

3.2 AIR QUALITY

Air quality within the VPA and its surrounding airshed has the potential to be affected by such activities as emissions from the construction and operation of oil and gas facilities, access roads, and other elements of management activities. This section describes the existing air quality resource of the VPA and the applicable air regulations that would apply to the alternatives.

3.2.1 Regional Overview

The climate in the VPA is characterized as arid, with cold winters and hot summers. Annual precipitation (rainfall and snowfall) in the VPA ranges from 8 to 35 inches and is dependent largely on elevation and aspect. Temperature inversions, where air temperatures near the ground are colder than the temperatures above, are common in the basins and other lower elevational areas of the VPA. Inversions commonly occur in winter when snow accumulation on the ground combines with short daylight hours. In summer, inversions dissipate rapidly when early morning sunlight warms the air near the ground surface. Inversions can hinder air pollutant dispersion by preventing emissions from mixing with the ambient air in the vertical direction. On average, mean morning mixing heights in the area are approximately 1,000 feet; mean afternoon mixing heights are more than 7,800 feet (Holzworth 1972). Mean morning mixing heights tend to be lowest in summer and fall, and highest in winter.

Air pollutant dispersion in the VPA is also dependent on wind direction and speed. Although wind direction is highly influenced by the local terrain, the wind direction in the VPA tends to be southeasterly, i.e. blowing from the southeast to northwest. Figure 3.2.1 presents a representative windrose for the VPA.

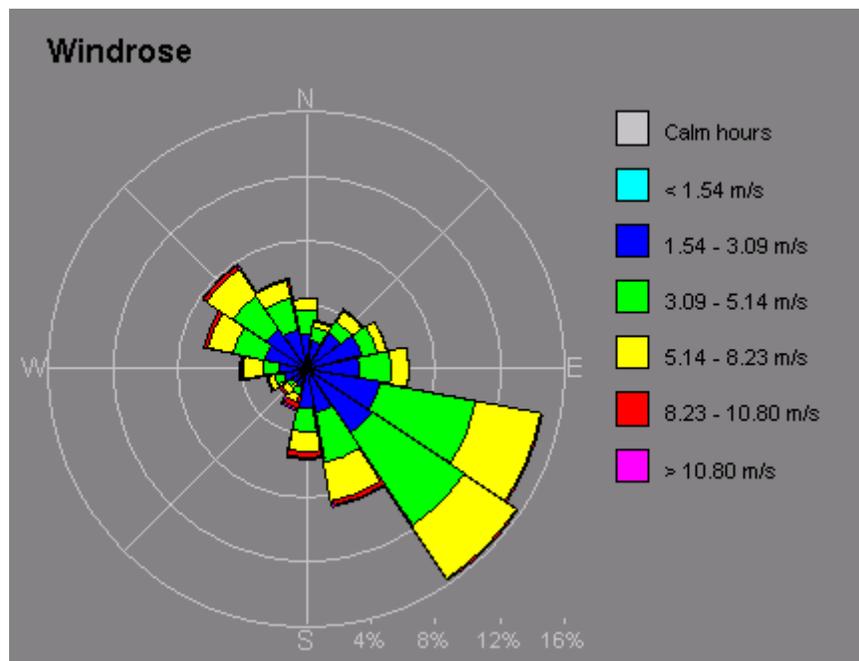


Figure 3.2.1. Windrose for the VPA (Year 1994)

3.2.2 Baseline Air Quality

The VPA is located in a region designated as being in attainment for all air-borne pollutants (EPA 2001). Table 3.2.1 presents the existing ambient air quality in the VPA and the National Ambient Air Quality Standards (EPA 2002). The data listed are the most recent available data for each pollutant. If there is no monitor located within the boundary of the VPA, the data from the nearest representative monitor are listed. Monitoring stations in Orem, Provo, Magna and San Juan County are located at distances of greater than 150 miles from Vernal. As most of these monitoring stations are located in urban areas with high emissions, monitoring data are expected to lead to over-estimates of the pollutant concentrations that may be found in the VPA.

Pollutant	Averaging Period	NAAQS	Maximum Monitored Concentration	Monitor Location (in Utah)
CO	1-hour	35 ppm	6.7 ppm	Orem
	8-hour	9 ppm	3.6 ppm	Orem
NO ₂	Annual	0.053 ppm	0.022 ppm	Provo
SO ₂	3-hour ^b	0.5 ppm	0.028 ppm	Magna
	24-hour	0.14 ppm	0.007 ppm	Magna
	Annual	0.03 ppm	0.001 ppm	Magna
Ozone	1-hour	0.12 ppm	0.072 ppm	San Juan County
PM	24-hour	150 µg/m ³	6 µg/m ³	Uintah County
	Annual	50 µg/m ³	3.3 µg/m ³	Uintah County

^a Emission inventory data are provided by Ms. Deborah McMurtrie, UDEQ, in a March 28, 2002, email forwarded by Ms. Teri Bateman, UDEQ.

^b SO₂ 3-hour standard is a secondary NAAQS that sets limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

3.2.3 Regulatory Setting

The U.S. Environmental Protection Agency (EPA) delegates the authority to manage air resources to the State when a State Implementation Plan (SIP) is approved and implemented. The UDEQ currently has approved SIPs for air quality programs under its jurisdiction, and the EPA has delegated authority for all air quality issues in the State of Utah, excluding Uintah and Ouray Indian Reservation lands. The air quality in Utah is currently regulated by the Utah Division of Air Quality (UDAQ). All stationary sources of air pollution are subject to the air quality regulations and standards under the UDEQ administration.

A portion of the VPA is located within the Uintah and Ouray Indian Reservation. The UDEQ does not have authority to administer air quality programs on Uintah and Ouray Indian Reservation lands. Sources located within Native American Indian Territory are not regulated by any SIP approved programs; and they are subject only to the federal air quality programs under the authority of EPA Region 8.

The Federal Clean Air Act (FCAA) amendments of the 1990s require all states to control air pollution emission sources so that national ambient air quality standards (NAAQS) are met and maintained.

In addition to these requirements, the National Park Service (NPS) Organic Act requires the NPS to protect the natural resources of the lands it manages from the adverse effects of air pollution.

Air quality in a given location is defined by pollutant concentrations in the atmosphere and is generally expressed in units of parts per million (ppm) or micrograms per cubic meter (micro-g/m³). One measure of a pollutant is its concentration in comparison to a national and/or state ambient air quality standard. The NAAQS are established by the EPA and are outlined in the Code of Federal Regulations (40 CRF 50). These standards represent the maximum allowable atmospheric concentrations that may occur without jeopardizing public health and welfare, and include a reasonable margin of safety to protect the more sensitive individuals in the population. The NAAQS represent maximum acceptable concentrations that generally may not be exceeded more than once per year, except the annual standards, which may never be exceeded. An area that does not meet the NAAQS is designated as a nonattainment area on a pollutant-by-pollutant basis. The State of Utah has adopted the NAAQS as state air quality standards.

3.2.4 Regional Air Emissions

The VPA covers Daggett, Duchesne, and Uintah Counties and part of Grand County. Currently, the emission sources within the VPA consist of mostly oil and gas development facilities and mining sites. The Utah Department of Environmental Quality (UDEQ) provided the emission inventory for the VPA (McMurtrie 2002). The types of facilities in each county are summarized in Table 3.2.2 below.

TABLE 3.2.2. EMISSION SOURCES IN THE VPA^a	
County	Source Category
Daggett	Natural gas compressor stations
Duchesne	Asphalt plant Natural gas compressor stations Gas plants
Grand	None ^b
Uintah	Asphalt plant Natural gas compressor station Gas wells Phosphate operation
^a Emission inventory data are provided by Ms. Deborah McMurtrie, UDEQ, in a March 28, 2002, email forwarded by Ms. Teri Bateman, UDEQ. ^b There is no emission source located within the portion of Grand County under the administration of the Vernal Field Office.	

3.2.4.1 National Ambient Air Quality Standards (NAAQS) and Criteria

The significant criteria for potential air quality impacts include NAAQS requirements for CO, PM₁₀, PM_{2.5}, SO₂ and NO₂/NO_x. Applicable federal and state criteria are presented in Table 3.2.3.

TABLE 3.2.3. APPLICABLE AMBIENT AIR QUALITY STANDARDS			
Pollutant	Averaging Period	National Ambient Air Quality Standards	State Ambient Air Quality Standards
		(µg/m³)	(µg/m³)
CO	1-Hour ^a	40,000	
	8-Hour ^a	10,000	
PM ₁₀	24-Hour ^a	150	
	Annual ^b	50	
PM _{2.5}	24-Hour ^a	65	
	Annual ^b	15	
SO ₂	3-Hour ^a	1,300	700 ^c
	24-Hour ^a	365	260 ^d
	Annual ^b	80	60 ^d
NO ₂	Annual ^b	100	
^a Not to be exceeded more than once per year. ^b Annual arithmetic mean not to be exceeded. ^c Colorado standard, more stringent than the NAAQS. ^d Wyoming standard, more stringent than the NAAQS.			

3.2.4.2 Criteria for Prevention of Significant Deterioration (PSD)

The applicable air quality criteria also include the PSD increments, which limit the incremental increase of PM₁₀, SO₂ and NO₂ above the legally defined baseline levels. A PSD Increment is the maximum increase in ambient concentrations that is allowed to occur above a baseline concentration for a pollutant. The increments are evaluated for both the Class I and Class II areas. PSD Increments have not yet been established for PM_{2.5} and are not addressed in increments analysis.

The NAAQS and Utah Air Quality Standards set absolute upper limits to specific air pollutant concentrations at all locations where the public has access. All NEPA analysis comparisons to the PSD Class I and II increments are intended to evaluate a threshold of concern for potential impacts, and do not represent a regulatory PSD Increment Consumption Analysis. The determination of PSD increment consumption is a regulatory agency responsibility conducted as part of the New Source Review process, which also includes a Federal Land Management Agency’s evaluation of potential impacts to Air Quality Related Values (AQRV) such as visibility, aquatic ecosystems, flora, fauna, etc.

Although the EPA has revised the PM_{2.5} (particulate matter less than 2.5 microns in effective diameter) Ambient Air Quality Standard, this revised limit will not be enforceable until formally approved. However, due to public concern and possible impacts on human health and visibility,

PM_{2.5} is being considered in this analysis. Current NAAQS and Utah Air Quality Standards, and PSD Class I and II increments are discussed below. The increment standards addressed in this study are listed in Table 3.2.4.

Pollutant	Averaging Period	Class I Increment (µg/m³)	Class II Increment (µg/m³)
PM ₁₀	24-Hour	8	30
	Annual	4	17
SO ₂	3-Hour	25	512
	24-Hour	5	91
	Annual	2	20
NO ₂	Annual	2.5	25

The PSD Class I Areas included in the analysis are listed in Table 3.2.5. Limitations on the additional amount of air pollution allowed in these areas from major emitting facilities are strict. The remainder of the project area is classified a PSD Class II, where similar but less stringent incremental pollution limits apply. These increments are shown in Table 3.2.4.

Potential air quality impacts from the Proposed Action and Alternatives are analyzed and reported in Chapter 4. However, the analysis is prepared solely under the requirements of NEPA, in order to assess and disclose “reasonably foreseeable” impacts to both the public and the Bureau decision maker before a Record of Decision is issued. Due to the preliminary nature of the NEPA air quality assessment, it should be considered a reasonable upper estimate of potential impacts. Actual impacts at the time of development may be lower.

UDEQ is the air quality regulatory agency responsible for determining potential impacts once detailed development plans have been made, subject to applicable air quality laws, regulations, standards, control measures and management practices. Therefore, the State of Utah has the ultimate responsibility for reviewing and permitting air pollutant emission sources before they become operational.

Mandatory Federal Class I Area (unless otherwise specified) ^a	Managing Agency ^b	Class Category	State
Arches NP	NPS	Class I	UT
Brown NWR	NPS	Class II	UT
Canyonlands NP	NPS	Class I	UT
Capitol Reef NP	NPS	Class I	UT
High Uintas WA	FS	Class II ^c	UT
Ouray NWR	FS	Class II	UT

Mandatory Federal Class I Area (unless otherwise specified) ^a	Managing Agency ^b	Class Category	State
USFS Request (Areas near Mount Olympus, Twin Peaks, Lone Peak, Mount Timpanogos, and Mount Nebo)	FS	Class II	UT
Dinosaur NM	NPS	Class II ^{c, d}	UT/CO
Flaming Gorge NRA	FS	Class II ^e	UT/WY

^a NP= National Park, WA=Wilderness Area, NWR=National Wildlife Refuge, NM=National Monument, NRA=National Recreation Area.
^b NPS= USDI - National Park Service. FS= USDA - Forest Service.
^c Sensitive Class II areas included in the analysis. (Archer, 2001a and Archer, 2002a)
^d SO2 increments in these Class II areas in Colorado have the same protection as Class I areas.
^e Sensitive Class II areas included in the analysis per CDPHE. (Machovec, 2002)

Representative background concentrations recommended by UDEQ and other appropriate sources were added to the modeled results for comparison to the appropriate ambient air quality standards as outline in Table 3.2.6.

Pollutant	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	8-Hour ($\mu\text{g}/\text{m}^3$)	3-Hour ($\mu\text{g}/\text{m}^3$)	1-Hour ($\mu\text{g}/\text{m}^3$)	Monitoring Station Location Description
NO ₂	10	-	-	-	-	Recommended by the Utah Dept. of Environmental Quality. ^a
SO ₂ ^b	5	10	-	20	-	Estimates based on the 1993 PSD application for Bonanza Power Plant, Deseret Generation and Transmission.
PM ₁₀	10	28	-	-	-	Recommended by the Utah Department of Environmental Quality. ^a
CO ^c	-	-	4,236	-	6,984	Grand Junction, Mesa County, Colorado. (Highest monitored concentration in 2001.) ^d

^a Background concentrations recommended by the Utah Department of Environmental Quality in memorandum No. DAQP-003-03, dated on January 17, 2003 from Richard W. Sprott to Yu Shan Huang.
^b The SO2 background concentrations are provided by Tom Orth, UDEQ. (Orth 2002)
^c The CO concentrations are reported in ppm: 8-hr, 3.7 ppm; 1-hr, 6.1 ppm.
^d Monitoring station was nearest to the Vernal RMP area. This background concentration is a conservatively high estimate for the Vernal RMP area since it was measured in an urban area.

3.2.4.3 Visibility Criteria

Federal Class I areas, which include certain national wilderness areas, national memorial parks, and national parks, are afforded the highest level of protection. Ambient air increments that apply within Class I areas are more stringent than those that apply to other areas (i.e., Class II areas). In addition to more stringent ambient air increments, Class I areas are also protected by the regulation of AQRVs within their borders. Federal Land Managers (FLMs) are responsible for the management of Class I areas. Mandatory Federal Class I areas (sensitive areas) considered in the Air Quality modeling methodology for the Vernal and Roan Plateau air analysis were Dinosaur National Monument, Canyonlands National Park, Flaming Gorge NRA, Arches National Park, and Capitol Reef National Park.

3.2.5 Consistency with Non-Bureau Plans

The Vernal Field Office manages its resources consistent with other plans not administered by BLM. EPA Region 8 regulates all air quality related issues in the Uintah and Ouray Indian Reservation, while the UDEQ regulates the air quality related issues in the state of Utah, except on Indian lands.

In addition to the federal and state air quality programs mentioned in the previous section, BLM is also committed to manage the VPA consistent with the Utah Smoke Management Plan (SMP). The BLM, U.S. Forest Service, National Park Service, Utah Department of Natural Resources, U.S. Fish and Wildlife Service, and the UDEQ currently have a signed Memorandum of Understanding (MOU) in place to regulate the prescribed burning activities in Utah (UDAQ 1999). The MOU requires BLM to report all prescribed fire activities to the SMP program coordinator. UDEQ has incorporated the SMP into UAC R307-204 in 2001. Each prescribed fire must first be approved by the SMP through issuance of a burn permit in order to assure that the burning activity will not cause dangerous air quality conditions.

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