

MEMORANDUM

TO: Mr. Ron Williams
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FROM: Mr. Richard F. DeLong
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DATE: October 9, 2003

SUBJECT: Pahrump Valley Air Quality Management; Control Measures Assessment

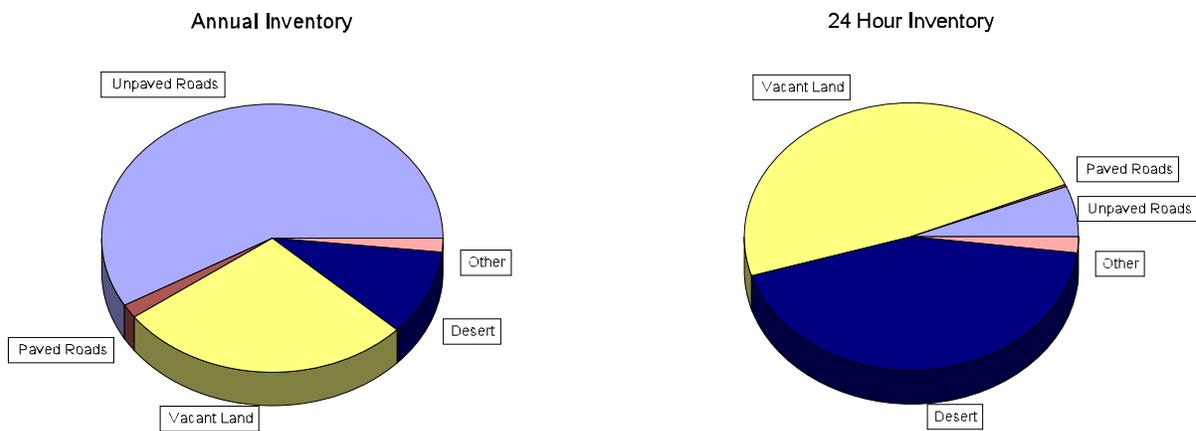
Introduction

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 (PM₁₀). The EPA has set 24-hour and annual standards for the concentration of PM₁₀ in the air to ensure that the air is not unhealthy. These standards have been exceeded in the Pahrump area, based on current PM₁₀ monitoring in the Town of Pahrump (Town) and most of the sources of PM₁₀ 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 PM₁₀ standards in the Town. Failure to do so will lead to a PM₁₀ 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 PM₁₀ 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 PM₁₀ 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 PM₁₀: 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 PM₁₀ 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.