do not require a Dust Control
H. Plan:

1. Landscaping by an individual at his/her place of residence;
2.
3. Emergency maintenance activities conducted by government agencies
4. on publicly maintained roads, road shoulders, rights-of-way and on public flood control facilities; or,
5. Dust Palliative application projects conducted solely for the purpose of
6. compliance with Open Areas and Vacant Lots subsection of this ordinance, wherein no grade elevation changes, no soil or rock is imported or exported, or no cut and fill operations occur. Importing of gravel or rock for use as a dust palliative is allowed under this subsection.

I. J. Any material which is tracked onto a paved roadway must be removed as quickly as safely possible. At a minimum all track-out must be cleaned up by the end of the workday or evening shift, as applicable. Exceptions to this provision may be made by the Nye County Planning Department for the construction, maintenance, and/or repair of paved roadways and for the application of traction materials for wintertime driving conditions.

K. To minimize fugitive dust generated during the loading of haul trucks, the
L. drop heights from front loaders shall not exceed 12 inches.

12 15.28.100 Unpaved Parking and Storage Areas
13

A. No new Unpaved Parking and Storage Areas, excluding single family
B. residential, shall be constructed within the Pahrump Regional Planning District except for the following:

1. Storage and handling of landscape, aggregate, and similar bulk materials
2. requires implementation of control measures as described in 15.28.090.B. below, and all access, parking, and loading areas used by on-road vehicles must be paved or chip sealed.
3. Storage and handling of non-rubber-tired vehicles or equipment requires
4. implementation of control measures as described in 15.28.090.B. below, and all access, parking, and loading areas used by rubber-tired vehicles must be paved or chip sealed.

5. Rural public trailheads, campgrounds, and similar facilities on Bureau of
6. Land Management administered lands are subject only to stabilization per 15.28.090.B.4-5 below prior to use.
7. Intermittent use for a period of 35 days or less during the calendar year
8. requires implementation of control measures as described in 15.28.090.B.4-5 below while utilized for vehicle parking.

C. All existing Unpaved Parking and Storage Areas greater than or equal to
D. 5,000 square feet shall implement the following Control Measures within one year of the effective date of this ordinance:

1. Pave; or
2.
3. Gravel to a minimum depth of 2" of gravel shall be applied; or
4.
5. Chip seal; or
6.
7. Apply dust palliative to unpaved areas in conformance with the
8. stabilization requirements in 15.28.140; or
9. Apply dust palliative to vehicle travel lanes within the parking lot in
10. conformance with the stabilization requirements in 15.28.140.

Any person subject to the requirements of this Regulation shall compile and retain records for one year that provide evidence of Control Measure application, by indicating type of treatment or Control Measure, extent of coverage, and date applied. That person shall also make those records available to the Nye County Planning Department or authorized representative upon request.

E. Waivers or variances of the requirement to reduce fugitive dust for
F. unpaved areas greater than or equal to 5,000 square feet are not permitted.

14 15.28.110 Open Areas and Vacant Lots
15

A. The owner of any Open Areas, Vacant Lots, or contiguous parcels with
B. Disturbed Areas in aggregate of more than one acre is required to control the release of fugitive dust from the parcel or contiguous parcels by implementing one or more of the following Best Practical Methods to the extent necessary to pass the stabilization tests described in 15.28.140:

1. Physical barriers and signs to prohibit access to the disturbed areas by
2. motorized vehicles;

3. The use of ground covers (e.g. gravel, decorative stone);
4.
5. The use of dust palliative (chemicals that bind soil together and retain moisture);
6. The use of show fencing (a fencing material that inhibits the wind);
7.
8. The use of windbreaks;
9.
10. The application of water in an amount and frequency adequate for the
11. soil to develop a crust; or
12. Revegetation.

C.

In the event that the disturbed areas are primarily the result of recurrent unauthorized use of the property by motorized vehicles, the application of water is not a suitable Control Measure without the erection and maintenance of physical barriers. The use of or parking on Open Areas and Vacant Lots for private purposes by the owner of such Open Areas and Vacant Lots shall not be considered vehicle use under this subsection.

D. Except for those portions of parcels zoned Residential
E. Estate or Residential Homestead and engaged in agricultural operations or occupied by livestock, each property owner shall implement Best Practical Methods within one year of the effective date of this ordinance.

F. Mechanized Weed Abatement and/or Trash Removal: If machinery is used to clear weeds and/or trash from Open Areas and Vacant Lots larger than one acre, then the following Control Measures shall be applied. Advisory Notice: In order to conserve water to the greatest extent practicable, the use of reclaimed water is highly encouraged.

1. Pre-wet surface soils before mechanized weed
2. abatement and/or trash removal occurs; and,
3. Maintain soil moisture while mechanized weed abatement
4. and/or trash removal is occurring; and,
5. Apply water, or apply a suitable dust palliative, in
G. compliance with the stabilization standard set forth in 15.28.140.A., apply gravel in compliance with the stabilization standard set forth in 15.28.140.B, or pave after mechanized weed abatement and/or trash removal occurs.

H. **15.28.120** **Track-out onto Paved Roadways**
I.

A. Any material which is tracked onto a pavedoadway must
J. be removed as quickly as safely possible. If the responsible party does not remediate the track-out, the Nye County Road Department take action and remediate the track-out. The remediation cost incurred by the Nye County Road Department will be recovered in accordance with Nye County Code 12.08.010. Exceptions to this provision may be made by the Nye County Planning Department for the application of traction materials for wintertime driving conditions.

16 15.28.130 Burning
17

A. B. Except as provided in 15.28.100.C below, no person shall kindle or maintain any open burning for the purpose of weed abatement, disposal of yard waste, conservation, disease control, game or range management, personnel training, elimination of hazards, agricultural purposes and management, recreational, educational or ceremonial purposes or authorize any such fire to be kindled or maintained on any public or private land without first having obtained a permit from the Town of Pahrump Fire Chief.

C. D. The burning of and rubbish is prohibited within the Pahrump Regional Planning District. The use of Burn Barrels for the purpose of burning refuse or rubbish is prohibited within the Pahrump Regional Planning District.

E. F. Outdoor fires may be used for heating, cooking, or branding in an appropriate fireplace or appliance at any time without permission.

1815.28.140 Stabilization Standards
A.

B. C. Drop Ball Method. The drop ball test method described in Subsection 15.28.140.A.1. through 15.28.140.A.4. shall be used to determine whether an Open Area or a Vacant Lot has a stabilized surface. Should a disturbed Open Area or Vacant Lot contain more than one type of disturbance, soil, or other characteristics which are visibly distinguishable, each representative surface must be tested separately for stability in an area that represents a random portion of the overall disturbed conditions of the site, utilizing the test method in

15.28.140.A.1. through 15.28.140.A.4. Depending upon test method results, include or eliminate each representative surface from the total size assessment of the Disturbed Surface Area(s).

1. 2. Soil Crust Determination (The Drop Ball Test): Drop a steel ball with a diameter of 15.9 millimeters (0.625 inches) and a mass ranging from 16-17 grams from a distance of 30 centimeters (one foot) directly above the soil surface. If blowsand is present, clear the blowsand from the surfaces on which the soil crust test method is conducted. Blowsand is defined as thin deposits of loose uncombined grains covering less than 50% of an Open Area or Vacant Lot which have not originated from the representative Open Area or Vacant Lot surface being tested.

3. 4. A sufficient crust is defined under the following conditions: once a ball has been dropped according to Subsection 90.4.1.1 of this Regulation, the ball does not sink into the surface, so that it is partially or fully surrounded by loose grains and, upon removal of the ball, the surface upon which it fell has not been pulverized, so that loose grains are visible.

5. 6. Randomly select each representative Disturbed Surfaces for the drop ball test by using a blind “over the shoulder” toss of a throwable object (for example, a metal weight with survey tape attached). Using the point of fall as the lower left hand corner, measure a 1-foot square area. Drop the ball three times within the 1-foot by 1-foot square survey area, using a consistent pattern across the survey area. The survey area shall be considered to have passed the Soil Crust Determination Test if at least two of the three times the ball was dropped, the results met the criteria in Subsection 15.28.140.A.2 of this chapter. Select at least two other survey areas that represent a random portion of the overall disturbed conditions of the site, and repeat this procedure. If the results meet the criteria of Subsection 15.28.140.A.2 of this chapter for all of the survey areas tested, then the site shall be considered to have passed the Soil Crust Determination Test and shall be considered sufficiently crusted.

7. 8. At any given site, the existence of a sufficient crust covering one portion of the site may not represent the existence or protectiveness of a crust on another portion of the site. Repeat the soil crust test as often as necessary on each portion of the overall conditions of the site using the random selection method set forth in Subsection 15.28.140.A.3 of this Regulation for an accurate assessment.

D. E. Rock Test Method: The Rock Test Method examines the wind-resistance effects of rocks and other non-erodible elements on

disturbed surfaces. Non-erodible elements are objects larger than 1 centimeter (cm) in diameter that remain firmly in place even on windy days. Typically, non-erodible elements include rocks, stones, glass fragments, and hardpacked clumps of soil lying on or embedded in the surface. Vegetation does not count as a non-erodible element in this method. The purpose of this test method is to estimate the percent cover of non-erodible elements on a given surface to see whether such elements take up enough space to offer protection against windblown dust. For simplification, the following test method refers to all non-erodible elements as “rocks.”

1. 2. Randomly select a 1 meter by 1 meter survey area within an area that represents the general rock distribution on the surface (a 1 meter by 1 meter area is slightly greater than a 3 foot by 3 foot area). Use a blind “over the shoulder” toss of a throwable object (for example, a metal weight with survey tape attached) to select the survey surface and using the point of fall as the lower left hand corner, measure a 1 meter by 1 meter survey area. Mark-off the survey area by tracing a straight, visible line in the dirt along the edge of a measuring tape or by placing short ropes, yard sticks, or other straight objects in a square around the survey area.

3. 4. Without moving any of the rocks or other elements, examine the survey area. Since rocks greater than 3/8 inch (1 cm) in diameter are of interest, measure the diameter of some of the smaller rocks to a get a sense of which rocks need to be considered.

5. 6. Mentally group the rocks greater than 3/8 inch (1cm) diameter lying in the survey area into small, medium, and large size categories. If the rocks are all approximately the same size, simply select a rock of average size and typical shape. Without removing any of the rocks from the ground, count the number of rocks in the survey area in each group and write down the resulting number.

7. 8. Without removing rocks, select one or two average-size rocks in each group and measure the length and width. Use either metric units or standard units. Using a calculator, multiply the length times the width of the rocks to get the average dimensions of the rocks in each group. Write down the results for each rock group.

9. 10. For each rock group, multiply the average dimensions (length times width) by the number of rocks counted in the group. Add the results from each rock group to get the total rock area within the survey area.

11. 12. Divide the total rock area, calculated in Subsection 15.28.140.B.5 of this Regulation, by two (to get frontal area). Divide the resulting number by the size of the survey area (make sure the units of measurement match), and multiply by 100 for percent rock cover. For example, the total rock area is 1,400 square centimeters, divide 1,400 by 2 to get 700. Divide 700 by 10,000 (the survey area is 1 meter by 1 meter, which is 100 centimeters by 100 centimeters or 10,000 centimeters) and multiply by 100. The result is 7% rock cover. If rock measurements are made in inches, convert the survey area from meters to inches (1 inch = 2.54 centimeters).

13. 14. Select and mark-off two additional survey areas and repeat the procedures described in 15.28.140.B.1 through 15.28.140.B.6 of this chapter. Make sure the additional survey areas also represent the general rock distribution on the site. Average the percent cover results from all three survey areas to estimate the average percent of rock cover.

15. F. If the average rock cover is greater than or equal to 20%, the surface is stable.

1915.28.150 Visual Determination of Opacity from Sources of Emissions.
A.

B. C. This method is applicable for the determination of the opacity of emissions from sources of visible emissions. The opacity standard established in this Ordinance for the Pahrump Regional Planning District is 20%.

D. E. Opacity shall be determined by a visual observation made by a currently certified evaluator in accordance with US EPA, 40 CFR Part 60, Appendix A, Method 9. A copy of the observer's certification must accompany the Visible Emission Evaluation (VEE).

F. G. Procedures: A certified opacity observer shall use the procedures set forth in Subsection 1 and Subsection 2.

1. H. The Time Averaged Opacity Method: This procedure is used for continuous fugitive dust emission sources such as earthmoving, grading, and trenching that produce emissions continuously. The certified observer should do the following:

a. I. Position: Stand at a position at least twenty (20) feet from the fugitive dust source in order to provide a clear view of the emissions with the sun oriented in the 140° sector to the back. Consistent as much as possible with maintaining the above requirements, make opacity observations from a position such that the line of sight is approximately perpendicular to the plume and wind direction. The observer may follow the fugitive dust

plume generated by mobile earth moving equipment, as long as the sun remains oriented in the 140° sector to the back. As much as possible, do not include more than one plume in the line of sight at one time.

a. J. Field Records: Record the name of the site, fugitive dust source type (e.g., earthmoving, grading, trenching), method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the fugitive dust source. Also, record the time, estimated distance to the fugitive dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position relative to the fugitive dust source, and color of the plume and type of background on the visible emission observation when opacity readings are initiated and completed.

a. K. Observations: Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of sight. Make opacity observations at a point just beyond where material is no longer being deposited out of the plume (normally three (3) feet above the surface from which the plume is generated). The initial observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume, but instead observe the plume momentarily at 15-second intervals. For fugitive dust from earthmoving equipment, make opacity observations at a point just beyond where material is not being deposited out of the plume (normally three (3) feet above the mechanical equipment generating the plume).

a. L. Recording Observations: Record the opacity observations to the nearest 5% every fifteen (15) seconds on a VEE record sheet. Each momentary observation recorded represents the average opacity of emission for a fifteen (15) second period. If a multiple plume exists at the time of an observation, do not record an opacity reading. Mark an "x" for that reading. If the equipment generating the plume travels outside of the field of observation, resulting in the inability to maintain the orientation of the sun within the 140° sector or if the equipment ceases operating, mark an "x" for the fifteen (15) second interval reading. Readings identified, as "x" shall be considered interrupted readings.

a. b. Data Reduction For Time-Averaged Method: For each set of twelve (12) or twenty four (24) consecutive readings, calculate the appropriate average opacity. Sets shall consist of consecutive observations, however, readings immediately preceding and following interrupted readings shall be deemed

consecutive and in no case shall two sets overlap, resulting in multiple violations.

1. 2. Intermittent Emissions Method: This procedure is for evaluating intermittent fugitive dust emissions. Intermittent fugitive dust sources include activities that produce emissions intermittently such as screening, dumping, and stockpiling where predominant emissions are produced intermittently.

a. M. Position: Stand at a position at least twenty (20) feet from the fugitive dust source in order to provide a clear view of the emissions with the sun oriented in the 140° sector to the back. Consistent as much as possible with maintaining the above requirements, make opacity observations from a position such that the line of sight is approximately perpendicular to the plume and wind direction. The observer may follow the fugitive dust plume generated by mobile earth moving equipment, as long as the sun remains oriented in the 140° sector to the back. As much as possible, do not include more than one plume in the line of sight at one time.

a. N. Field Records: Record the name of the site, fugitive dust source type (e.g., earthmoving, grading, trenching), method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the fugitive dust source. Also, record the time, estimated distance to the fugitive dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position relative to the fugitive dust source, and color of the plume and type of background on the visible emission observation when opacity readings are initiated and completed.

a. b. Observations: Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of sight. Make opacity observations at a point just beyond where material is no longer being deposited out of the plume (normally three (3) feet above the surface from which the plume is generated). Make two observations per plume at the same point, beginning with the first reading at zero (0) seconds and the second reading at five (5) seconds. The zero (0) zero second observation should begin immediately after a plume has been created above the surface involved.

c. d. Recording Observations: Record the opacity observations to the nearest 5% on a VEE record sheet. Each momentary observation recorded represents the average opacity of emissions for a five (5) second period.

e. f. Repeat Subsection 2c. and 2d.above until you have recorded a

total of 12 consecutive opacity readings. This should occur once six intermittent plumes on which you are able to take a proper readings have been observed. The 12 consecutive readings must be taken within the same period of observation but must not exceed 1 hour. Observations immediately preceding and following interrupted observations can be considered consecutive.

g. O. Average the 12 opacity readings together. If the average opacity reading equals 20% or lower, the source is in compliance with the opacity standard.

2015.28.160 Posting of Informational Signs on Construction Sites

A.

B. C. The Dust Control Plan sign shall conform to the following requirements:

1. 2. The signboard shall be constructed with materials capable of withstanding the harsh environment (e.g., strong winds, intense sunlight) of Nye County. The sign board must be visible from the road and not obstructed by other signs or materials. Nye County recommends the following materials at a minimum:

a. b. ¾” A/C laminated plywood board a minimum of 2 feet by 2 feet in dimension;

c. d. 4”x 4” posts with the base of the sign four feet above ground level;

e. f. Posts should be attached to the plywood board with a minimum of two (2) carriage bolts on each post;

g. h. The front surface of the signboard should be painted in the contrasting colors of a white background with black lettering, or

i. j. A minimum of 0.118” DiBond® Composite Material (aluminum sheets over a thermoplastic core) a minimum of 2 feet by 2 feet in dimension;

k. l. 1 7/8” galvanized steel center post with the base of the sign four feet above ground level;

m. n. The sign should be attached to the post with a single fastener to allow for heat expansion; and

o. p. The front surface of the signboard should have a white background with contrasting black lettering.

3. 4. The sign board shall contain the following information:

a. b. Project name;

c. d. Owner/Operator name;

e. f. Telephone Number of person responsible for dust control;

g. h. Nye County Planning Department telephone umber;

i. j. Building, site preparation, or conditional use permit number;

k. l. Project Acreage; and

m. n. Building, site preparation, or conditional use permit expiration date.

D. E. The signboard shall be designed to the following alpha and numeric text dimensions (sign boards written in longhand are unacceptable).

PROJECT NAME:	(Proj. Name)
OPERATOR:	**(Your Name)**
OPERATOR TELEPHONE NUMBER:	(Your Number)
NYE COUNTY—PLANNIG DEPARTMENT TELEPHONE NUMBER:	Pahrump Phone Number
BUILDING/OTHER PERMIT NUMBERS:	(Permit Number)
DUST CONTROL PLAN NUMBER	**(Plan Number)**
PROJECT ACREAGE:	**(Acreage)**

F.

G. that can be completed in two (2) weeks or less may request a variance to
H. the requirements of this section.

I. Highway construction activities that are limited to road repairs or in the right-of-way where the activity continually moves forward may use a sign that is mobile or apply for variance if the project is less than two (2) weeks in duration.

Effective Date. This Ordinance shall be in full force and effect from and after passage, approval, and publication as required by law, to wit, from and after the 21st day of March, 2005

Proposed on the 15th day of February, 2005.

Proposed by Commissioner Eastley.

Adopted on the 1st day of March, 2005.

Vote: Ayes:Commissioners: Hollis, Eastley, Trummell, Cox, Carver

Nays:Commissioners: None

Absent: Commissioners: None

BY: ___ ATTEST:

Candice Trummell, Chairman
Nye County Board of
County Commissioners

Sandra “Sam” Merlino
Clerk and Ex-Officio
Clerk of the Board

SURFACE AREA DISTURBANCE PERMIT
DUST CONTROL PLAN (PLAN) PREPARATION GUIDELINES
OCTOBER 2002

SPECIAL AREAS

- **HA 162- PAHRUMP VALLEY - SURFACE AREA DISTURBANCES OF 5 ACRES OR MORE**

Nevada Division of Environmental Protection
Bureau of Air Pollution Control
901 South Stewart Street Suite 4001
Carson City, Nevada 89701-5249

SURFACE AREA DISTURBANCE PERMIT
DUST CONTROL PLAN (PLAN) PREPARATION GUIDELINES

REQUIRED FOR:

- **GENERAL - SURFACE AREA DISTURBANCES OF 20 ACRES OR MORE**
- **HA 162- PAHRUMP VALLEY - SURFACE AREA DISTURBANCES OF 5 ACRES OR MORE**

PLAN Requirements

1. The PLAN shall contain the Project's responsible party name, business address, mailing address and phone number(s). If the R.O. is not the project manager, list the name of the onsite project manager and his phone number.

2. The PLAN shall contain the physical address of the Project, including the County in which the Project is located. Major cross streets bordering the Project area shall be listed.

3. The PLAN shall include a description of the Project and the initial Project schedule.

4. The PLAN shall identify total physical boundaries of Project (Sections/fractional Sections, Townships and Ranges). The PLAN shall also identify the UTM's of the project location.

5. The PLAN shall include appropriately-sized maps of the Project with total project boundaries and facilities outlined (NDEP approved)

Table 1
Project Maps

Project Type	Map Type
Subdivision (total project, not just streets and sidewalks)	Tract Map Site Map
Commercial/Business park development (total project, not just streets and sidewalks)	Tract Map Site Map Topographic Map (if more than 40 acres)
Precious Metal Mining	Topographic Map Site Map with facilities identified
Sand and Gravel/Crushed Stone Processing	Topographic Map Site Map with facilities identified
Other	Map type to be specified by NDEP

6. The PLAN shall include a statement that the Project's Responsible Official has read the provisions of Nevada Administrative Code (NAC) Section 445B.22037 "Emissions of Particulate Matter; Fugitive Dust" and is aware that Project is responsible for preventing controllable fugitive dust from the project's disturbed areas to become airborne on a 7-day/week, 24-hour/day basis.

7. The PLAN shall have provisions for notification of subcontractors and others accessing the disturbed areas of their responsiblities to control fugitive dust (i.e. observing onsite vehicle speed limits, track out, best practical methods of dust control being used onsite when working in disturbed areas, keeping off disturbed areas that have been stabilized, etc.) The PLAN shall

prohibit disturbing (driving over, grading or spreading dirt over) adjacent properties not covered by the permit.

8. The PLAN shall address the type of best practical methods of fugitive dust control to be used by permittee to control fugitive dust in detail. More than one type of fugitive dust control method may be necessary to prevent fugitive dust generation and use of multiple fugitive dust methods must be addressed if applicable. The Project is responsible for adhering to the provisions contained in the PLAN. Failure to follow the PLAN required by a permit may result in a violation of the NAC Code Section 445B. 275 "Violations; Acts constituting; notice". Failure to control fugitive dust generation at the Project site is a violation of NAC Section 445B.22037 "Emissions of Particulate Matter; Fugitive Dust". Regardless of the best practical method(s) of fugitive control selected, the permittee is responsible to prevent controllable fugitive dust from becoming airborne.

Table 2
Best Practical Methods (Non-inclusive listing)

Fugitive Dust Sources	Best Practical Methods
Unpaved new, access/egress and haul roads Road shoulders and traffic control berms Unpaved sidewalks	a. Water Sprays b. Gravel (with or without palliatives) c. Surfactants/Palliatives d. Vehicle speed control (10-15 MPH maximum speed, posted onsite) e. Paving f. Cessation of operations when winds make fugitive dust control difficult g. Other
Graded areas • Residential building sites • Commercial building sites • Industrial building sites • Other building sites (schools, churches, synagogues, temples, storage facilities, etc.) • Construction equipment staging sites • Parking lots • Precious metals mining and processing facility sites • Sand and gravel/crushed stone processing facility sites • Animal containment structures	a. Water Sprays b. Revegetation c. Gravel (with or without palliatives) d. Surfactants/Palliatives f. Vehicle speed control (10-15 MPH maximum speed, posted onsite) e. Staged construction f. Wind fences h. Fencing or berming to prevent unauthorized access to disturbed areas) i. Cessation of operations when winds make fugitive dust control difficult j. Other
Material storage piles (construction sand, gravel, base materials, rock, etc.; not mortar mix, concrete or cement or other such portland cement-based materials) Overburden material storage piles (dirt, sand, gravel, rock, etc.) Landscaping material storage piles (loose, not bagged materials)	a. Water Sprays b. Surfactants/Palliatives c. Covering with tarpaulin or geotextiles; tenting d. Wind fences e. Fencing or berming to prevent unauthorized access to storage areas) f. Cessation operations when winds make fugitive dust control difficult g. Other

Table 2
Best Practical Methods (Non-inclusive listing)
(Continued)

Fugitive Dust Sources	Best Practical Methods
Paved roads - trackout	a. Wash racks (to clean truck tires) b. Water hoses (to clean truck tires or wash down roads) c. Street sweeper (to clean roads) d. Other
Earthmoving, loading and unloading of dusty materials	a. Reduce equipment travel speeds b. Water loads, then load or unload slowly c. Decrease drop height between bucket/ stacker and truck/storage pile d. Decrease drop height between silo and truck and/or use shrouding/baghouse

9. The PLAN shall specify when wind fencing and other best practical methods of fugitive control are to be installed/implemented. Storage piles and disturbed area best practical methods selected for fugitive dust control should be implemented immediately as large disturbed areas and storage piles tend to be most affected by windy conditions. If wind fencing is to be used, the PLAN should specify that the top of the storage pile must not be taller than the wind fencing. If water or surfactants/palliatives are used to stablize large disturbed areas, the PLAN should limit unauthorized vehicle access to the water or chemically stablized areas using fencing, boulders or earth berming.

10. The PLAN must address the application schedule and timing of the application of the best practical method(s) selected for fugitive dust control at the various locations within the project site if water, surfactants/palliatives, or similar best practical methods of fugitive dust control are to be used.

Grading -Water Application

- It is highly recommended that the area to be disturbed be watered for several days prior to start of slash removal and grading. This does not mean flooding the area to be disturbed which may make the area unworkable or that the area should be allowed to dryout before beginning disturbance of the area since that would prevent adequate dust control and impede proper grading of the area.

- Water should be applied continously in front of the scraper/grader/dozer. If the soil is dry, the scraper/grader/dozer must cease further disturbance when the water truck runs out of water and should not resume until the water truck is operational again.

11. If water is to be used for fugitive dust control, the PLAN shall include the location(s) of the water supply to be used, the number of water trucks to be used and the travel time between the water supply and the project site.

12. If water is to be used for fugitive dust control, the PLAN shall include a contigency plan for leasing water trucks in the event that project's water truck(s) breakdown or are insufficient to control the

generation of fugitive dust at the project site. The operator(s) of the equipment additional water trucks when required.

13. The PLAN shall include a provision for maintaining a daily operations log showing the operational hours of the scraper/grader/dozer, front loaders, backhoes, cranes/shovels, water truck(s), the amount of water used, the number of water trucks used, and when operations cease each day. When operations are ceased because of wind or other meteorlogical conditions, it should be noted in the daily operations log.

14. The PLAN shall include training of the project supervisor and equipment operators to recognize when the dust controls being used are not preventing the generation of fugitive dust and to follow the requirements of the project's fugitive dust control plan. A log of such training shall be kept onsite with the daily operations log.

15. The PLAN shall include identification of the Project onsite person(s) authorized to cease operations when wind or other meteorlogical conditions make prevent the control of fugitive dust when employing the best practical methods specified in the PLAN.

16. The PLAN shall have provisions for updating the PLAN in the event material changes to the Project occur and resubmittal of the PLAN to NDEP for evaluation.

CONTACT INFORMATION

PERMITTING BRANCH	775-687-9339
COMPLIANCE BRANCH	775-687-9342

ATTACHMENT – NEVADA ADMINISTRATIVE CODE 445B.22037 “EMISSION OF PARTICULATE MATTER: FUGITIVE DUST”

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NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

CHAPTER 445B

AIR CONTROLS

AIR POLLUTION

NAC 445B.22037 Emission of Particulate Matter: Fugitive dust.

1. No person may cause or permit the handling, transporting or storing of any material in a manner which allows or may allow controllable particulate matter to become airborne.

2. Except as otherwise provided in subsection 4, no person may cause or permit the construction, repair, demolition, or use of unpaved or untreated areas without first putting into effect an ongoing program using the best practical methods to prevent particulate matter from becoming airborne. As used in this subsection, "best practical methods" includes, but is not limited to, paving, chemical stabilization, watering, phased construction and revegetation.

3. Except as otherwise provided in subsection 4, no person may disturb or cover 5 acres or more of land or its topsoil until he has obtained an operating permit for surface area disturbance to clear, excavate, or level the land or to deposit any foreign material to fill or cover the land.

4. The provisions of subsections 2 and 3 do not apply to:
(a) Agricultural activities occurring on agricultural land; or
(b) Surface disturbances authorized by a permit issued pursuant to NRS 519A.180 which occur on land which is not less than 5 acres or more than 20 acres.

[Environmental Comm'n, Air Quality Reg. §§ 7.3.1 & 7.3.2, eff. 11-7-75; § 7.3.3, eff. 11-7-75; A 12-15-77]—(NAC A 9-19-90; 12-26-91; 12-13-93; 10-30-95)

State Implementation Plan
Text of Regulations and Articles

445.734 Fugitive dust.

1. No person may cause or permit the handling, transporting or storing of any material in a manner which allows or may allow controllable particulate matter to become airborne.

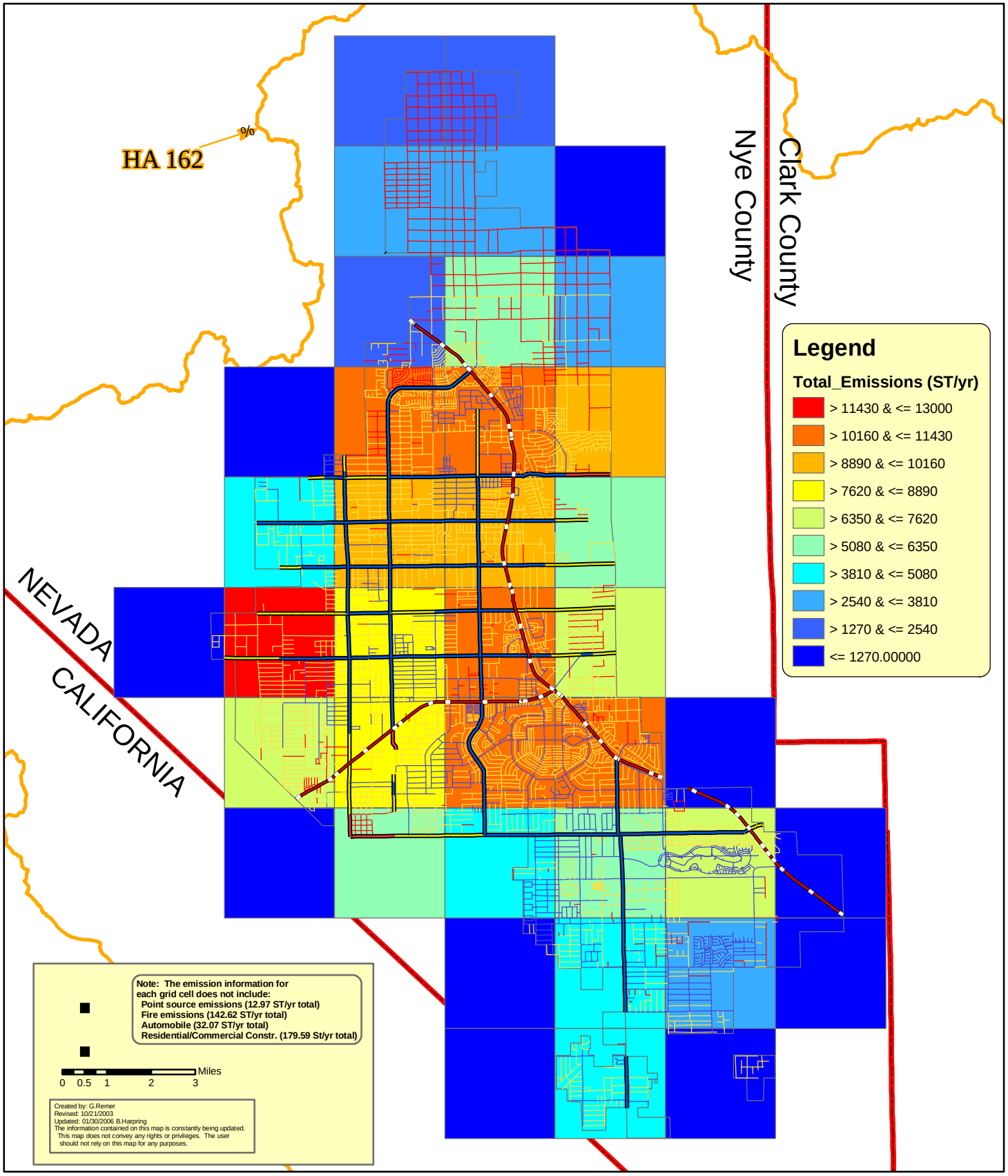
2. *In any area designated by the director, no person may cause or permit the construction, repair, demolition or use of unpaved or untreated areas without first applying any measures required by the director to prevent particulate matter from becoming airborne.*

3. No person may disturb or cover 20 acres (8 hectares) or more of land or its topsoil, other than agricultural land, until he has obtained a registration certificate or operating permit for the purpose of clearing, excavating or leveling the land or an operating permit for the deposit of any foreign material to fill or cover the land.

[Environmental Comm'n, Air Quality Reg. 7.3.1 & 7.3.2, eff. 11-7-75: S 7.3.3, eff. 11-7-75; A 12-15-77]

APPENDIX I

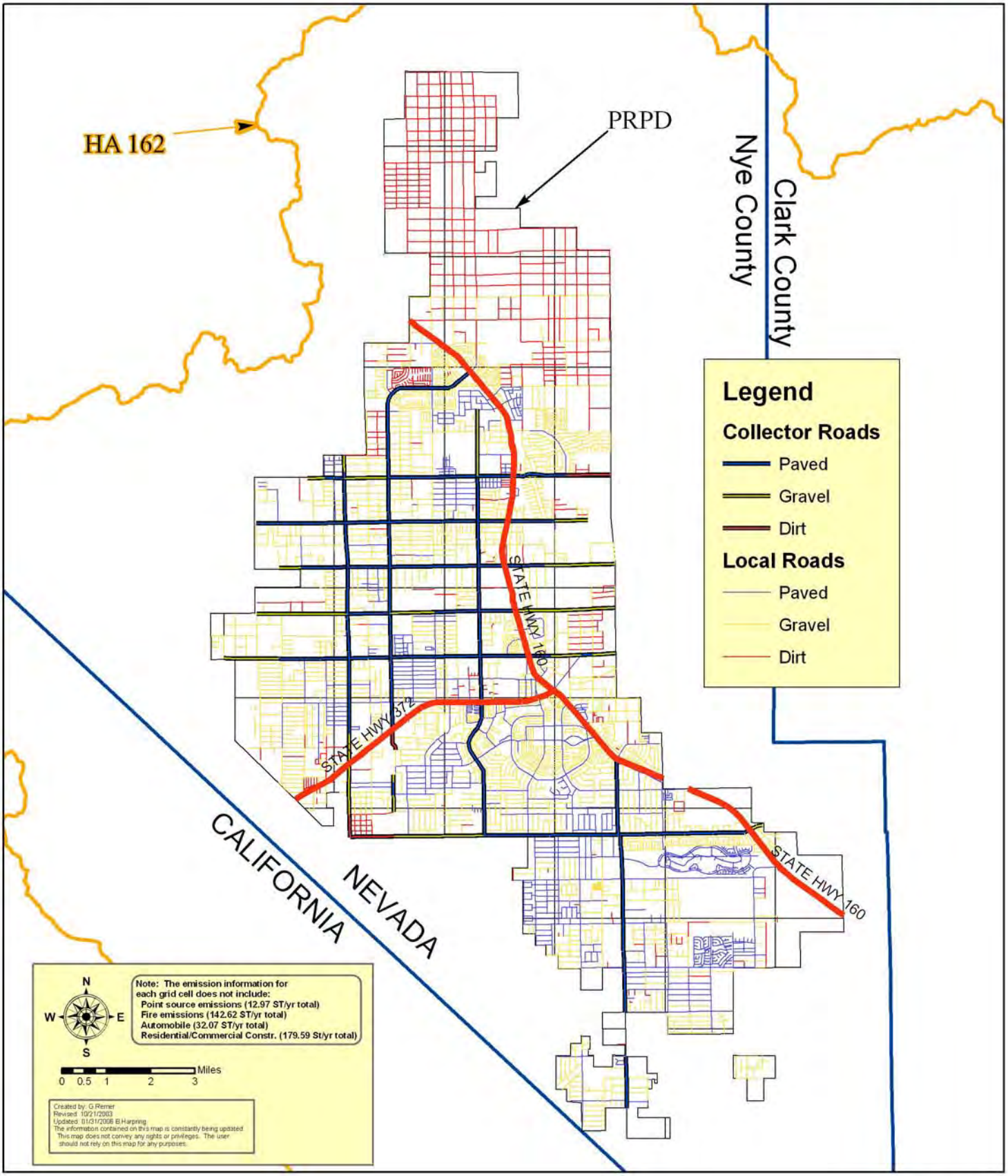
2001 Emission Inventory Distribution



Pahrump_EI_distribution.pdf

APPENDIX I

Road Types in the Pahrump Regional Planning District (PRPD)



Road_Types.jpg

THE BOARD OF COUNTY COMMISSIONERS
OF THE COUNTY OF NYE,
STATE OF NEVADA,
ACTING AS THE BOARD OF TRUSTEES OF
THE UNINCORPORATED TOWN OF
PAHRUMP, NYE COUNTY, NEVADA

DO HEREBY ORDAIN:

MOTOR VEHICLES

72.010. MOTOR VEHICLE DEFINED. The term "motor vehicle," when used in this Ordinance, means any vehicle which is self-propelled, but not operated upon rails. (4-1970)

72.020. SPEED LIMIT IMPOSED. It shall be unlawful for any person to ride, drive or operate a motor vehicle of any kind or character on any street, highway, alley or any other place within the limits of the Town of Pahrump, Nye County, Nevada, at a rate of speed in excess of the following:

(a) In areas designated as school zones, the maximum allowable speed shall be 15 miles per hour;

(b) On state highways, the maximum allowable speed shall be the maximum designated and posted by the State Department of Highways.

(c) On all county streets and roads within the Town of Pahrump, except those streets and roads described in subparagraphs (a) and (d), the maximum allowable speed shall be 45 miles per hour;

(d) On those streets and alleys within the areas described below, the maximum allowable speed shall be 25 miles per hour;

ON WILSON STREET, from State Highway 16 to Blagg Road;

On EAST STREET, from State Highway 52 to Wilson Street;

On FIRST STREET, from East Street to West Street;

On SECOND STREET, fro East Street to West Street;

On THIRD STREET, from East Street to West Street;

On FOURTH STREET, from East Street to West Street;

THE BOARD OF COUNTY COMMISSIONERS
OF THE COUNTY OF NYE,
STATE OF NEVADA,
ACTING AS THE BOARD OF TRUSTEES OF
THE UNINCORPORATED TOWN OF
PAHRUMP, NYE COUNTY, NEVADA

DO HEREBY ORDAIN:

MOTOR VEHICLES

72.010. MOTOR VEHICLE DEFINED. The term "motor vehicle," when used in this Ordinance, means any vehicle which is self-propelled, but not operated upon rails. (4-1970)

72.020. SPEED LIMIT IMPOSED. It shall be unlawful for any person to ride, drive or operate a motor vehicle of any kind or character on any street, highway, alley or any other place within the limits of the Town of Pahrump, Nye County, Nevada, at a rate of speed in excess of the following:

(a) In areas designated as school zones, the maximum allowable speed shall be 15 miles per hour;

(b) On state highways, the maximum allowable speed shall be the maximum designated and posted by the State Department of Highways.

(c) On all county streets and roads within the Town of Pahrump, except those streets and roads described in subparagraphs (a) and (d), the maximum allowable speed shall be 45 miles per hour;

(d) On those streets and alleys within the areas described below, the maximum allowable speed shall be 25 miles per hour;

ON WILSON STREET, from State Highway 16 to Blagg Road;

On EAST STREET, from State Highway 52 to Wilson Street;

On FIRST STREET, from East Street to West Street;

On SECOND STREET, fro East Street to West Street;

On THIRD STREET, from East Street to West Street;

On FOURTH STREET, from East Street to West Street;

On BASIN ROAD, from State Highway 16 to the west boundary of the Community Arena Property. (4-1970)

72.030. RECKLESS DRIVING PROHIBITED. It shall be unlawful for any person to operate a motor vehicle on the public highways, streets or alleys of the Town of Pahrump in such a manner as to endanger the life, limb or property of any person or persons, or in any other than a careful and prudent manner. (4-1970)

72.040. EXHAUST MUFFLERS. It shall be unlawful for any person to ride, drive or operate any motor vehicle on any highway, street or alley or any other place within the limits of the Town of Pahrump, Nye County, Nevada, with exhaust mufflers cut out or open, or with straight exhaust pipes. (4-1970)

72.050. SIGNS. It shall be unlawful to wilfully deface, injure, move, remove, or otherwise interfere with any signs or other devices installed or erected for the purpose of directing or regulating traffic or parking, or to fail to comply with the directions displayed upon said signs or other devices. (4-1970)

72.060. DRIVING REGULATIONS.

(a) The operator of a motor vehicle leaving a parked position shall yield the right of way to any motor vehicle approaching in the regular line of through traffic.

(b) No person shall turn a vehicle at an intersection, or otherwise turn a vehicle from a direct course or move right or left upon a roadway unless and until such movement can be made with reasonable safety. A signal of intention to turn right or left when required shall be given continuously during not less than the last 100 feet traveled by the vehicle before turning. Signals shall be given in accordance with the requirements of NRS 484.333 et. Seq.

(c) No motor vehicle shall be driven over any unprotected hose of the fire department when laid down on any street or other place to be used at any fire or alarm of fire.

(d) The crossing over a double yellow center line is unlawful and prohibited. (4-1970)

72.070. PARKING REGULATIONS.

(a) No person shall stop, stand or park a vehicle, except when necessary to avoid conflict with other traffic or in compliance with law or the directions of a sheriff officer or traffic control device, in any of the following places:

1. On a sidewalk;

2. In front of a public or
private driveway;

3. Within an intersection;

4. On a crosswalk;

5. Within 20 feet of a crosswalk at an intersection;

6. On the roadway side of any vehicle stopped or parked at the edge or curb of a street;

7. At any place where official signs prohibit stopping, or at any place where the adjacent curb is painted red or parking is limited or designated for a particular purpose.

(b) It shall be unlawful for any person to park, or allow to remain parked, any disabled motor vehicle on the public right of way for a period of more than one week. The Sheriff may, after three (3) days give notice to the owner, causing such vehicles to be removed at the expense of the owner.

(4-1970)

72.080 EMERGENCY VEHICLES. None of the provisions of this Ordinance shall be applicable to police vehicles, sheriff's vehicles, ambulance, vehicles of licensed medical physicians, or fire department vehicles being driven or operated in the course of official duties.
(4-1970)

72.090 UTILITY VEHICLES. None of the provisions regarding parking of vehicles shall be applicable to utility vehicles while engaged in the performance of duties relating to garbage collection, repair or maintenance of water, power, television or sanitation facilities within the said Town of Pahrump.

(4-1970)

72.100 CONSTITUTIONALITY. If any section, clause or phrase of this Ordinance is for any reason held to be void or unconstitutional, such decision shall not affect the validity of the remainder of this Ordinance, and the Board of County Commissioners hereby declares that they would have enacted this Ordinance, and each of said sentences, clauses, sections, or phrases thereof irrespective of the fact that any one or more of such sections, sentences, clauses or phrases might be declared void or unconstitutional.
(4-1970)

72.110. PENALTIES. Any persons violating this Ordinance or any provisions thereof shall be guilty of a misdemeanor, and shall be subject to a fine not to exceed Five Hundred Dollars ($500.00), or imprisonment in the County Jail for a period not to exceed six (6) months, or both such fine and imprisonment.
(4-1970)

72.120. EFFECTIVE DATE. This Ordinance shall become effective on January 1, 1971.
(4-1970)

AFFIDAVIT OF PUBLICATION

State of Nevada, }
}SS.
County of Nye }

I, Gerald A. Roberts, editor of the Tonopah Times-Bonanza & Goldfield News, a weekly newspaper printed and published in Tonopah, Nye county, Nevada, being duly sworn, hereby certifies that the _____Notice of Adoption of Ordinance Pahrump Town ordinance No. 4 Regulate traffic of all vehicles____ a copy of which is hereon attached, was published in the said Tonopah Times-Bonanza & Goldfield News on the following dates: ___May 7, 14, 1971_____.

WITNESS my hand this __14__day of____May____, 19_71_.

_____Gerald A Roberts_____(Sig. on file)

SUBSCRIBED and sworn to before me this

__14__day of____May____, 19_71_

__Marilyn J. Phillips___ (Sig on file)
Notary Public In and for the County of
Nye, State of Nevada

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NYE COUNTY CODE, CHAPTER 16

16.28.280: STREET DESIGN STANDARDS:

A. General: The arrangement of streets shall conform to the Nye County streets and highways plan where applicable. For streets not shown on the streets and highways plan, the arrangement shall provide for the appropriate extension of existing streets. Residential streets shall be arranged so as to discourage through traffic and provide for maximum privacy. For street cross sections and construction requirements refer to the "Standard Details for Public Improvements Within the Pahrump Regional Planning District".

B. Adequate Public Or Private Access:

1. Any division of land proposal shall have adequate public or private access consisting of full width (no 1/2 street) legal and physical access that must be a minimum of forty feet (40') in right of way width, which said width shall only be considered adequate if the right of way was intended and developed as a forty foot (40') wide full width road. Exception: Large parcels maps may be provided access via a minimum fifteen foot (15') wide legal and physical access that need not be maintained by Nye County. The access shall be in a form acceptable for maintenance by the Nye County public works director, must be maintained by the Nye County road department, or must be maintained by some other formally created entity approved by the planning commission. The access must also support the maximum anticipated ADT generated by the development in accordance with the street hierarchy as indicated in exhibit 1 of this chapter in addition to the ADT generated by existing land uses as evaluated pursuant to a traffic impact analysis as required.

2. To protect the public health, safety and welfare, subdivisions shall have the following minimum public access available between roads shown in the "Nye County Streets and Highways Plan, Year 2010 Projected Network for the Pahrump Valley", which said network is also found in the "Standard Details and Specifications for Public Improvements Within the Pahrump Regional Planning District", and the subdivision: (Ord. 215, 1998)

Less than 400 ADT	A minimum of 1 gravel standard road
400 to 2,000 ADT	A minimum of 1 paved standard road
2,001 to 5,000 ADT	A minimum of 1 paved standard road and 1 additional road and 1 additional gravel standard road
Greater than 5,000 ADT	A minimum of 2 paved standard roads

(Ord. 236, 2001: Ord. 215, 1998)

C. Private Streets:

1. Any development requiring the use of a private street maintained by a formally created entity must obtain and record an easement deed for the use of such streets, or otherwise prove to the planning commission that use of such private street(s) is authorized.

2. Private streets shall be allowed only when it is proven that no parcel shall become landlocked by privatizing a street. Control of access to properties fronting on private streets shall be left to the discretion of the entity responsible for maintenance of said streets.

D. Street Dedications And Acceptance: Developers shall, except in the case where a private street is approved, dedicate all new public streets to Nye County. All streets properly engineered and constructed with asphalt paving shall be accepted by Nye County upon submittal of final inspection documents to the planning commission by the public works director.

E. Perimeter Street Dedications And Construction:

1. Where a one-half (1/2) width street has been constructed on adjoining property along the perimeter of any subdivision or parcel map proposal and, in the view of the planning commission said street will be necessary for future development, developer shall be required to dedicate and construct a one-half (1/2) width street tying into the existing one-half (1/2) street, using similar construction materials (i.e., pit run, type II, chip seal, pavement). Where adjoining one-half (1/2) width street dedications or easements exist, but no street has been constructed, developer may be required to dedicate property for street purposes along the adjoining one-half (1/2) street(s), and the planning commission shall evaluate the need for construction of said one-half (1/2) street(s) and, through findings duly made, determine if street construction shall be required.

2. In the event an adjacent property owner was required to provide two (2) moving lanes within a one-half (1/2) width road right of way, developer shall be required to dedicate and construct matching improvements, including two (2) moving lanes. (Ord. 215, 1998)

3. In the event future passage is needed through or around land over which a division of land map is proposed, or in order to provide legal access to landlocked parcels, the planning commission may require reasonable right of way dedications or easements to extend completely through, or around the perimeter of, said land. (Ord. 236, 2001: Ord. 215, 1998)

F. Street Hierarchy:

1. Streets shall be classified in a street hierarchy system with design tailored to the street's function as indicated in exhibit 1 of this chapter.

2. The street hierarchy system shall be defined by function and average daily traffic (ADT), calculated by trip generation rates prepared by the ITE as indicated in the "Standard Details and Specifications for Public Improvements Within the Pahrump Regional Planning District". Trip generation rates from other sources may be used if the applicant demonstrates that these sources better reflect local conditions.

3. The applicant shall demonstrate to the planning commission's satisfaction that the distribution of traffic to the proposed street system will not exceed the ADT thresholds indicated in exhibit 1 of this chapter for any proposed street type.

G. Residential Street Surface Width:

1. Surface width for each residential street classification shall be determined by parking and shoulder requirements which are based on form and intensity of development.

2. Intensity of development shall be based on lot frontage as follows:

INTENSITY OF DEVELOPMENT

Low:	Lot frontages greater than 150 feet (on street parking lane not required).
Medium:	Lot frontages from 75 feet to 150 feet. (1 on street parking lane required for curbed streets only. No parking lane required for shouldered streets.)
High:	Lot frontages less than 75 feet. (2 on street parking lanes required for curbed streets only. No parking lane required for shouldered streets, but residential access streets must be constructed as residential subcollector streets to accommodate on street parking on the wider shoulder.)

3. Surface widths shall also consider possible limitations imposed by sight distances, terrain, and maintenance needs. In order to minimize street costs, the minimum width assuring satisfaction of needs shall be selected.

4. Surface widths for each street classification are shown in exhibit 1 of this chapter.

H. Street Grade:

1. Minimum desired street grade for all streets shall be 0.5 percent; but streets may be constructed at a minimum grade of 0.2 percent, provided this grade is closely monitored and strict attention paid to construction techniques to avoid ponding. Where topographical conditions permit, grades in excess of 0.5 percent shall be used.

2. Maximum street grade shall vary by street hierarchy, with flatter grades required for streets with higher ADTs, in accordance with the requirements shown in the "Standard Details and Specifications for Public Improvements" document.

I. Base And Surfacing Requirements:

1. General Requirements: Base and surfacing requirements shall be dependent upon a street's ADT as shown in exhibit 1 of this chapter and in accordance with the requirements shown in the "Standard Details and Specifications for Public Improvements" document.

2. Large Parcels Maps: Road construction requirements for large parcels maps shall consist of a minimum fifteen foot (15') wide bladed area within dedicated or private road right of way in which all vegetation and debris is removed. Blading of such roads shall conform to the natural contours of the area.

3. Parcel Maps: Each and every new parcel created pursuant to a parcel map application shall be provided with full width or one-half (1/2) width dedicated or private road right of way with two (2) moving lanes of asphalt paving.

4. Subdivisions: Each and every new parcel created pursuant to a subdivision application shall be provided with full width dedicated or private road right of way with two (2) moving lanes of asphalt paving.

J. Street Intersections:

1. Minimum Intersection Angle: Street intersections shall be as nearly at right angles as possible and in no case shall be less than seventy five degrees (75°).

2. Minimum Center Lines Offset Of Adjacent Intersections: New intersections along one side of an existing street shall, if possible, coincide with any existing intersections on the opposite side of each street. Use of "T" intersections interior to new subdivisions shall be encouraged. To avoid corner cutting when inadequate offsets exist between adjacent intersections, offsets shall measure at least one hundred twenty five feet (125') between center lines.

3. Minimum Curb Radius: Where curbs are used, intersections shall be rounded at the curb line, with the street having the highest radius requirement as shown in the "Standard Details and Specifications for Public Improvements" determining the minimum standard for all curb lines.

4. Grade: Intersections shall be designed with a flat grade wherever practicable. Maximum grade within intersections shall be five percent (5%) except for collectors which shall be three percent (3%).

5. Minimum Center Line Radius; Minimum Tangent Length Between Reverse Curves; And Curb Radii: Requirements shall be as shown in the "Standard Details and Specifications for Public Improvements" document.

6. Sight Triangle Easements: Sight triangle easements shall be required and shall include the area on each street corner that is bounded by the line which connects the sight or "connecting" point located on each of the right of way lines of the intersecting street. The planting of trees or other plantings or the location of structures, including cyclone fencing exceeding thirty inches (30") in height, with the exception of street hardware, that would obstruct the clear sight across the area of the easements shall be prohibited, and a public right of entry shall be reserved for the purpose of removing any object, material or otherwise, that obstructs the clear sight. The distances shown in the "Standard Details and Specifications for Public Improvements Within the Pahrump Regional Planning District" shall be required.

K. Curbs, Gutters And Sidewalks: Curbs, gutters and sidewalks shall not be required. For developments providing curbs, gutters and/or sidewalks the following shall apply:

1. For the purposes of drainage and safety developers shall provide a drainage study indicating that the use of curbs and gutters will not adversely affect adjacent properties and the street network in accordance with the storm water management section of this chapter. Storm drains, drop inlets, culverts and other drainage structures may be required pursuant to said drainage study.

2. Flexibility regarding curb type is permitted as long as the curb type accommodates the system of drainage proposed.

3. Curbing shall be designed to provide ramps for bicycles and wheelchairs at intersections.

4. Curbing shall be constructed according to the specifications set forth in the "Standard Details and Specifications for Public Improvements Within the Pahrump Regional Planning District".

5. Paved sidewalks shall not be required but a graded area is required in accordance with exhibit 1 of this chapter. For developments providing sidewalks developer shall provide for maintenance of such sidewalks through an entity other than Nye County. Construction of sidewalks shall be in accordance with the "Standard Details and Specifications for Public Improvements Within the Pahrump Regional Planning District".

L. Shoulders: Shoulders and drainage swales are required except when the developer opts for curbs and gutters. Shoulder requirements shall vary according to street hierarchy and intensity of development in accordance with the requirements set forth in exhibit 1 of this chapter. Where shoulders and

drainage swales are used, only driveways shall be allowed to encroach into the road right of way. Under no circumstances shall mailboxes, manhole covers, water valves or other obstructions to maintenance be placed in the drainage swale.

M. Street Lighting: Street lighting shall not be required. However, applicants may provide street lighting at no cost to Nye County or its citizens. In the event that publicly maintained street lighting becomes available, streetlights shall be required at external intersections in accordance with plans submitted by the applicant.

N. Traffic Impact Analysis: Pursuant to the Nye County streets and highways plan, all subdivisions creating an ADT of one hundred (100) or greater shall provide a traffic impact analysis prior to approval of a final subdivision map. The analysis shall comply with the requirements found in the "Document Submittal Requirements for Planning Applications Within the Pahrump Regional Planning District" document. Applicant shall comply with article VII of this chapter for traffic improvements required as a result of the traffic impact analysis. (Ord. 215, 1998)

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NYE COUNTY ORDINANCE NO. 297
Pahrump Regional Planning District Dust Control Regulations

Disclaimer:
This is provided for informational purposes only. The formatting of this ordinance may vary from the official hard copy. In the case of any discrepancy between this ordinance and the official hard copy, the official hard copy will prevail.

BILL NO. 2005-04

SUMMARY: An Ordinance amending Nye County Code Chapter 15.28, the Pahrump Regional Planning District Dust Control Regulations, by amending the applicability, definitions, and appeal rights; and other matters properly related thereto.

TITLE: AN ORDINANCE AMENDING NYE COUNTY CODE CHAPTER 15.28, DUST CONTROL REGULATIONS EFFECTIVE WITHIN THE PAHRUMP REGIONAL PLANNING DISTRICT, BY AMENDING THE APPLICABILITY, DEFINITIONS, AND APPEAL RIGHTS; OTHER MATTERS PROPERLY RELATED THERETO.

WHEREAS, pursuant to NRS 278.020, for the purpose of promoting the health, safety and the general welfare of the residents of Nye County, the Nye County Board of County Commissioners (Board) is authorized and empowered to regulate and restrict the improvement of land and to control the location and soundness of structures; and

WHEREAS, it is recognized through air quality monitoring by the Nevada Division of Environmental Protection (NDEP) that, within the Nye County portion of State hydrographic area No. 162 (Pahrump Valley) federal PM10 air quality standards were exceeded several times over the last few years; and

WHEREAS, the Board entered into a Memorandum of Understanding with the U.S. Environmental Protection Agency (EPA), NDEP and the Town of Pahrump in order to defer action by EPA that would designate the Nye County portion of hydrographic area No. 162 as “nonattainment,”; and

WHEREAS, it is the responsibility of the Board to promote and protect the health and welfare of the inhabitants of the Pahrump Regional Planning District, which necessitates the control and regulation of activities affecting the quality of the air therein; and

WHEREAS, the purpose of these regulations to achieve and maintain levels of air quality which will protect human health and safety, prevent injury to plant and animal life, prevent damage to property, and preserve visibility and scenic, aesthetic and historic values of Pahrump Regional Planning District; and

WHEREAS, the quality of air is declared to be affected with the public interest and these regulations are enacted in the exercise of the police power of Nye County to protect the health, safety and general welfare of its people as required by State law;

NOW, THEREFORE, the Board of County Commissioners of the County of Nye, State of Nevada, in accordance with Chapter 445B of Nevada Revised Statutes, does hereby adopt, promulgate and order compliance therewith within the Pahrump Regional Planning District, the following regulations:

NYE COUNTY CODE CHAPTER 15.28 IS AMENDED AS FOLLOWS:

15.28 DUST CONTROL REGULATIONS WITHIN THE PAHRUMP REGIONAL PLANNING DISTRICT

ARTICLE I: GENERAL PROVISIONS

1 15.28.010 Short Title

This Chapter shall be known, and may be cited as: The Dust Control Regulations of the Pahrump Regional Planning District.

2 15.28.020 Authority and Purpose

A. B. This Chapter is adopted pursuant to Nevada Revised Statute 445B.500 **(Establishment and administration of program. . .) which at subsection 4 states, "Any county whose population**

is less than 100,000 or any city may meet the requirements of this section for administration and enforcement through cooperative or interlocal agreement with one or more other counties, or through agreement with the State, or may establish its own program for the control of air pollution. If the county establishes such a program, it is subject to the approval of the Commission."

C. D. The purpose of this Chapter is to:

1. 2. Control PM10 emissions at existing and active surface disturbance sites to achieve compliance with federal air quality standards;

3. E. Improve air quality in order to protect the health, safety and general welfare of the inhabitants of the Pahrump Regional Planning District;

315.28.030 Jurisdiction

A.

B. C. The provisions of this Chapter shall apply to the Pahrump Regional Planning District of Nye County, Nevada.

4 15.28.040 Enforcement and Penalties

5

A. B. Failure to comply with any requirement of this chapter constitutes a violation. The Nye County Planning Department shall issue a written Notice of Alleged Violation to any owner or operator for, including, but not limited to:

1. 2. Any violation of a provision of this Chapter;

3. 4. Any violation of any provision, term, or condition of any Plan that contains requirements stipulated in this Chapter;

5. 6. Failure to pay any fee; or

7. 8. Falsification of any material statement, representation or certification in any application, notice or report.

C. D. To the extent that a violation is not regulated by State regulation, whenever the Nye County Planning Department believes that a regulation for the prevention, abatement or control of fugitive dust has been violated, it shall cause written notice to be served upon the person or persons responsible for the alleged violation. The notice shall specify:

1. 2. The specific regulation violated;

3. 4. The facts constituting the violation; and

5. 6. The timeframe under which corrective action must taken.

E. F. Any person who violates any provision of this Chapter shall be punished by a fine of not more than $10,000 for each day of each violation.

G. H. If, in the judgment of the Nye County Planning Department, any person is engaged in a violation of any provision of this chapter, the Nye County Planning Department may request that the District Attorney institute by indictment or information a criminal prosecution of the person.

I. J. The Nye County Planning Department shall issue a Stop Order if the proposed construction, installation, alteration, or establishment will not be in accordance with the provisions of this Chapter, including all materials submitted to the Nye County Planning Department.

K. L. A person served with a Stop Order shall immediately stop all activities specified in the Stop Order, and may apply for its revocation at any time, setting forth the facts upon which he believes that the reasons for the issuance of the Stop Order no longer exist. If the Nye County Planning Department finds that the reasons for the issuance of the Stop Order no longer exist, the Nye County Planning Department shall withdraw the order promptly. If the Nye County Planning Department finds the reasons for the issuance of the order still exist, or that other reasons exist for continuing a Stop Order in effect, the Nye County Planning Department shall, within 48 hours issue a written statement of the Nye County Planning Department's reasons for so finding.

M. N. Any person who is not satisfied with the results of the Nye County Compliance Review Committee ruling on a Notice of Alleged Violation may request an appeal hearing. The appeal will be heard de novo. There is a 10-day time limit in which to appeal the decision(s) of the Compliance Review Committee.

615.28.050 Interpretation, Conflict, Severability and Constitutionality

A.

B. C. D. In their interpretation and application, the provisions of this Chapter shall be held to be the minimum requirements. More stringent provisions may be required if it is demonstrated that such provisions are necessary to promote the public health, safety and welfare.

E. F. The provisions of this Chapter are severable. If a section, sentence, clause, or phrase of this Chapter is adjudged by a court of competent jurisdiction to be invalid or unconstitutional, the decision shall not affect the remaining portions of this

Chapter.

ARTICLE II: G. DEFINITIONS

715.28.060 A. Generally

B. C. The words and terms used in this Chapter shall be defined as follows. All words used in the singular shall include the plural and the plural the singular. Each gender shall include the others; any tense shall include the other tenses. The word “shall” is mandatory and the words “may” and “should” are permissive.

815.28.070 A. Definitions

Agricultural Operations. The growing of crops for profit or the growing of crops for the purpose of providing life support to a considerable number of people, animals or fowl.

Best Practical Methods. Fugitive Dust Control Measures include, but are not limited to, phased clearing of the land; the use of dust palliative; the use of water; the use of snow fencing (a fencing material that inhibits the wind); the use of windbreaks; revegetation (excluding noxious weeds); the use of ground cover (e.g. gravel, decorative stone); physical barriers and signs to prohibit access to the disturbed areas by motorized vehicles; controls on single lot development approved as a part of a land division subject to these regulations; or cessation of operations when wind conditions exceed the operator’s ability to control fugitive dust. The term Best Practical Methods is synonymous with the Best Management Practices.

Burn Barrel. A container made of metal or other fire resistance substance used to hold vegetative material while burning.

Commercial and Residential Construction. Construction of structures intended to be utilized solely as personal dwellings, including but not limited to single family homes, duplexes, fourplexes, apartments, condominiums, town houses; construction of institutional structures, schools, libraries, churches, hospitals, parks, office structures; shopping malls; residential streets within a subdivision; improvements to existing curbed paved roads; parking lots, parking lot structures; and construction of underground utilities for sanitary sewer, water, electricity, natural gas and communication.

Construction Activity. Any component of the following including, but not limited to: commercial and residential construction, flood control construction, and highway construction, including land clearing, maintenance, and land cleanup using machinery; soil and rock excavation or removal; soil or rock hauling; soil or

rock crushing or screening; filling, compacting, stockpiling and grading; explosive blasting; demolition; implosion; handling of building materials capable of entrainment in air (e.g., sand, cement powder); dismantling or demolition of buildings; mechanized trenching; initial landscaping; operation of motorized machinery; driving vehicles on a construction site; or establishing and/or using staging areas, parking areas, material storage areas, or access routes to or from a construction site.

Control Measure. A technique, practice, or procedure used to prevent or minimize the generation, emission, entrainment, suspension, and/or airborne transport of fugitive dust.

Disturbed Area . A portion of the earth's surface (or material placed thereupon) which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed native condition, thereby increasing the potential for the emission of fugitive dust. Any area that fails the Drop Ball Test or Rock Test as defined in 15.28.140 is a Disturbed Area.

Dust Control Handbook. A guide used to select the appropriate Best Practical Methods appropriate for each construction activity that will be used to control fugitive dust and itemized in a Dust Control Plan.

Dust Control Plan. A plan to formalize the Best Practical Methods (all the selected Control Measures) for a project-specific fugitive dust control program.

Dust Palliative. Hygroscopic material, non-toxic chemical stabilizer or other material which is not prohibited for ground surface application by the federal Environmental Protection Agency (EPA) or the Nevada Department of Environmental Protection (NDEP) or any applicable law or regulation, used as a treatment material for reducing fugitive dust emissions. Water, solutions of water and chemical surfactants, and foam are not Dust Palliatives for the purpose of these Regulations.

Dust Suppressant. Water, hygroscopic material, solution of water and chemical surfactants, foam, non-toxic chemical stabilizer or any other dust palliative which is not prohibited for ground surface application by the federal Environmental Protection Agency (EPA) or the Nevada Department of Environmental Protection (NDEP) or any applicable law or regulation, used as a treatment material for reducing fugitive dust emissions.

Emergency . A situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including Acts of God, that requires

immediate corrective action to restore normal operations.

Fugitive Dust. Emissions of solid, airborne particulate matter which could not reasonably pass through a stack, chimney, vent or a functionally equivalent opening. Fugitive dust is entrained in the air and is caused from human and/or natural activities, such as but not limited to, movement of soil, vehicles, equipment, blasting, and wind.

Garbage. Putrescible animal and vegetable wastes resulting from the handling, storage, sale, preparation, cooking and serving of food.

Opacity. A measure of air visibility, or the degree to which an effluent plume or any emission of air contaminants reduces the transmission of light and obscures the view of an object in the background. Percent opacity refers to the degree in which the visible emission obscures the transmission of light from the view of background objects.

Open Areas and Vacant Lots. An undeveloped tract of land~~,~~ which contains no approved or permitted buildings or structures**.**

Open Burning. Any fire from which the products of combustion are emitted into the atmosphere without passing through a stack, chimney, or duct.

Particulate Matter. Any material except uncombined water that exists in a finely divided form as a liquid or solid at reference conditions. PM10 is any particulate matter in the atmosphere with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

Refuse. Refuse means any:

B. Garbage.

C. Sludge from a:

1. Plant that treats waste water.
2. Plant that treats the water supply.
3. Facility for controlling air pollution.

D. Other discarded material, except yard waste, including solid, semi-solid, liquid or contained gaseous material, resulting from industrial or commercial operations or community activities.

Roads. All publicly dedicated rights-of way within the Pahrump Regional Planning District.

Rubbish. N onputrescible solid waste, consisting of both combustible and noncombustible wastes such as paper, cardboard, abandoned automobiles, tin cans, wood, glass, crockery and similar materials.

Unpaved Parking and Storage Areas. Those parcels, or portions of parcels that include (but are not limited to) parking lots, automotive impound and/or dismantling yards, material and equipment handling and/or storage yards, salvage and/or wrecking yards, outside storage and/or display, and similar uses.

Visible Emission Evaluator. Individual currently certified in accordance with US EPA, 40 CFR Part 60, Appendix A, Method 9, to conduct visible emission evaluations.

ARTICLE III: E.	CONTROL MEASURE REQUIREMENTS
915.28.080 A.	Fugitive Dust
B. C.	Any person engaged in activities involving the handling, transportation or storage of any material; dismantling or demolition of buildings; grubbing; grading; clearing of land; public or private construction; the operation of machines and equipment; the grading of roads; trenching operations; the operation and use of unpaved parking facilities; and the organization and supervision of public outdoor events; shall take all reasonable precautions to prevent fugitive dust from becoming airborne from such activities at all times. Reasonable precautions may include, but are not limited to, sprinkling, compacting, enclosure, chemical, or asphalt sealing, cleaning up, sweeping, soil amendments, addition of non-emissible covers or such other measures as Nye County may specify. All control measures selected must be maintained to ensure the visible emissions do not exceed the 20% opacity limit as described in Section 15.28.150.A.
D. E.	Use and operation of livestock arenas, horse arenas, corrals, agricultural operations and feed lots, and raceways and rodeo grounds for animals or motor vehicles, should take all reasonable precautions to abate fugitive dust from becoming airborne from such activities. Reasonable precautions may include, but are not limited to, sprinkling, compacting, enclosure, chemical, or asphalt sealing, cleaning up, sweeping, soil

amendments addition of non-emisible covers or such other measures.

F. G. This Ordinance shall not apply to emergency activities conducted by any Fire Departments, utility, or government agency which are necessary to protect the health, safety and welfare of the public.

10 15.28.090 Construction Activities
11

A. A person engaged in Construction Activity shall employ Best Practical
B. Methods to prevent the generation of fugitive dust and submit a Dust Control Plan.

C. Except when engaged in agricultural operations, no person may initiate a
D. construction activity that results in Disturbed Areas unless Best Practical Methods are taken to prevent generation of fugitive dust during both the active development phases and thereafter if the property is to remain unoccupied, unused, vacant, or undeveloped.

E. For any project involving in aggregate one-half acre or more of Disturbed
F. Area, a Dust Control Plan must be submitted to the Nye County Planning Department along with the building permit application, conditional use permit application, zoning change application, or site development plan. The Dust Control Plan shall specify the use of Best Practical Methods to control the generation of fugitive dust from each construction activity. The owner/operator will:

1. File a complete Dust Control Plan with the Nye County Planning
2. Department before initiating Construction Activities.

3. Implement the Best Practical Methods as outlined in the Dust Control
4. Plan.

5. Maintain a written record of self inspection made each day when soil
6. disturbing work is conducted;

7. Retain records of site self inspections for a minimum of one (1) year or
8. for six (6) months beyond the project duration, whichever is longer. Self inspection records include daily inspections for crusted or damp soil, track-out conditions and cleanup measures, daily water usage, dust palliative application records, etc. For Control Measures involving chemical or organic soil stabilization, records shall indicate the type of product applied, vendor name, label instructions for approved usage, and the method, frequency, concentration, and quantity of application; and

9. Install a sign on said property prior to commencing construction activity
10. that is visible to the public and conforming to County policy on Dust

Control Permit Design and Posting of Signage as described in 15.28.160, Posting of Informational Signs on Construction Sites.

11. When a construction is complete, or a site or part thereof becomes
12. inactive for a period of thirty (30) days or longer, long-term stabilization shall be implemented within ten (10) days following the cessation of active operations.

G. The following construction type activities do not require a Dust Control
H. Plan:

1. Landscaping by an individual at his/her place of residence;
2.
3. Emergency maintenance activities conducted by government agencies
4. on publicly maintained roads, road shoulders, rights-of-way and on public flood control facilities; or,
5. Dust Palliative application projects conducted solely for the purpose of
6. compliance with Open Areas and Vacant Lots subsection of this ordinance, wherein no grade elevation changes, no soil or rock is imported or exported, or no cut and fill operations occur. Importing of gravel or rock for use as a dust palliative is allowed under this subsection.

I. J. Any material which is tracked onto a paved roadway must be removed as quickly as safely possible. At a minimum all track-out must be cleaned up by the end of the workday or evening shift, as applicable. Exceptions to this provision may be made by the Nye County Planning Department for the construction, maintenance, and/or repair of paved roadways and for the application of traction materials for wintertime driving conditions.

K. To minimize fugitive dust generated during the loading of haul trucks, the
L. drop heights from front loaders shall not exceed 12 inches.

12 15.28.100 Unpaved Parking and Storage Areas
13

A. No new Unpaved Parking and Storage Areas, excluding single family
B. residential, shall be constructed within the Pahrump Regional Planning District except for the following:

1. Storage and handling of landscape, aggregate, and similar bulk materials
2. requires implementation of control measures as described in 15.28.090.B. below, and all access, parking, and loading areas used by on-road vehicles must be paved or chip sealed.
3. Storage and handling of non-rubber-tired vehicles or equipment requires
4. implementation of control measures as described in 15.28.090.B. below, and all access, parking, and loading areas used by rubber-tired vehicles must be paved or chip sealed.

5. Rural public trailheads, campgrounds, and similar facilities on Bureau of
6. Land Management administered lands are subject only to stabilization per 15.28.090.B.4-5 below prior to use.
7. Intermittent use for a period of 35 days or less during the calendar year
8. requires implementation of control measures as described in 15.28.090.B.4-5 below while utilized for vehicle parking.

C. All existing Unpaved Parking and Storage Areas greater than or equal to
D. 5,000 square feet shall implement the following Control Measures within one year of the effective date of this ordinance:

1. Pave; or
2.
3. Gravel to a minimum depth of 2" of gravel shall be applied; or
4.
5. Chip seal; or
6.
7. Apply dust palliative to unpaved areas in conformance with the
8. stabilization requirements in 15.28.140; or
9. Apply dust palliative to vehicle travel lanes within the parking lot in
10. conformance with the stabilization requirements in 15.28.140.

Any person subject to the requirements of this Regulation shall compile and retain records for one year that provide evidence of Control Measure application, by indicating type of treatment or Control Measure, extent of coverage, and date applied. That person shall also make those records available to the Nye County Planning Department or authorized representative upon request.

E. Waivers or variances of the requirement to reduce fugitive dust for
F. unpaved areas greater than or equal to 5,000 square feet are not permitted.

14 15.28.110 Open Areas and Vacant Lots
15

A. The owner of any Open Areas, Vacant Lots, or contiguous parcels with
B. Disturbed Areas in aggregate of more than one acre is required to control the release of fugitive dust from the parcel or contiguous parcels by implementing one or more of the following Best Practical Methods to the extent necessary to pass the stabilization tests described in 15.28.140:

1. Physical barriers and signs to prohibit access to the disturbed areas by
2. motorized vehicles;

3. The use of ground covers (e.g. gravel, decorative stone);
4.
5. The use of dust palliative (chemicals that bind soil together and retain moisture);
6. The use of show fencing (a fencing material that inhibits the wind);
7.
8. The use of windbreaks;
9.
10. The application of water in an amount and frequency adequate for the
11. soil to develop a crust; or
12. Revegetation.

C.

In the event that the disturbed areas are primarily the result of recurrent unauthorized use of the property by motorized vehicles, the application of water is not a suitable Control Measure without the erection and maintenance of physical barriers. The use of or parking on Open Areas and Vacant Lots for private purposes by the owner of such Open Areas and Vacant Lots shall not be considered vehicle use under this subsection.

D. Except for those portions of parcels zoned Residential
E. Estate or Residential Homestead and engaged in agricultural operations or occupied by livestock, each property owner shall implement Best Practical Methods within one year of the effective date of this ordinance.

F. Mechanized Weed Abatement and/or Trash Removal: If machinery is used to clear weeds and/or trash from Open Areas and Vacant Lots larger than one acre, then the following Control Measures shall be applied. Advisory Notice: In order to conserve water to the greatest extent practicable, the use of reclaimed water is highly encouraged.

1. Pre-wet surface soils before mechanized weed
2. abatement and/or trash removal occurs; and,
3. Maintain soil moisture while mechanized weed abatement
4. and/or trash removal is occurring; and,
5. Apply water, or apply a suitable dust palliative, in
G. compliance with the stabilization standard set forth in 15.28.140.A., apply gravel in compliance with the stabilization standard set forth in 15.28.140.B, or pave after mechanized weed abatement and/or trash removal occurs.

H. **15.28.120** **Track-out onto Paved Roadways**
I.

A. Any material which is tracked onto a pavedoadway must
J. be removed as quickly as safely possible. If the responsible party does not remediate the track-out, the Nye County Road Department take action and remediate the track-out. The remediation cost incurred by the Nye County Road Department will be recovered in accordance with Nye County Code 12.08.010. Exceptions to this provision may be made by the Nye County Planning Department for the application of traction materials for wintertime driving conditions.

16 15.28.130 Burning
17

A. B. Except as provided in 15.28.100.C below, no person shall kindle or maintain any open burning for the purpose of weed abatement, disposal of yard waste, conservation, disease control, game or range management, personnel training, elimination of hazards, agricultural purposes and management, recreational, educational or ceremonial purposes or authorize any such fire to be kindled or maintained on any public or private land without first having obtained a permit from the Town of Pahrump Fire Chief.

C. D. The burning of and rubbish is prohibited within the Pahrump Regional Planning District. The use of Burn Barrels for the purpose of burning refuse or rubbish is prohibited within the Pahrump Regional Planning District.

E. F. Outdoor fires may be used for heating, cooking, or branding in an appropriate fireplace or appliance at any time without permission.

1815.28.140 Stabilization Standards
A.

B. C. Drop Ball Method. The drop ball test method described in Subsection 15.28.140.A.1. through 15.28.140.A.4. shall be used to determine whether an Open Area or a Vacant Lot has a stabilized surface. Should a disturbed Open Area or Vacant Lot contain more than one type of disturbance, soil, or other characteristics which are visibly distinguishable, each representative surface must be tested separately for stability in an area that represents a random portion of the overall disturbed conditions of the site, utilizing the test method in

15.28.140.A.1. through 15.28.140.A.4. Depending upon test method results, include or eliminate each representative surface from the total size assessment of the Disturbed Surface Area(s).

1. 2. Soil Crust Determination (The Drop Ball Test): Drop a steel ball with a diameter of 15.9 millimeters (0.625 inches) and a mass ranging from 16-17 grams from a distance of 30 centimeters (one foot) directly above the soil surface. If blowsand is present, clear the blowsand from the surfaces on which the soil crust test method is conducted. Blowsand is defined as thin deposits of loose uncombined grains covering less than 50% of an Open Area or Vacant Lot which have not originated from the representative Open Area or Vacant Lot surface being tested.

3. 4. A sufficient crust is defined under the following conditions: once a ball has been dropped according to Subsection 90.4.1.1 of this Regulation, the ball does not sink into the surface, so that it is partially or fully surrounded by loose grains and, upon removal of the ball, the surface upon which it fell has not been pulverized, so that loose grains are visible.

5. 6. Randomly select each representative Disturbed Surfaces for the drop ball test by using a blind “over the shoulder” toss of a throwable object (for example, a metal weight with survey tape attached). Using the point of fall as the lower left hand corner, measure a 1-foot square area. Drop the ball three times within the 1-foot by 1-foot square survey area, using a consistent pattern across the survey area. The survey area shall be considered to have passed the Soil Crust Determination Test if at least two of the three times the ball was dropped, the results met the criteria in Subsection 15.28.140.A.2 of this chapter. Select at least two other survey areas that represent a random portion of the overall disturbed conditions of the site, and repeat this procedure. If the results meet the criteria of Subsection 15.28.140.A.2 of this chapter for all of the survey areas tested, then the site shall be considered to have passed the Soil Crust Determination Test and shall be considered sufficiently crusted.

7. 8. At any given site, the existence of a sufficient crust covering one portion of the site may not represent the existence or protectiveness of a crust on another portion of the site. Repeat the soil crust test as often as necessary on each portion of the overall conditions of the site using the random selection method set forth in Subsection 15.28.140.A.3 of this Regulation for an accurate assessment.

D. E. Rock Test Method: The Rock Test Method examines the wind-resistance effects of rocks and other non-erodible elements on

disturbed surfaces. Non-erodible elements are objects larger than 1 centimeter (cm) in diameter that remain firmly in place even on windy days. Typically, non-erodible elements include rocks, stones, glass fragments, and hardpacked clumps of soil lying on or embedded in the surface. Vegetation does not count as a non-erodible element in this method. The purpose of this test method is to estimate the percent cover of non-erodible elements on a given surface to see whether such elements take up enough space to offer protection against windblown dust. For simplification, the following test method refers to all non-erodible elements as “rocks.”

1. 2. Randomly select a 1 meter by 1 meter survey area within an area that represents the general rock distribution on the surface (a 1 meter by 1 meter area is slightly greater than a 3 foot by 3 foot area). Use a blind “over the shoulder” toss of a throwable object (for example, a metal weight with survey tape attached) to select the survey surface and using the point of fall as the lower left hand corner, measure a 1 meter by 1 meter survey area. Mark-off the survey area by tracing a straight, visible line in the dirt along the edge of a measuring tape or by placing short ropes, yard sticks, or other straight objects in a square around the survey area.

3. 4. Without moving any of the rocks or other elements, examine the survey area. Since rocks greater than 3/8 inch (1 cm) in diameter are of interest, measure the diameter of some of the smaller rocks to a get a sense of which rocks need to be considered.

5. 6. Mentally group the rocks greater than 3/8 inch (1cm) diameter lying in the survey area into small, medium, and large size categories. If the rocks are all approximately the same size, simply select a rock of average size and typical shape. Without removing any of the rocks from the ground, count the number of rocks in the survey area in each group and write down the resulting number.

7. 8. Without removing rocks, select one or two average-size rocks in each group and measure the length and width. Use either metric units or standard units. Using a calculator, multiply the length times the width of the rocks to get the average dimensions of the rocks in each group. Write down the results for each rock group.

9. 10. For each rock group, multiply the average dimensions (length times width) by the number of rocks counted in the group. Add the results from each rock group to get the total rock area within the survey area.

11. 12. Divide the total rock area, calculated in Subsection 15.28.140.B.5 of this Regulation, by two (to get frontal area). Divide the resulting number by the size of the survey area (make sure the units of measurement match), and multiply by 100 for percent rock cover. For example, the total rock area is 1,400 square centimeters, divide 1,400 by 2 to get 700. Divide 700 by 10,000 (the survey area is 1 meter by 1 meter, which is 100 centimeters by 100 centimeters or 10,000 centimeters) and multiply by 100. The result is 7% rock cover. If rock measurements are made in inches, convert the survey area from meters to inches (1 inch = 2.54 centimeters).

13. 14. Select and mark-off two additional survey areas and repeat the procedures described in 15.28.140.B.1 through 15.28.140.B.6 of this chapter. Make sure the additional survey areas also represent the general rock distribution on the site. Average the percent cover results from all three survey areas to estimate the average percent of rock cover.

15. F. If the average rock cover is greater than or equal to 20%, the surface is stable.

1915.28.150 Visual Determination of Opacity from Sources of Emissions.
A.

B. C. This method is applicable for the determination of the opacity of emissions from sources of visible emissions. The opacity standard established in this Ordinance for the Pahrump Regional Planning District is 20%.

D. E. Opacity shall be determined by a visual observation made by a currently certified evaluator in accordance with US EPA, 40 CFR Part 60, Appendix A, Method 9. A copy of the observer's certification must accompany the Visible Emission Evaluation (VEE).

F. G. Procedures: A certified opacity observer shall use the procedures set forth in Subsection 1 and Subsection 2.

1. H. The Time Averaged Opacity Method: This procedure is used for continuous fugitive dust emission sources such as earthmoving, grading, and trenching that produce emissions continuously. The certified observer should do the following:

a. I. Position: Stand at a position at least twenty (20) feet from the fugitive dust source in order to provide a clear view of the emissions with the sun oriented in the 140° sector to the back. Consistent as much as possible with maintaining the above requirements, make opacity observations from a position such that the line of sight is approximately perpendicular to the plume and wind direction. The observer may follow the fugitive dust

plume generated by mobile earth moving equipment, as long as the sun remains oriented in the 140° sector to the back. As much as possible, do not include more than one plume in the line of sight at one time.

a. J. Field Records: Record the name of the site, fugitive dust source type (e.g., earthmoving, grading, trenching), method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the fugitive dust source. Also, record the time, estimated distance to the fugitive dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position relative to the fugitive dust source, and color of the plume and type of background on the visible emission observation when opacity readings are initiated and completed.

a. K. Observations: Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of sight. Make opacity observations at a point just beyond where material is no longer being deposited out of the plume (normally three (3) feet above the surface from which the plume is generated). The initial observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume, but instead observe the plume momentarily at 15-second intervals. For fugitive dust from earthmoving equipment, make opacity observations at a point just beyond where material is not being deposited out of the plume (normally three (3) feet above the mechanical equipment generating the plume).

a. L. Recording Observations: Record the opacity observations to the nearest 5% every fifteen (15) seconds on a VEE record sheet. Each momentary observation recorded represents the average opacity of emission for a fifteen (15) second period. If a multiple plume exists at the time of an observation, do not record an opacity reading. Mark an "x" for that reading. If the equipment generating the plume travels outside of the field of observation, resulting in the inability to maintain the orientation of the sun within the 140° sector or if the equipment ceases operating, mark an "x" for the fifteen (15) second interval reading. Readings identified, as "x" shall be considered interrupted readings.

a. b. Data Reduction For Time-Averaged Method: For each set of twelve (12) or twenty four (24) consecutive readings, calculate the appropriate average opacity. Sets shall consist of consecutive observations, however, readings immediately preceding and following interrupted readings shall be deemed

consecutive and in no case shall two sets overlap, resulting in multiple violations.

1. 2. Intermittent Emissions Method: This procedure is for evaluating intermittent fugitive dust emissions. Intermittent fugitive dust sources include activities that produce emissions intermittently such as screening, dumping, and stockpiling where predominant emissions are produced intermittently.

a. M. Position: Stand at a position at least twenty (20) feet from the fugitive dust source in order to provide a clear view of the emissions with the sun oriented in the 140° sector to the back. Consistent as much as possible with maintaining the above requirements, make opacity observations from a position such that the line of sight is approximately perpendicular to the plume and wind direction. The observer may follow the fugitive dust plume generated by mobile earth moving equipment, as long as the sun remains oriented in the 140° sector to the back. As much as possible, do not include more than one plume in the line of sight at one time.

a. N. Field Records: Record the name of the site, fugitive dust source type (e.g., earthmoving, grading, trenching), method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the fugitive dust source. Also, record the time, estimated distance to the fugitive dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position relative to the fugitive dust source, and color of the plume and type of background on the visible emission observation when opacity readings are initiated and completed.

a. b. Observations: Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of sight. Make opacity observations at a point just beyond where material is no longer being deposited out of the plume (normally three (3) feet above the surface from which the plume is generated). Make two observations per plume at the same point, beginning with the first reading at zero (0) seconds and the second reading at five (5) seconds. The zero (0) zero second observation should begin immediately after a plume has been created above the surface involved.

c. d. Recording Observations: Record the opacity observations to the nearest 5% on a VEE record sheet. Each momentary observation recorded represents the average opacity of emissions for a five (5) second period.

e. f. Repeat Subsection 2c. and 2d.above until you have recorded a

total of 12 consecutive opacity readings. This should occur once six intermittent plumes on which you are able to take a proper readings have been observed. The 12 consecutive readings must be taken within the same period of observation but must not exceed 1 hour. Observations immediately preceding and following interrupted observations can be considered consecutive.

g. O. Average the 12 opacity readings together. If the average opacity reading equals 20% or lower, the source is in compliance with the opacity standard.

2015.28.160 Posting of Informational Signs on Construction Sites

A.

B. C. The Dust Control Plan sign shall conform to the following requirements:

1. 2. The signboard shall be constructed with materials capable of withstanding the harsh environment (e.g., strong winds, intense sunlight) of Nye County. The sign board must be visible from the road and not obstructed by other signs or materials. Nye County recommends the following materials at a minimum:

a. b. ¾” A/C laminated plywood board a minimum of 2 feet by 2 feet in dimension;

c. d. 4”x 4” posts with the base of the sign four feet above ground level;

e. f. Posts should be attached to the plywood board with a minimum of two (2) carriage bolts on each post;

g. h. The front surface of the signboard should be painted in the contrasting colors of a white background with black lettering, or

i. j. A minimum of 0.118” DiBond® Composite Material (aluminum sheets over a thermoplastic core) a minimum of 2 feet by 2 feet in dimension;

k. l. 1 7/8” galvanized steel center post with the base of the sign four feet above ground level;

m. n. The sign should be attached to the post with a single fastener to allow for heat expansion; and

o. p. The front surface of the signboard should have a white background with contrasting black lettering.

3. 4. The sign board shall contain the following information:

a. b. Project name;

c. d. Owner/Operator name;

e. f. Telephone Number of person responsible for dust control;

g. h. Nye County Planning Department telephone umber;

i. j. Building, site preparation, or conditional use permit number;

k. l. Project Acreage; and

m. n. Building, site preparation, or conditional use permit expiration date.

D. E. The signboard shall be designed to the following alpha and numeric text dimensions (sign boards written in longhand are unacceptable).

PROJECT NAME:	(Proj. Name)
OPERATOR:	**(Your Name)**
OPERATOR TELEPHONE NUMBER:	(Your Number)
NYE COUNTY— PLANNIG DEPARTMENT TELEPHONE NUMBER:	Pahrump Phone Number
BUILDING/OTHER PERMIT NUMBERS:	(Permit Number)
DUST CONTROL PLAN NUMBER	**(Plan Number)**
PROJECT ACREAGE:	**(Acreage)**

F.

G. that can be completed in two (2) weeks or less may request a variance to
H. the requirements of this section.

I. Highway construction activities that are limited to road repairs or in the right-of-way where the activity continually moves forward may use a sign that is mobile or apply for variance if the project is less than two (2) weeks in duration.

Effective Date. This Ordinance shall be in full force and effect from and after passage, approval, and publication as required by law, to wit, from and after the 21st day of March, 2005

Proposed on the 15th day of February, 2005.

Proposed by Commissioner Eastley.

Adopted on the 1st day of March, 2005.

Vote: Ayes:Commissioners: Hollis, Eastley, Trummell, Cox, Carver

Nays:Commissioners: None

Absent: Commissioners: None

BY: ___ ATTEST:

Candice Trummell, Chairman
Nye County Board of
County Commissioners

Sandra “Sam” Merlino
Clerk and Ex-Officio
Clerk of the Board

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APPENDIX J

BILL NO. 2004- 15

NYE COUNTY ORDINANCE NO. 289

SUMMARY: An Ordinance adding to Nye County Code Chapter 15.28, the Pahrump Regional Planning District Dust Control Regulations, and other matters properly related thereto.

TITLE: AN ORDINANCE ADDING TO NYE COUNTY CODE TITLE 15 BY ADDING CHAPTER 15.28, DUST CONTROL REGULATIONS EFFECTIVE WITHIN THE PAHRUMP REGIONAL PLANNING DISTRICT, PROVIDING DEFINITIONS, CONTROL MEASURES AND ENFORCEMENT; PROVIDING FOR AN EFFECTIVE DATE AND OTHER MATTERS PROPERLY RELATED THERETO.

WHEREAS, pursuant to NRS 278.020, for the purpose of promoting the health, safety and the general welfare of the residents of Nye County, the Nye County Board of County Commissioners (Board) is authorized and empowered to regulate and restrict the improvement of land and to control the location and soundness of structures; and

WHEREAS, it is recognized through air quality monitoring by the Nevada Division of Environmental Protection (NDEP) that, within the Nye County portion of State hydrographic area No. 162 (Pahrump Valley) federal PM_{10} air quality standards were exceeded several times over the last few years; and

WHEREAS, the Board entered into a Memorandum of Understanding with the U.S. Environmental Protection Agency (EPA), NDEP and the Town of Pahrump in order to defer action by EPA that would designate the Nye County portion of hydrographic area No. 162 as "nonattainment,"; and

WHEREAS, it is the responsibility of the Board to promote and protect the health and welfare of the inhabitants of the Pahrump Regional Planning District, which necessitates the control and regulation of activities affecting the quality of the air therein; and

WHEREAS, the purpose of these regulations to achieve and maintain levels of air quality which will protect human health and safety, prevent injury to plant and animal life, prevent damage to property, and preserve visibility and scenic, aesthetic and historic values of Pahrump Regional Planning District; and

WHEREAS, the quality of air is declared to be affected with the public interest and these regulations are enacted in the exercise of the police power of Nye County to protect the health, safety and general welfare of its people as required by State law;

NOW, THEREFORE, the Board of County Commissioners of the County of Nye, State of Nevada, in accordance with Chapter 445B of Nevada Revised Statutes, does hereby adopt, promulgate and order compliance therewith within the Pahrump Regional Planning District, the following regulations:

NYE COUNTY CODE CHAPTER 15.28 IS ADDED AS FOLLOWS:

15.28 DUST CONTROL REGULATIONS WITHIN THE PAHRUMP REGIONAL PLANNING DISTRICT

ARTICLE I: GENERAL PROVISIONS

15.28.010 Short Title

This Chapter shall be known, and may be cited as: The Dust Control Regulations of the Pahrump Regional Planning District.

15.28.020 Authority and Purpose

A. This Chapter is adopted pursuant to Nevada Revised Statute 445B.500 **(**Establishment and administration of program. . .) which at subsection 4 states, **"**Any county whose population is less than 100,000 or any city may meet the requirements of this section for administration and enforcement through cooperative or interlocal agreement with one or more other counties, or through agreement with the State, or may establish its own program for the control of air pollution. If the county establishes such a program, it is subject to the approval of the Commission."

B. The purpose of this Chapter is to:
   1. Control PM_{10} emissions at existing and active surface disturbance sites to achieve compliance with federal air quality standards;
   2. Improve air quality in order to protect the health, safety and general welfare of the inhabitants of the Pahrump Regional Planning District;

15.28.030 Jurisdiction

The provisions of this Chapter shall apply to the Pahrump Regional Planning District of Nye County, Nevada.

15.28.040 Enforcement and Penalties

A. Failure to comply with any requirement of this chapter constitutes a violation. The Nye County Planning Department shall issue a written notice of an alleged violation to any owner or operator for, including, but not limited to:
   1. Any violation of a provision of this chapter;
   2. Any violation of any provision, term, or condition of any permit that contains requirements stipulated in this chapter;

3. Failure to pay any fee; or
4. Falsification of any material statement, representation or certification in any application, notice or report.

B. To the extent that a violation is not regulated by State regulation, whenever the Nye County Planning Department believes that a regulation for the prevention, abatement or control of fugitive dust has been violated, it shall cause written notice to be served upon the person or persons responsible for the alleged violation. The notice shall specify:

1. The specific regulation violated;

2. The facts constituting the violation; and

3. The timeframe under which corrective action must taken.

C. Any person who violates any provision of this chapter shall be punished by a fine of not more than $10,000 for each day of each violation.

D. If, in the judgment of the Nye County Planning Department, any person is engaged in a violation of any provision of this chapter, the Nye County Planning Department may request that the District Attorney institute by indictment or information a criminal prosecution of the person.

E. The Nye County Planning Department shall issue a cease and desist order if the proposed construction, installation, alteration, or establishment will not be in accordance with the provisions of this Chapter, including all materials submitted to the Nye County Planning Department.

F. A person served with a cease and desist order shall immediately stop all activities specified in the cease and desist order, and may apply for its revocation at any time, setting forth the facts upon which he believes that the reasons for the issuance of the cease and desist order no longer exist. If the Nye County Planning Department finds that the reasons for the issuance of the cease and desist order no longer exist, the Nye County Planning Department shall withdraw the order promptly. If the Nye County Planning Department finds the reasons for the issuance of the order still exist, or that other reasons exist for continuing a cease and desist order in effect, the Nye County Planning Department shall, within 48 hours issue a written statement of the Nye County Planning Department's reasons for so finding.

15.28.050 Interpretation, Conflict, Severability and Constitutionality

A. In their interpretation and application, the provisions of this Chapter shall be held to be the minimum requirements. More stringent provisions may be required if it is demonstrated that such provisions are necessary to promote the public health, safety and welfare.

B. Where the conditions imposed by any provision of this Chapter are either more restrictive or less restrictive than comparable conditions imposed by any other provision of this Chapter or any other applicable law, ordinance, resolution, or rule of any kind, the regulations which are more restrictive and impose higher standards or requirements shall govern.

C. The provisions of this Chapter are severable. If a section, sentence, clause, or phrase of this Chapter is adjudged by a court of competent jurisdiction to be invalid or unconstitutional, the decision shall not affect the remaining portions of this Chapter.

ARTICLE II: DEFINITIONS

15.28.060 Generally

The words and terms used in this Chapter shall be defined as follows. All words used in the singular shall include the plural and the plural the singular. Each gender shall include the others; any tense shall include the other tenses. The word "shall" is mandatory and the word "may" is permissive.

15.28.070 Definitions

Agricultural Operations. The growing of crops for profit or the growing of crops for the purpose of providing life support to a considerable number of people, animals or fowl.

Best Practical Methods. Fugitive Dust Control Measures include, but are not limited to, phased clearing of the land; the use of dust palliative; the use of water; the use of snow fencing (a fencing material that inhibits the wind); the use of windbreaks; revegetation (excluding noxious weeds); the use of ground cover (e.g. gravel, decorative stone); physical barriers and signs to prohibit access to the disturbed areas by motorized vehicles; controls on single lot development approved as a part of a land division subject to these regulations; or cessation of operations when wind conditions exceed the operator's ability to control fugitive dust

Burn Barrel. A container made of metal or other fire resistance substance used to hold vegetative material while burning.

Commercial and Residential Construction. Construction of structures intended to be utilized solely as personal dwellings, including but not limited to single family homes, duplexes, fourplexes, apartments, condominiums, town houses; construction of institutional structures, schools, libraries, churches, hospitals, parks, office structures; shopping malls; residential streets within a subdivision; improvements to existing curbed paved roads; parking lots, parking lot structures; and construction of underground utilities for sanitary sewer, water, electricity, natural gas and communication.

Construction Activity. Any component of the following including, but not limited to: commercial and residential construction, flood control construction, and highway construction, including land clearing, maintenance, and land cleanup using machinery; soil and rock excavation or removal; soil or rock hauling; soil or rock crushing or screening; filling, compacting, stockpiling and grading; explosive blasting; demolition; implosion; handling of building materials capable of entrainment in air (e.g., sand, cement powder); dismantling or demolition of buildings; mechanized trenching; initial landscaping; operation of motorized machinery; driving vehicles on a construction site; or establishing and/or using staging areas, parking areas, material storage areas, or access routes to or from a construction site.

Control Measure. A technique, practice, or procedure used to prevent or minimize the generation, emission, entrainment, suspension, and/or airborne transport of fugitive dust.

Disturbed Area. A portion of the earth's surface (or material placed thereupon) which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed native condition, thereby increasing the potential for the emission of fugitive dust. Any area that fails the Drop Ball Test or Rock Test as defined in 15.28.130 is a Disturbed Area.

Dust Control Handbook. A guide used to select the appropriate Best Practical Methods appropriate for each construction activity that will be used to control fugitive dust and itemized in a Dust Control Plan.

Dust Control Plan. A plan to formalize a project-specific fugitive dust control program.

Dust Palliative. Hygroscopic material, non-toxic chemical stabilizer or other material which is not prohibited for ground surface application by the federal Environmental Protection Agency (EPA) or the Nevada Department of Environmental Protection (NDEP) or any applicable law or regulation, used as a treatment material for reducing fugitive dust emissions. Water, solutions of water and chemical surfactants, and foam are not Dust Palliatives for the purpose of these Regulations.

Emergency. A situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including Acts of God, that requires immediate corrective action to restore normal operations.

Dust Suppressant. Water, hygroscopic material, solution of water and chemical surfactants, foam, non-toxic chemical stabilizer or any other dust palliative which is not prohibited for ground surface application by the federal Environmental Protection Agency (EPA) or the Nevada Department of Environmental Protection (NDEP) or any applicable law or regulation, used as a treatment material for reducing fugitive dust emissions.

Fugitive Dust. Particulate matter~~,~~ which is not collected by a capture system that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening. Fugitive dust is entrained in the air and is caused from human and/or natural activities, such as but not limited to, movement of soil, vehicles, equipment, blasting, and wind.

Garbage. Putrescible animal and vegetable wastes resulting from the handling, storage, sale, preparation, cooking and serving of food.

Open Areas and Vacant Lots. An undeveloped tract of land~~,~~ which contains no approved or permitted buildings or structures**.**

Open Burning. Any fire from which the products of combustion are emitted into the atmosphere without passing through a stack, chimney, or duct.

Refuse. Refuse means any:

(a) Garbage.
(b) Sludge from a:
    (1) Plant that treats waste water.
    (2) Plant that treats the water supply.
    (3) Facility for controlling air pollution.
(c) Other discarded material, except yard waste, including solid, semi-solid, liquid or contained gaseous material, resulting from industrial or commercial operations or community activities.

Roads. All publicly dedicated rights-of way within the Pahrump Regional Planning District.

Rubbish. Nonputrescible solid waste, consisting of both combustible and noncombustible wastes such as paper, cardboard, abandoned automobiles, tin cans, wood, glass, crockery and similar materials.

Unpaved Parking and Storage Areas. Those parcels, or portions of parcels that include (but are not limited to) parking lots, automotive impound and/or dismantling yards, material and equipment handling and/or storage yards, salvage and/or wrecking yards, outside storage and/or display, and similar uses.

ARTICLE III: CONTROL MEASURES

15.28.090 Unpaved Parking and Storage Areas

A. No new Unpaved Parking and Storage Areas, excluding single family residential, shall be constructed within the Pahrump Regional Planning District except for the following:

    1. Storage and handling of landscape, aggregate, and similar bulk materials requires implementation of control measures as described in 15.28.090.B. below, and all access, parking, and loading areas used by on-road vehicles must be paved or chip sealed.

    2. Storage and handling of non-rubber-tired vehicles or equipment requires implementation of control measures as described in 15.28.090.B. below, and all access, parking, and loading areas used by rubber-tired vehicles must be paved or chip sealed.

    3. Rural public trailheads, campgrounds, and similar facilities on Bureau of Land Management administered lands are subject only to stabilization per 15.28.090.B.4-5 below prior to use.

    4. Intermittent use for a period of 35 days or less during the calendar year requires implementation of control measures as described in 15.28.090.B.4-5 below while utilized for vehicle parking.

B. All existing Unpaved Parking and Storage Areas greater than or equal to 5,000 square feet shall implement the following Control Measures within one year of the effective date of this ordinance:

    1. Pave; or

2. Gravel to a minimum depth of 2" of gravel shall be applied; or

3. Chip seal; or

4. Apply dust palliative to unpaved areas in conformance with the stabilization requirements in 15.28.130; or

5. Apply dust palliative to vehicle travel lanes within the parking lot in conformance with the stabilization requirements in 15.28.130.

Any person subject to the requirements of this Regulation shall compile and retain records for one year that provide evidence of Control Measure application, by indicating type of treatment or Control Measure, extent of coverage, and date applied. That person shall also make those records available to the Nye County Planning Department or authorized representative upon request.

C. Waivers or variances of the requirement to reduce fugitive dust for unpaved areas greater than or equal to 5,000 square feet are not permitted.

15.28.110 Construction Activities

A. A person engaged in Construction Activity shall employ Best Practical Methods to prevent the generation of fugitive dust.

B. Except when engaged in agricultural operations, no person may initiate an activity that results in Disturbed Areas unless Best Practical Methods are taken to prevent generation of fugitive dust during both the active development phases and thereafter if the property is to remain unoccupied, unused, vacant, or undeveloped.

C. For any project involving in aggregate one-half acre or more of Disturbed Area, a Dust Control Plan must be submitted to the Nye County Planning Department along with the building permit application, conditional use permit application, zoning change application, or site development plan. The Dust Control Plan shall specify the use of Best Practical Methods to control the generation of fugitive dust from each construction activity. The owner/operator will:

1. File a complete Dust Control Plan with the Nye County Planning Department before initiating Construction Activities.

2. Implement the Best Practical Methods as outlined in the Dust Control Plan.

3. Maintain a written record of self inspection made each day soil disturbing work is conducted;

4. Retain records of site self inspections for a minimum of one (1) year or for six (6) months beyond the project duration, whichever is longer. Self inspection records include daily inspections for crusted or damp soil, trackout conditions and cleanup measures, daily water usage, dust palliative application records, etc. For Control Measures involving chemical or organic soil stabilization, records shall indicate the type of product applied, vendor name,

label instructions for approved usage, and the method, frequency, concentration, and quantity of application; and

5. Install a sign on said property prior to commencing construction activity that is visible to the public and conforming to County policy on Dust Control Permit Design and Posting of Signage as described in 15.28.150, Posting of Informational Signs on Construction Sites.

6. When a construction is complete, or a site or part thereof becomes inactive for a period of thirty (30) days or longer, long-term stabilization shall be implemented within ten (10) days following the cessation of active operations.

D. The following activities do not require a Dust Control Plan:

1. Landscaping by an individual at his/her place of residence;

2. Emergency maintenance activities conducted by government agencies on publicly maintained roads, road shoulders, rights-of-way and on public flood control facilities; or,

3. Dust Palliative application projects conducted solely for the purpose of compliance with Open Areas and Vacant Lots subsection of this ordinance, wherein no grade elevation changes, no soil or rock is imported or exported, or no cut and fill operations occur. Importing of gravel or rock for use as a dust palliative is allowed under this subsection.

15.28.120 Open Areas and Vacant Lots

A. The owner of any Open Areas and Vacant Lots or contiguous parcels with Disturbed Areas in aggregate of more than one acre is required to control the release of fugitive dust from the parcel or contiguous parcels by implementing one or more of the following Best Practical Methods to the extent necessary to pass the stabilization tests described in 15.28.130:

1. Physical barriers and signs to prohibit access to the disturbed areas by motorized vehicles;
2. The use of ground covers (e.g. gravel, decorative stone)
3. The use of dust palliative (chemicals that bind soil together and retain moisture);
4. The use of snow fencing (a fencing material that inhibits the wind);
5. The use of windbreaks;
6. The application of water in an amount and frequency adequate for the soil to develop a crust; or
7. Revegetation.

In the event that the disturbed areas are primarily the result of recurrent unauthorized use of the property by motorized vehicles, the application of water is not a suitable Control Measure without the erection and maintenance of physical barriers. The use of or parking on Open Areas and Vacant Lots for private purposes by the owner of such Open Areas and Vacant Lots shall not be considered vehicle use under this subsection.

B. Except for those portions of parcels zoned Residential Estate or Residential Homestead and engaged in agricultural operations or occupied by livestock, each property owner shall implement Best Practical Methods within one year of the effective date of this ordinance.

C. Mechanized Weed Abatement and/or Trash Removal: If machinery is used to clear weeds and/or trash from Open Areas and Vacant Lots larger than one acre, then the following Control Measures shall be applied. Advisory Notice: In order to conserve water to the greatest extent practicable, the use of reclaimed water is highly encouraged.

1. Pre-wet surface soils before mechanized weed abatement and/or trash removal occurs; and,

2. Maintain soil moisture while mechanized weed abatement and/or trash removal is occurring; and,

3. Apply water, or apply a suitable dust palliative, in compliance with the stabilization standard set forth in 15.28.130.A., apply gravel in compliance with the stabilization standard set forth in 15.28.130.B, or pave after mechanized weed abatement and/or trash removal occurs.

15.28.130 Stabilization Standards

A. Drop Ball Method. The drop ball test method described in Subsection 15.28.130.A.1. through 15.28.130.A.4. shall be used to determine whether an Open Area or a Vacant Lot has a stabilized surface. Should a disturbed Open Area or Vacant Lot contain more than one type of disturbance, soil, or other characteristics which are visibly distinguishable, each representative surface must be tested separately for stability in an area that represents a random portion of the overall disturbed conditions of the site, utilizing the test method in 15.28.130.A.1. through 15.28.130.A.4. Depending upon test method results, include or eliminate each representative surface from the total size assessment of the Disturbed Surface Area(s).

1. Soil Crust Determination (The Drop Ball Test): Drop a steel ball with a diameter of 15.9 millimeters (0.625 inches) and a mass ranging from 16-17 grams from a distance of 30 centimeters (one foot) directly above the soil surface. If blowsand is present, clear the blowsand from the surfaces on which the soil crust test method is conducted. Blowsand is defined as thin deposits of loose uncombined grains covering less than 50% of an Open Area or Vacant Lot which have not originated from the representative Open Area or Vacant Lot surface being tested.

2. A sufficient crust is defined under the following conditions: once a ball has been dropped according to Subsection 90.4.1.1 of this Regulation, the ball does not sink into the surface, so that it is partially or fully surrounded by loose grains and, upon removal of the ball, the surface upon which it fell has not been pulverized, so that loose grains are visible.

3. Randomly select each representative Disturbed Surfaces for the drop ball test by using a blind “over the shoulder” toss of a throwable object (for example, a metal weight with survey tape attached). Using the point of fall as the lower left hand corner, measure a 1-foot square area. Drop the ball three times within the 1-foot by 1-foot square survey area, using a consistent pattern across the survey area. The survey area shall be considered to have passed the Soil Crust Determination Test if at least two of the three times the ball was dropped, the results met the criteria in Subsection 15.28.130.A.2 of this chapter. Select at least two other survey areas that represent a random portion of the overall disturbed

conditions of the site, and repeat this procedure. If the results meet the criteria of Subsection 15.28.130.A.2 of this chapter for all of the survey areas tested, then the site shall be considered to have passed the Soil Crust Determination Test and shall be considered sufficiently crusted.

4. At any given site, the existence of a sufficient crust covering one portion of the site may not represent the existence or protectiveness of a crust on another portion of the site. Repeat the soil crust test as often as necessary on each portion of the overall conditions of the site using the random selection method set forth in Subsection 15.28.130.A.3 of this Regulation for an accurate assessment.

B. Rock Test Method: The Rock Test Method examines the wind-resistance effects of rocks and other non-erodible elements on disturbed surfaces. Non-erodible elements are objects larger than 1 centimeter (cm) in diameter that remain firmly in place even on windy days. Typically, non-erodible elements include rocks, stones, glass fragments, and hardpacked clumps of soil lying on or embedded in the surface. Vegetation does not count as a non-erodible element in this method. The purpose of this test method is to estimate the percent cover of non-erodible elements on a given surface to see whether such elements take up enough space to offer protection against windblown dust. For simplification, the following test method refers to all non-erodible elements as “rocks.”

1. Randomly select a 1 meter by 1 meter survey area within an area that represents the general rock distribution on the surface (a 1 meter by 1 meter area is slightly greater than a 3 foot by 3 foot area). Use a blind “over the shoulder” toss of a throwable object (for example, a metal weight with survey tape attached) to select the survey surface and using the point of fall as the lower left hand corner, measure a 1 meter by 1 meter survey area. Mark-off the survey area by tracing a straight, visible line in the dirt along the edge of a measuring tape or by placing short ropes, yard sticks, or other straight objects in a square around the survey area.

2. Without moving any of the rocks or other elements, examine the survey area. Since rocks greater than 3/8 inch (1 cm) in diameter are of interest, measure the diameter of some of the smaller rocks to a get a sense of which rocks need to be considered.

3. Mentally group the rocks greater than 3/8 inch (1cm) diameter lying in the survey area into small, medium, and large size categories. If the rocks are all approximately the same size, simply select a rock of average size and typical shape. Without removing any of the rocks from the ground, count the number of rocks in the survey area in each group and write down the resulting number.

4. Without removing rocks, select one or two average-size rocks in each group and measure the length and width. Use either metric units or standard units. Using a calculator, multiply the length times the width of the rocks to get the average dimensions of the rocks in each group. Write down the results for each rock group.

5. For each rock group, multiply the average dimensions (length times width) by the number of rocks counted in the group. Add the results from each rock group to get the total rock area within the survey area.

6. Divide the total rock area, calculated in Subsection 15.28.130.B.5 of this Regulation, by two (to get frontal area). Divide the resulting number by the size of the survey area (make sure the units of measurement match), and multiply by 100 for percent rock cover. For example, the total rock area is 1,400 square centimeters, divide 1,400 by 2 to get 700. Divide 700 by 10,000 (the survey area is 1 meter by 1 meter, which is 100 centimeters by 100 centimeters or 10,000 centimeters) and multiply by 100. The result is 7% rock cover. If rock measurements are made in inches, convert the survey area from meters to inches (1 inch = 2.54 centimeters).

7. Select and mark-off two additional survey areas and repeat the procedures described in 15.28.130.B.1 through 15.28.130.B.6 of this chapter. Make sure the additional survey areas also represent the general rock distribution on the site. Average the percent cover results from all three survey areas to estimate the average percent of rock cover.

8. If the average rock cover is greater than or equal to 20%, the surface is stable.

15.28.140 Visual Determination of opacity of emissions from sources of visible emissions.

A. Applicability: This method is applicable for the determination of the opacity of emissions from sources of visible emissions The Time Averaged Method requires averaging of visible emission readings over a specific time period to determine the opacity of visible emissions. The Time Averaged Method is applicable to continuous emissions sources.

B. Principle: The opacity of emissions of a source of visible emissions is determined visually by an observer who has current certification approved by the Control Officer, as a qualified Visible Emissions Evaluator, using US EPA Method 9.

C. Procedures: A qualified Visible emissions Evaluator shall use the procedures set forth in Subsection 1.

1. Time Averaged Method: This procedure is for evaluating continuous fugitive dust emissions and is for the determination of the opacity of continuous fugitive dust emissions by a qualified observer. . The qualified observer should do the following:

a. Position: Stand at a position at least twenty (20) feet from the fugitive dust source in order to provide a clear view of the emissions with the sun oriented in the 140° sector to the back. Consistent as much as possible with maintaining the above requirements, make opacity observations from a position such that the line of sight is approximately perpendicular to the plume and wind direction. The observer may follow the fugitive dust plume generated by mobile earth moving equipment, as long as the sun remains oriented in the 140° sector to the back. As much as possible, do not include more than one plume in the line of sight at one time.

b. Field Records: Record the name of the site, fugitive dust source type (e.g., earthmoving, grading, trenching), method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the fugitive dust source. Also, record the time, estimated distance to the fugitive dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position relative to the fugitive dust source, and color of the plume and type of background on the visible emission observation when opacity readings are initiated and completed.

c. Observations: Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of sight. Make opacity observations at a point just beyond where material is no longer being deposited out of the plume (normally three (3) feet above the surface from which the plume is generated). The initial observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume, but instead observe the plume momentarily at 15-second intervals. For fugitive dust from earthmoving equipment, make opacity observations at a point just beyond where material is not being deposited out of the plume (normally three (3) feet above the mechanical equipment generating the plume).

d. Recording Observations: Record the opacity observations to the nearest 5% every fifteen (15) seconds on an observational record sheet. Each momentary observation recorded represents the average opacity of emission for a fifteen (15) second period. If a multiple plume exists at the time of an observation, do not record an opacity reading. Mark an "x" for that reading. If the equipment generating the plume travels outside of the field of observation, resulting in the inability to maintain the orientation of the sun within the 140° sector or if the equipment ceases operating, mark an "x" for the fifteen (15) second interval reading. Readings identified as "x" shall be considered interrupted readings.

e. Data Reduction For Time-Averaged Method: For each set of twelve (12) or twenty four (24) consecutive readings, calculate the appropriate average opacity. Sets shall consist of consecutive observations, however, readings immediately preceding and following interrupted readings shall be deemed consecutive and in no case shall two sets overlap, resulting in multiple violations.

15.28.150 Posting of Informational Signs on Construction Sites

A. The Dust Control Plan sign shall conform to the following requirements:

1. The signboard shall be constructed with materials capable of withstanding the harsh environment (e.g., strong winds, intense sunlight) of Nye County. Nye County recommends the following materials:

   a. ¾" A/C laminated plywood board 2 feet by 2 feet in dimension;

   b. 4"x 4" posts;

c. Posts should be attached to the plywood board with a minimum of two (2) carriage bolts on each post; and

d. The front surface of the signboard should be painted in the contrasting colors of a white background with black lettering.

2. The sign board shall contain the following information:

a. Project name;

b. Owner/Operator name;

c. Telephone Number of person responsible for dust control;

d. Nye County Planning Department telephone umber;

e. Building, site preparation, or conditional use permit number;

f. Project Acreage; and

g. Building, site preparation, or conditional use permit expiration date.

B. The signboard shall be designed to the following alpha and numeric text dimensions (sign boards written in longhand are unacceptable).

PROJECT NAME:	**(Proj. Name)**
OPERATOR:	**(Your Name)**
OPERATOR TELEPHONE NUMBER:	**(Your Number)**
NYE COUNTY— PLANNIG DEPARTMENT TELEPHONE NUMBER:	**Pahrump Phone Number**
BUILDING/OTHER PERMIT NUMBERS:	**(Permit Number)**
DUST CONTROL PLAN NUMBER	**(Plan Number)**
CHAPTER 2 PROJECT ACREAGE:	**(Acreage)**

Effective Date. This Ordinance shall be in full force and effect from and after passage, approval, and publication as required by law, to wit, from and after the 31st day of December, 2004

Proposed on the 3rd day of August, 2004

Proposed by Commissioner _____.

Adopted on the 17th day of August, 2004

Vote: Ayes: Commissioners:

Nays: Commissioners:

Absent: Commissioners:

BY: _____ ATTEST: _____

Henry E. Neth, Chairman
Nye County Board of
County Commissioners

Sandra "Sam" Merlino
Clerk and Ex-Officio
Clerk of the Board

Town of Pahrump
400 North Highway 160 · Pahrump, Nevada 89060 · 775-727-5107 · Fax 775-727-0345 · townoffice@pahrumpnv.org

November 8, 2005

Mr. Jean-Paul Huys,
Supervisor Planning Branch
Bureau of Air Quality Planning
901 S. Stewart Street
Carson City, NV 89701

Dust Control Measures Implemented during the 2005 Pahrump Fall Festival

Dear Mr. Huys:

The purpose of this letter is to document the control measures implemented by the Town of Pahrump to mitigate fugitive dust during the Pahrump Fall Festival of 2005. The specific dates of the Fall Festival were September 30 through October 2, 2005.

Control measures implemented included:

- Pre-festival watering of the rodeo grounds and baseball field three days prior to the event; and
- Gravelling of high traffic pedestrian areas, and vehicle parking areas; and
- Event site watering as needed throughout the event.

If you have any questions regarding this matter or if I can be of further assistance, please do not hesitate to call me at (775) 727-5107.

Sincerely,

Dave Richards, Town Manager

DR/meg

APPENDIX L

Average Background Concentration

Background Concentration		***16.5 µg/m3***					
Date	Conc	Date	Conc	Date	Conc	Date	Conc
5/1/2003		6/19/2003	36.9	8/7/2003	16.1	9/25/2003	20.5
5/2/2003		6/20/2003	33.6	8/8/2003	23.8	9/26/2003	14.4
5/3/2003		6/21/2003	36.2	8/9/2003	18.1	9/27/2003	16.8
5/4/2003		6/22/2003	29.0	8/10/2003	12.0	9/28/2003	15.3
5/5/2003		6/23/2003	45.5	8/11/2003	12.5	9/29/2003	21.5
5/6/2003	34.6	6/24/2003	13.3	8/12/2003	16.0	9/30/2003	
5/7/2003	16.3	6/25/2003	20.4	8/13/2003	13.7	10/1/2003	22.5
5/8/2003	20.9	6/26/2003	11.8	8/14/2003	14.8	10/2/2003	40.3
5/9/2003	8.3	6/27/2003		8/15/2003	47.6	10/3/2003	29.3
5/10/2003	4.9	6/28/2003		8/16/2003	18.9	10/4/2003	20.7
5/11/2003	11.5	6/29/2003		8/17/2003	22.9	10/5/2003	13.9
5/12/2003	19.6	6/30/2003		8/18/2003	18.8	10/6/2003	14.7
5/13/2003	23.0	7/1/2003	20.4	8/19/2003	51.0	10/7/2003	16.4
5/14/2003	31.2	7/2/2003	16.5	8/20/2003	10.2	10/8/2003	13.1
5/15/2003	28.4	7/3/2003	20.7	8/21/2003	12.3	10/9/2003	19.5
5/16/2003	25.8	7/4/2003	18.0	8/22/2003	9.1	10/10/2003	29.7
5/17/2003	31.2	7/5/2003	20.1	8/23/2003	8.1	10/11/2003	21.8
5/18/2003	13.0	7/6/2003	22.2	8/24/2003	16.2	10/12/2003	19.6
5/19/2003	12.5	7/7/2003	21.0	8/25/2003	14.8	10/13/2003	16.7
5/20/2003	11.1	7/8/2003	21.2	8/26/2003	6.1	10/14/2003	18.3
5/21/2003	20.1	7/9/2003	19.5	8/27/2003	11.4	10/15/2003	21.9
5/22/2003	28.1	7/10/2003	26.6	8/28/2003	19.4	10/16/2003	20.3
5/23/2003	30.9	7/11/2003	27.4	8/29/2003	0.0	10/17/2003	18.9
5/24/2003	30.4	7/12/2003	30.0	8/30/2003	0.0	10/18/2003	14.9
5/25/2003	40.6	7/13/2003	30.4	8/31/2003	0.0	10/19/2003	13.1
5/26/2003	22.2	7/14/2003	20.5	9/1/2003	11.6	10/20/2003	13.6
5/27/2003	22.9	7/15/2003	27.7	9/2/2003	15.5	10/21/2003	14.0
5/28/2003	24.9	7/16/2003	95.3	9/3/2003	17.6	10/22/2003	12.8
5/29/2003	34.2	7/17/2003	46.7	9/4/2003	12.2	10/23/2003	15.3
5/30/2003	38.1	7/18/2003	51.0	9/5/2003	39.9	10/24/2003	13.9
5/31/2003	26.9	7/19/2003	26.9	9/6/2003	22.3	10/25/2003	12.0
6/1/2003	20.7	7/20/2003	26.3	9/7/2003	22.3	10/26/2003	14.7
6/2/2003	22.3	7/21/2003	28.3	9/8/2003	22.3	10/27/2003	10.9
6/3/2003	29.5	7/22/2003	27.9	9/9/2003	37.4	10/28/2003	12.2
6/4/2003	26.0	7/23/2003	28.7	9/10/2003	37.7	10/29/2003	162.1
6/5/2003	20.8	7/24/2003	27.9	9/11/2003	8.8	10/30/2003	154.8
6/6/2003	32.0	7/25/2003	44.1	9/12/2003	9.2	10/31/2003	22.2
6/7/2003	24.4	7/26/2003	15.6	9/13/2003	15.3	11/1/2003	6.4
6/8/2003	27.2	7/27/2003	20.2	9/14/2003	19.2	11/2/2003	
6/9/2003	34.8	7/28/2003	20.1	9/15/2003	33.2	11/3/2003	
6/10/2003	41.2	7/29/2003	31.6	9/16/2003	34.5	11/4/2003	
6/11/2003	26.1	7/30/2003	19.7	9/17/2003	23.6	11/5/2003	
6/12/2003	32.4	7/31/2003	13.7	9/18/2003	22.6	11/6/2003	6.0
6/13/2003	27.9	8/1/2003	8.8	9/19/2003	20.5	11/7/2003	12.7
6/14/2003	25.7	8/2/2003	8.6	9/20/2003	12.7	11/8/2003	18.1
6/15/2003	25.6	8/3/2003	15.5	9/21/2003	12.9	11/9/2003	12.0
6/16/2003	20.5	8/4/2003	13.6	9/22/2003	12.9	11/10/2003	12.1
6/17/2003	19.0	8/5/2003	13.1	9/23/2003	14.3	11/11/2003	4.0
6/18/2003	32.1	8/6/2003	14.1	9/24/2003	31.7	11/12/2003	3.4

APPENDIX L

Average Background Concentration

Background Concentration		***16.5 µg/m3***					
Date	Conc	Date	Conc	Date	Conc	Date	Conc
11/13/2003	0.5	1/1/2004	5.9	2/19/2004	1.3	4/8/2004	2.6
11/14/2003	2.1	1/2/2004	2.9	2/20/2004	2.5	4/9/2004	2.2
11/15/2003	10.1	1/3/2004	2.0	2/21/2004	4.2	4/10/2004	3.0
11/16/2003	1.6	1/4/2004	2.0	2/22/2004	2.2	4/11/2004	2.6
11/17/2003	2.4	1/5/2004	5.3	2/23/2004	2.1	4/12/2004	6.7
11/18/2003	5.6	1/6/2004	8.5	2/24/2004	1.8	4/13/2004	24.4
11/19/2003	4.9	1/7/2004	8.2	2/25/2004	11.3	4/14/2004	17.0
11/20/2003	5.8	1/8/2004	4.5	2/26/2004	4.2	4/15/2004	26.4
11/21/2003	14.9	1/9/2004	8.5	2/27/2004	4.5	4/16/2004	12.7
11/22/2003	3.7	1/10/2004	5.0	2/28/2004	1.9	4/17/2004	11.2
11/23/2003	3.9	1/11/2004	4.9	2/29/2004	2.5	4/18/2004	7.2
11/24/2003	7.7	1/12/2004	11.3	3/1/2004	4.0	4/19/2004	14.0
11/25/2003	5.2	1/13/2004	8.1	3/2/2004	2.5	4/20/2004	15.2
11/26/2003	3.5	1/14/2004	12.7	3/3/2004	1.5	4/21/2004	32.8
11/27/2003	5.9	1/15/2004	9.3	3/4/2004	5.2	4/22/2004	13.2
11/28/2003	3.5	1/16/2004	4.1	3/5/2004	4.5	4/23/2004	1.7
11/29/2003	3.1	1/17/2004	7.9	3/6/2004	6.5	4/24/2004	28.8
11/30/2003	8.6	1/18/2004	7.2	3/7/2004	12.2	4/25/2004	7.7
12/1/2003	18.3	1/19/2004	7.9	3/8/2004	8.5	4/26/2004	15.0
12/2/2003	9.6	1/20/2004	9.8	3/9/2004	8.1	4/27/2004	15.9
12/3/2003	8.1	1/21/2004	7.0	3/10/2004	7.9	4/28/2004	101.7
12/4/2003	7.0	1/22/2004	5.9	3/11/2004	8.7	4/29/2004	8.8
12/5/2003	9.5	1/23/2004	9.0	3/12/2004	6.4	4/30/2004	7.8
12/6/2003	13.9	1/24/2004	15.7	3/13/2004	3.9		
12/7/2003	5.5	1/25/2004	13.3	3/14/2004	6.8		
12/8/2003	4.2	1/26/2004	16.2	3/15/2004	12.4		
12/9/2003	9.7	1/27/2004	14.1	3/16/2004	16.1		
12/10/2003	14.2	1/28/2004	16.7	3/17/2004	12.3		
12/11/2003	6.7	1/29/2004	8.3	3/18/2004	9.9		
12/12/2003	2.6	1/30/2004	19.7	3/19/2004	12.5		
12/13/2003	3.9	1/31/2004	9.4	3/20/2004	10.5		
12/14/2003	8.8	2/1/2004	8.7	3/21/2004	11.7		
12/15/2003	0.4	2/2/2004	13.8	3/22/2004	33.7		
12/16/2003	3.5	2/3/2004	2.9	3/23/2004	26.9		
12/17/2003	2.1	2/4/2004	10.6	3/24/2004	24.7		
12/18/2003	3.0	2/5/2004	1.4	3/25/2004	45.4		
12/19/2003	5.7	2/6/2004	3.7	3/26/2004	37.3		
12/20/2003	8.6	2/7/2004	5.7	3/27/2004	20.8		
12/21/2003	4.3	2/8/2004	0.7	3/28/2004	7.2		
12/22/2003	2.5	2/9/2004	2.8	3/29/2004	14.2		
12/23/2003	3.5	2/10/2004	3.6	3/30/2004	26.0		
12/24/2003	1.7	2/11/2004	3.7	3/31/2004	29.8		
12/25/2003	0.4	2/12/2004	6.3	4/1/2004	41.8		
12/26/2003	0.5	2/13/2004	7.1	4/2/2004	2.2		
12/27/2003	1.1	2/14/2004	5.5	4/3/2004	1.6		
12/28/2003	1.2	2/15/2004	6.9	4/4/2004	3.3		
12/29/2003	4.0	2/16/2004	10.4	4/5/2004	8.7		
12/30/2003	1.9	2/17/2004	11.3	4/6/2004	28.2		
12/31/2003	5.2	2/18/2004	20.0	4/7/2004	8.0		

MEMORANDUM

SUBJECT: Areas Affected by PM-10 Natural Events

FROM: Mary D. Nichols
Assistant Administrator
for Air and Radiation (6101)

TO: Director, Air, Pesticides and Toxics Management Division, Regions I and IV
Director, Air and Waste Management Division, Region II
Director, Air, Radiation and Toxics Division, Region III
Director, Air and Radiation Division, Region V
Director, Air, Pesticides and Toxics Division, Region VI
Director, Air and Toxics Division

Purpose

This memorandum sets forth the Environmental Protection Agency's (EPA's) policy for protecting public health in areas where the PM-10 (particulate matter having a nominal aerodynamic diameter less than or equal to 10 microns) national ambient air quality standards (NAAQS) are violated due to natural events. This policy will be followed in implementing the PM-10 NAAQS until it is superseded. [1] The

[1]This document contains EPA policy and, therefore, does not establish or affect legal rights or obligations. It does not establish a binding norm and it is not finally determinative of the issues addressed. In applying this policy in any particular case, the EPA will consider its applicability to the specific facts of that case, the underlying validity of the interpretations set forth in this memorandum, and any other relevant considerations, including

need for revisions to this policy will be considered by EPA, State agencies and the Federal Advisory Committee Act's Particulate Matter/Ozone/Regional Haze Subcommittee if the NAAQS for particulate matter are revised.

Three categories of natural events have been identified as affecting the PM-10 NAAQS: (1) volcanic and seismic activity, (2) wildland fires, and (3) high wind events. These PM-10

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any that may be required under applicable law and regulations.

natural events are defined further below. If other significant categories of natural events are identified, they may be added tothis policy in the future. [2]

Background

Prior to the 1990 Clean Air Act Amendments (Act), the Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events (exceptional events guideline) and Appendix K to 40 CFR, part 50, were issued by EPA to address, in part, the situation where natural sources strongly influence an area's PM-10 air quality. To avoid imposing potentially unreasonable State implementation plan (SIP) requirements on such areas, EPA provided for the exclusion of certain natural source data from nonattainment determinations. Thus, Appendix K provides, in part, that measured exceedances of the PM-10 NAAQS in an area may be discounted from decisions regarding nonattainment status if the data are shown to be influenced by uncontrollable events caused by natural sources of particulate matter. The 1986 exceptional events guideline contains EPA's guidance regarding the process States should follow when dealing with PM-10 air quality data that may be eligible for the adjustments authorized under section 2.4 of Appendix K.

Subsequently, the Act added section 188(f) which provides EPA with discretionary statutory authority to waive either a specific attainment date or certain planning requirements for serious PM-10 nonattainment areas that are impacted significantly
by nonanthropogenic sources. The EPA states in current PM-10 guidance documents that it interprets the section 188(f) waiver provision to mean that the data exclusion policy contained in Appendix K and the procedures described in the exceptional events guideline no longer apply.

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[2]Other types of temporary or exceptional events that can impact ambient PM-10 concentrations are structural fires, chemical spills, industrial accidents, and clean-up activities following a major disaster. The EPA's Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events, July 1986, is still applicable for treating air quality data resulting from these types of exceptional, anthropogenic events.

Under this natural events policy, those statements no longer reflect EPA's interpretation of the relationship between the section 188(f) waiver provision, Appendix K, and the exceptional events guideline and should be treated as revised to the extent described herein.

In establishing this natural events policy, EPA now believes that, under certain circumstances, it is appropriate to again exclude PM-10 air quality data that are attributable to uncontrollable natural events from the decisions regarding an area's nonattainment status. The discussion in the Appendix at the end of this memorandum briefly describes the legal rationale underlying this revised interpretation.

Description of Policy

The policy described in this document addresses PM-10 NAAQS violations caused by natural events in areas designated unclassifiable or attainment. It also addresses certain reclassification and redesignation questions for PM-10 nonattainment areas. This policy applies at the time the State determines that a PM-10 NAAQS has been violated due to natural events and addresses the question of what should be done to protect public health. The policy provides that EPA will: (1) exercise its discretion under section 107(d)(3) not to redesignate areas as nonattainment if the State develops and implements a plan to respond to the health impacts of natural events; and, (2) redesignate nonattainment areas as attainment by applying Appendix K, on a case-by-case basis, to discount data in circumstances where an area would attain but for exceedances that result from uncontrollable natural events.

The guiding principles followed in developing this policy are:

1. Protection of public health is the highest priority of Federal, State, and local air pollution control agencies.

2. The public must be informed whenever the air quality in an area is unhealthy. [3]

[3]The air quality is considered unhealthy whenever the 24-hour PM-10 NAAQS is exceeded. The short-term PM-10 NAAQS is exceeded when the 24-hour average PM-10 concentration is

3. All valid ambient air quality data should be submitted to the EPA Aerometric Information Retrieval System (AIRS) and made available for public access.

4. State and local agencies must take appropriate reasonable measures to safeguard public health regardless of the source of PM-10 emissions.

5. Emission controls should be applied to sources that contribute to exceedances of the PM-10 NAAQS when those controls will result in fewer violations of the standards.

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greater than 150 micrograms per cubic meter (µg/m ^{3}). The 24-hour NAAQS is violated when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is greater than 1.0, as determined by procedures described in Appendix K.

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Definition of PM-10 Natural Events

Volcanic and seismic activities: Ambient PM-10 concentrations caused by volcanic eruptions or seismic activity will be treated as due to natural events. Volcanic eruptions contribute to ambient PM-10 concentrations in two ways: (1) with emissions of primary PM-10 (e.g., ash), and (2) with emissions of precursor pollutants (e.g., sulfur dioxide) that react to form secondary particulate matter. Seismic activity (e.g., earthquakes) can also contribute to ambient PM-10 concentrations by shaking the ground, causing structures to collapse and otherwise raising dust (primary PM-10 emissions).

Also, emissions caused by anthropogenic activities that re-entrain volcanic ash during the first year (12 months) following an event will be treated as due to the natural event. One year is considered adequate time for cleaning ash deposits from areas where anthropogenic activities (e.g., vehicle traffic) would cause reentrainment. After 1 year, only emissions resulting from reentrainment of ash by high winds will be treated as due to a natural event.

Wildland fires: Ambient PM-10 concentrations caused by smoke from wildland fires will be treated as due to natural events if the fires are unwanted fires, not designated or managed as prescribed fires, and requiring appropriate suppression action by the wildlands manager. [4]

For the purposes of this policy, wildland fire natural events are limited to unwanted fires that do not meet a prescription (wildfires) and, therefore, require appropriate suppression actions. Wildland prescribed fires, burning of

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[4]The EPA recognizes and endorses the Federal Wildland Fire Policies adopted by the Departments of Interior and Agriculture in December 1995. These policies refer to all fires on sparsely populated lands managed by Federal agencies (e.g., national parks, national forests, grasslands, etc.) as wildland fires. The wildland fires term includes unwanted fires that do not meet a prescription (wildfires), management-ignited prescribed fires, and naturally-ignited fires that meet a prescription (prescribed natural fire). Only wildland fires that meet a prescription may be used to accomplish land and resource management objectives.

forest harvest residues, agricultural burning, and fires for land clearing are not covered by this natural events policy. The EPA will develop broader guidance in the near future to address issues raised by smoke emissions from wildland prescribed fires and other policy issues surrounding prevention of significant deterioration, conformity, visibility protection programs and regional haze.

High Winds : Ambient PM-10 concentrations due to dust raised by unusually high winds will be treated as due to uncontrollable natural events under the following conditions: (1) the dust originated from nonanthropogenic sources, or (2) the dust originated from anthropogenic sources controlled with best available control measures (BACM). [5]

The BACM must be implemented at contributing anthropogenic sources of dust in order for PM-10 NAAQS exceedances to be treated as due to uncontrollable natural events under this policy. Therefore, BACM must be implemented for anthropogenic dust sources contributing to NAAQS exceedances in attainment and unclassifiable areas and in moderate PM-10 nonattainment areas. In unclassifiable and attainment areas, BACM must be implemented for those contributing sources for which it has been defined within 3 years after the first NAAQS violation attributed to high wind events or from the date of this policy. In these same areas, implementation should be as expeditious as practicable for sources for which BACM are undefined.

The conditions that create high wind events vary from area to area with soil type, precipitation and the speed of wind gusts. Therefore, the State must determine the unusually high wind conditions that will overcome BACM in each region or subregion of the State.

Response to NAAQS Violations

If natural events cause ambient concentrations of PM-10 to violate a NAAQS, a plan should be developed to address future

[5]BACM for PM-10 are techniques that achieve the maximum degree of emissions reduction from a source as determined on a case-by-case basis considering technological and economic feasibility (59 FR 42010, August 16, 1994).

events.[6] A natural events action plan (NEAP) should include commitments to:

1. Establish public notification and education programs. Such programs may be designed to educate the public about the short-term and long-term harmful effects that high concentrations of PM-10 could have on their health and inform them that: (a) certain types of natural events affect the air quality of the area periodically, (b) a natural event is imminent, and (c) specific actions are being taken to minimize the health impacts of events.

2. Minimize public exposure to high concentrations of PM-10 due to future natural events. Programs to minimize public exposure should: (a) identify the people most at risk, (b) notify the at-risk population that a natural event is imminent or currently taking place, (c) suggest actions to be taken by the public to minimize their exposure to high concentrations of PM-10, and (d) suggest precautions to take if exposure cannot be avoided.

3. Abate or minimize appropriate contributing controllable sources of PM-10. Programs to minimize PM-10 emissions may include:

(a) volcanic and seismic activities - cleaning ash and dust deposits from areas where it would be re-entrained into the air by anthropogenic activities;

(b) wildland fires - prohibition of other burning activities during wildland fire events and steps to minimize fuel loadings in areas vulnerable to fire. Appropriate suppression actions, as determined by the wildlands manager, should be taken for fires that do not meet a prescription. The Federal Wildland Fire Policies require that fire management plans (FMP) be developed

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[6]The annual PM-10 NAAQS is violated if the expected average annual arithmetic mean concentration for the past 3 calendar years is greater than 50 µg/m ^{3}. Several elevated 24-hour PM-10 concentrations caused by natural events can potentially cause the annual NAAQS (which is an annual arithmetic mean of 24-hour concentrations) to be exceeded. If natural events cause the annual NAAQS to be violated, one NEAP for the area will cover both the 24-hour and annual NAAQS.

for all Federal lands with burnable vegetation. [7] It is anticipated that a goal of FMP will be to prevent NAAQS exceedances caused by wildland fires. Therefore, EPA envisions treating future FMP as acceptable plans for mitigating the public health impacts of smoke from wildland fires on Federal lands. Similar FMP should be developed to serve the same purpose for State and private wildlands.

(c) High winds - application of BACM 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. The BACM for windblown dust include, but are not limited to, application of chemical dust suppressants to unpaved roads, parking lots and open areas; dust suppression at construction sites; use of conservation farming practices on agricultural lands; tree

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[7]FMP are not in place for all Federal lands at this time. These plans will be developed by Federal land managers in conjunction with all stakeholders including Federal, State and local air management agencies. The FMP will integrate fire, as a natural ecological process, into land and resource management plans and will form the basis for management actions taken on wildland fires. The FMP must include prescriptions for any use of fire to meet land and resource management objectives.

The EPA anticipates that FMP will achieve an acceptable balance between forest health and public health concerns. Public health concerns caused by the potential effects of smoke on air quality from wildland fires will be addressed in FMP through smoke management plans and other measures. Smoke management plans attempt to minimize smoke impacts by monitoring fire behavior, meteorology and air quality during the fire and by publicly announcing forecasts of likely smoke conditions in communities impacted by ongoing fires. Since FMP will treat fire as a natural ecological process, the impact of wildland fires on air quality and regional haze is expected to increase in the future. Therefore, EPA will encourage Federal land management agencies to support air quality monitoring near fires, to assess air and haze impacts, and to develop a fire information data base and regional-scale smoke management plans.

rows and other physical wind breaks; restricting or prohibiting recreational off-road vehicle activities; and use of surface coverings. If BACM are not defined for the anthropogenic sources in question, step 4 below is required.

4. Identify, study and implement practical mitigating measures as necessary. The NEAP may include commitments to conduct pilot tests of new emission reduction techniques. For example, it may be desirable to test the feasibility and effectiveness of new strategies for minimizing sources of windblown dust through pilot programs. The plan must include a timely schedule for conducting such studies and implementing measures that are technologically and economically feasible.

5. Periodically reevaluate: (a) the conditions causing violations of a PM-10 NAAQS in the area, (b) the status of implementation of the NEAP, and (c) the adequacy of the actions being implemented. The State should reevaluate the NEAP for an area every 5 years at a minimum and make appropriate changes to the plan.

Form and Timing of the Response

The NEAP should be developed by the State air pollution control agency in conjunction with the stakeholders affected by the plan. Development of a NEAP for wildland fires should include input from Federal, State and private land managers in areas vulnerable to fire. Also, agencies responsible for suppressing fires and the citizens in the affected area should be involved in developing the plan. Development of a NEAP for high- wind events should include input from Federal, State and private managers of open desert lands, rangelands, agricultural lands; the construction industry; and organizations promoting the use of recreational off-road vehicles. Development of a NEAP for volcanic and seismic activities should include input from geophysicists and public works officials who will be responsible for ash removal and disposal. The plan should include documented agreements among the stakeholders as to planned actions, the implementation schedule, and the parties responsible for carrying out those actions.

At a minimum, States should develop NEAP for any areas where natural events cause or have caused a PM-10 NAAQS to be violated within 18 months of the violation or the date this policy is issued. The NEAP should be made available for public

review and comment and may, but are not required to, be adopted as revisions to the SIP if current SIP rules are not revised. Final plans should be submitted to EPA for review and comment.

Documentation of Natural Events

In circumstances where a State has reason to believe that natural events have caused measured exceedances of the NAAQS, the State is responsible for establishing a clear causal relationship between the measured exceedance and the natural event. Supporting documentation concerning the natural event could include filter analysis, meteorological data (e.g., wind speed and wind direction to support a source receptor relationship), modeling and receptor analysis, videos and/or photographs of the event and the resulting emissions, maps of the area showing sources of emissions and the area affected by the event, and news accounts of the event.

In the case of high-wind events where the sources of dust are anthropogenic, the State must document that BACM were required for those sources, and the sources were in compliance at the time of the high-wind event. If BACM are not required for some dust sources, the NEAP developed must include agreements with appropriate stakeholders to minimize future emissions from such sources using BACM.

The type and amount of documentation provided for each event should be sufficient to demonstrate that the natural event occurred, and that it impacted a particular monitoring site in such a way as to cause the PM-10 concentrations measured. This documentation should also provide evidence that, absent the emissions from the natural event, concentrations of PM-10 at the monitoring site under consideration would not cause a NAAQS exceedance.

The State should also make the documentation of natural events and their impact on measured air quality available to the public for review. This may be accomplished through a number of means, such as the publishing of newspaper announcements, periodic reports on air quality in the area, and through public hearings. This would serve to allow the public an opportunity to comment on whether the causal relationship between the natural event and the air quality measurement is convincing. Also, open hearings, where State and local regulatory boards review the documentation, are

useful forums in which to notify the public of potentially-important policy decisions.

When air quality data affected by a natural event are submitted to EPA for inclusion into the AIRS data base, the State should request that a flag be placed on the data to indicate that a natural event was involved. Documentation to support the flagged data should be maintained by the State. A copy of the documentation should be sent to the relevant EPA Regional Office monitoring representative no later than 180 days from the time the exceedance occurred or from the date of this policy for past events. The Regional Office will acknowledge receipt of the documentation and confirm that the natural event data were flagged within 60 days.

Current PM-10 Nonattainment Areas

States may request that a moderate nonattainment area not be reclassified as serious if it can be demonstrated that the area would attain the standards by the statutory attainment date but for emissions caused by natural events. Similarly, States may request redesignation of nonattainment areas to attainment if it can be demonstrated that the area would be meeting the NAAQS but for the emissions caused by natural events. This policy applies to emissions caused by natural events that have occurred since January 1, 1994. [8]

Approval of the above requests will be made by EPA on a case-by-case basis as determined by the sufficiency of the information submitted by the State to substantiate its claim. At a minimum, the State must have adopted a SIP for the area which demonstrates that, but for the emissions from natural events, the area would be able to attain the NAAQS. All of the requirements under section 107(d)(3)(E) of the Act must also be satisfied before an area can be redesignated to attainment. Those requirements include the submittal of a maintenance plan under section 175A, among other things. The

[8]The 1990 Amendments to the Clean Air Act required that control measures for anthropogenic sources in PM-10 nonattainment areas be implemented by the end of 1993. Therefore, this policy is made retroactive to January 1, 1994 so that NAAQS exceedances that may prevent areas from having sufficient clean air quality data to meet the standards will be covered by this policy.

maintenance plan for areas affected by natural events must include a NEAP.

Failure to Submit a Natural Events Action Plan

If a State fails to submit an adequate NEAP within 18 months in response to violations of a PM-10 NAAQS, EPA will notify the governor of the State that the area should be redesignated as nonattainment. The EPA's action, in such instances, would be authorized under the Act based on the conclusion that the health of citizens affected by such events is not being protected by the State.

Once the area violating the NAAQS is designated nonattainment, the State will be required to adopt a federally- enforceable SIP revision and address the sources of PM-10 emissions. Most likely, the SIP revision will include many of the same mitigative measures that could have been included in a NEAP.

APPENDIX

INTERPRETATION OF THE CLEAN AIR ACT (ACT) AS AMENDED IN 1990

Section 107(d)(4)(B) of the Act, as amended in 1990, provided EPA with the authority to designate initial areas as nonattainment for PM-10. Where such determinations involved an assessment of a potential PM-10 nonattainment area's air quality data, Congress expressly required such assessments to be made in accordance with Appendix K (section 107(d)(4)(B)(ii)). Since, upon enactment, Congress did not alter or revise Appendix K in any way, all the provisions of Appendix K, including section 2.4, remained applicable under the Act. Among other things, section 2.4 authorizes EPA to discount air quality data that are attributable to "an uncontrollable event caused by natural sources" of PM-10. Consequently, if an area's nonattainment problem was attributable to uncontrollable natural sources, application of section 2.4 of Appendix K would allow the data from the uncontrollable natural event to be excluded from regulatory determinations regarding an area's nonattainment status.

The Act also added section 188(f) which specifically addresses the adverse influence of nonanthropogenic PM-10 sources. This section provides EPA with discretionary authority to waive a specific attainment date for all areas or certain planning requirements for serious PM-10 nonattainment areas that are significantly impacted by nonanthropogenic sources.

The EPA previously interpreted the inclusion of such an express waiver provision in the 1990 Amendments as implying that Congress may have intended to limit the application of section 2.4 of Appendix K. The argument in support of this interpretation was that in contrast to section 2.4 of Appendix K, which contemplates the discounting of data due to emissions from certain events, the section 188(f) waiver provisions envisioned that adjustments prompted by adverse air quality impacts that are attributable to data from natural uncontrollable sources of PM-10 should be made only after all the data have been considered and the area has been designated nonattainment.

The EPA, however, believes that this is not the only reasonable interpretation of the Act's provisions that is possible. The EPA believes that the congressional directive in section 107(d)(4)(B)(ii) to base designation decisions on

Appendix K, and the differences in how section 188(f) and Appendix K address issues related to emissions from natural sources, indicate that it is not necessary to conclude that section 188(f) limits the application of section 2.4 of Appendix K. Rather, it is possible to view both section 188(f) and section 2.4 of Appendix K as being operative and dealing with related but distinct aspects of the issues connected with emissions from natural PM-10 sources.

The starting point for this analysis is section 107(d)(4)(B)(ii), which, by operation of law, designated nonattainment any area with data showing a violation of the PM-10 NAAQS before January 1, 1989 "(as determined under part 50, appendix K of title 40 of the Code of Federal Regulations)." In that section, Congress required the use of Appendix K in designating areas nonattainment without indicating that any portion of Appendix K was to be considered invalid. Thus, that provision indicates that Congress intended designation decisions to be based on that appendix, including the procedures in section 2.4 regarding exceptional events.

Notably, section 2.4 defines an exceptional event as "an uncontrollable event caused by natural sources of particulate matter or an event that is not expected to recur at a given location." Thus, exceptional events include both uncontrollable natural sources and nonrecurring events related to any kind of source of particulate matter. Section 2.4 further provides that data from such events may be discounted (i.e., EPA may compensate for such data or exclude such data entirely from decisions regarding an area). Consequently, Appendix K contemplates that data from "exceptional events" may be discounted, including, but not limited to, data due to emissions from uncontrollable natural events.

On the other hand, section 188(f), which was enacted by Congress in the same amendments as section 107(d)(4)(B)(ii), discusses PM-10 natural sources in terms of whether they are "anthropogenic" or "nonanthropogenic." It does not discuss such sources or emissions in the terms of Appendix K (i.e., it does not discuss matters in terms of exceptional or nonexceptional events, nor does it distinguish between uncontrollable and controllable natural sources). In general, section 188(f) provides that EPA may waive certain requirements where EPA determines that anthropogenic sources do not contribute significantly to a violation of the PM-10 standard, and that EPA may waive a specific attainment date if

it determines that the contribution of nonanthropogenic emissions to a violation is demonstrated to be "significant."

As Congress, without express exception, directed the use of Appendix K in determining whether areas were attaining the PM-10 standard, EPA believes it is reasonable to interpret section 188(f) as not limiting the use of that appendix, provided that such an interpretation does not render section 188(f) invalid. The EPA believes that the approach taken in this natural events policy does not do that, and that it represents a reasonable harmonization of these provisions of the Act and the language of Appendix K regarding exceptional events.

Under EPA's revised interpretation, section 188(f) continues to have force and effect. As section 188(f) addresses the issues in terms of "anthropogenic" and "nonanthropogenic" sources, not in terms of exceptional events (which are defined in Appendix K as both uncontrollable natural events and nonrecurring events from both natural and other sources), it is possible to view the waivers of section 188(f) as being potentially applicable only to areas that are designated nonattainment because the data do not qualify for adjustment under Appendix K. For such areas, it may be reasonable and appropriate to grant waivers from some requirements that simply do not make sense in light of the nature of the sources generating the PM-10 problem in the area. Thus, EPA's new interpretation does not render section 188(f) meaningless. Consequently, EPA believes that the exercise of its discretionary authority under Appendix K to discount or de-weight air quality data that are affected by uncontrollable natural sources of PM-10 is reasonable and appropriate.