

APPENDIX I
AIR QUALITY

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Construction Emissions. Emissions during the construction period were quantified to determine the potential impacts on regional air quality. Calculations of volatile organic compounds (VOCs), nitrogen oxides (NO_x), CO, and PM₁₀ emissions from construction, grading, and paving activities were performed using USEPA emission factors compiled in the *California Environmental Quality Air Quality Handbook* (South Coast Air Quality Management District 1993), *Calculations Methods for Criteria Air Pollution Emission Inventories* (Jagielski and O'Brien 1994), and *Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations* (O'Brien and Wade 2002). The emission factors for building construction include contributions from engine exhaust emissions (i.e., construction equipment, material handling, and workers' travel) and fugitive dust emissions (e.g., from grading activities). Demolition emissions (from removal of old pavement) include fugitive dust and transport of demolition debris offsite. Site preparation and grading emissions include fugitive dust from ground disturbance, plus combustive emissions from heavy equipment operating during the construction period. Paving emissions include combustive emissions from bulldozers, rollers, and paving equipment, plus emissions from a dump truck hauling pavement materials to the site.

Identifying the ROI for air quality requires knowledge of the types of pollutants being emitted, pollutant emission rates, topography, and meteorological conditions. The ROI for inert pollutants (pollutants other than O₃ and its precursors) is generally limited to a few miles downwind from a source. The ROI for photochemical pollutants, such as O₃, can extend much farther downwind than for inert pollutants. Ozone is a secondary pollutant formed in the atmosphere by photochemical reactions of previously emitted pollutants, or precursors. Ozone precursors are mainly VOCs and NO_x. In the presence of solar radiation, the maximum effect of VOCs and NO_x emissions on O₃ levels usually occurs several hours after they are emitted and many miles from the source. Federal regulations at 40 CFR 81 have defined certain air quality control regions (AQCR), which were originally designated based on population and topographic criteria closely approximating each air basin. The potential effects on air quality would typically be confined to the air basin in which the emissions occur.

Federal Air Quality Standards. Under the authority of the Clean Air Act (CAA), the EPA has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety.

These federal standards, known as the National Ambient Air Quality Standards (NAAQS), represent the maximum allowable atmospheric concentrations of seven "criteria pollutants": O₃, CO, PM₁₀, particulate matter less than 2.5 μm in diameter (PM_{2.5}), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead (Pb). The NAAQS are defined in terms of concentration (e.g., parts per million [ppm] or micrograms per cubic meter [μg/m³]) determined over various periods of time (averaging periods). Short-term standards (1-hour, 8-hour, or 24-hour periods) were established for pollutants with acute health effects and may not be exceeded more than once a year. Long-term standards (annual periods) were established for pollutants with chronic health effects and may never be exceeded.

Based on measured ambient criteria pollutant data, the EPA designates areas of the U.S. as having air quality equal to or better than the NAAQS (attainment) or worse than the NAAQS

(nonattainment). Nonattainment regions, upon achieving attainment, are considered to be maintenance areas for a period of 10 or more years. Areas are designated as unclassifiable for a pollutant when there is insufficient local ambient air quality data for the EPA to form a basis for an attainment designation. For the purpose of applying air quality regulations, unclassifiable areas are treated similar to areas that are in attainment of the NAAQS.

State Air Quality Standards. Under the CAA, state and local agencies may establish Ambient Air Quality Standards (AAQS) and regulations of their own, provided these are at least as stringent as the federal requirements. For selected criteria pollutants, the State of New Mexico has established its AAQS (NMAC 2006). New Mexico standards are equivalent to the NAAQS for PM₁₀, O₃, and Pb. New Mexico AAQS are more restrictive than federal standards for CO, NO₂, and SO₂. In addition, New Mexico regulates emissions of total suspended particulates (TSP), hydrogen sulfide (H₂S), and total reduced sulfur, three pollutants for which there are no federal standards. The New Mexico AAQS are not intended to provide a sharp dividing line between satisfactory and unsatisfactory air quality. They are, however, numbers that represent objectives that will preserve the state's air resources (ACC 2004).

State Implementation Plan. For nonattainment regions, individual states are required to develop a State Implementation Plan (SIP) designed to eliminate or reduce the severity and number of NAAQS violations, with an underlying goal to bring state air quality conditions into (and maintain) compliance with the NAAQS by specific deadlines. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS in each state.

Prevention of Significant Deterioration. Section 162 of the CAA further established the goal of prevention of significant deterioration (PSD) of air quality in all international parks; national parks that exceeded 6,000 acres; and national wilderness areas and memorial parks that exceeded 5,000 acres if these areas were in existence on August 7, 1977. These areas were defined as mandatory Class I areas, while all other attainment or unclassifiable areas were defined as Class II areas. Under CAA Section 164, states, tribal nations, and the federal government have the authority to redesignate certain areas as (nonmandatory) Class I areas (e.g., a National Park or wilderness area established after August 7, 1977). Class I areas (mandatory and nonmandatory) are those where any appreciable deterioration of air quality is considered significant. Class II areas are those where moderate, well-controlled growth could be permitted. Class III areas are those designated by the governor of a state as requiring less protection than Class II areas. No Class III areas have yet been so designated. The PSD requirements affect construction of new major stationary sources in the PSD Class I, II, and III areas and are a preconstruction permitting system.

Visibility. CAA Section 169A established the additional goal of prevention of further visibility impairment in PSD Class I areas. Visibility impairment is defined as atmospheric discoloration and a reduction in the visual range. Determination of the significance of an activity on visibility in a PSD Class I area is typically associated with evaluation of stationary source contributions. The EPA is implementing a Regional Haze rule for PSD Class I areas that will address contributions from mobile sources and pollution transported from other states or regions. Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I areas. Decreased visibility may potentially result from elevated concentrations of PM₁₀ and SO₂ in the lower atmosphere.

General Conformity. CAA Section 176(c), General Conformity, established certain statutory requirements for federal agencies with proposed federal activities to demonstrate conformity of the proposed activities with each SIP for attainment of the NAAQS. In 1993, EPA issued the final rules for determining air quality conformity. Federal activities must not:

- Cause or contribute to any new violation;
- Increase the frequency or severity of any existing violation; or
- Delay timely attainment of any standard, interim emission reductions, or milestones in conformity to a SIP's purpose of eliminating or reducing the severity and number of NAAQS violations or achieving attainment of NAAQS.

General conformity applies only to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual thresholds identified in the rule, a conformity determination is required of that action. The thresholds become more restrictive as the severity of the nonattainment status of the region increases. The State of New Mexico Environmental Improvement Board has implemented the federal general conformity regulations in Title 20, Chapter 2, Part 98 of the state's Air Quality Regulations.

Stationary Source Operating Permits. In New Mexico, the New Mexico Air Quality Bureau (NMAQB) Permitting Section processes permit applications for industries that emit pollutants into the air. The Permitting Section consists of two groups: (1) New Source Review (NSR); and (2) Title V. The NSR is responsible for issuing construction permits, technical and administrative revisions or modifications to existing permits, Notices of Intent for smaller industrial operations, and No Permit Required determinations. Construction Permits (under NSR) are required for all sources with the potential emission rate greater than 10 pounds per hour or 25 tons per year of criteria pollutants (e.g., NO₂ and CO). Air quality permits must be obtained for new or modified sources. Title V of the CAA Amendments of 1990 requires states to issue Federal Operating Permits for major stationary sources. A major stationary source in an attainment or maintenance area is a facility (e.g., plant, base) or an activity that emits more than 100 tons per year of any one criteria air pollutant; 10 tons per year of a hazardous air pollutant; or 25 tons per year of any combination of hazardous air pollutants. The purpose of the permitting rule is to establish regulatory control over large, industrial activities and to monitor their impact upon air quality (NMAQB 2006).

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