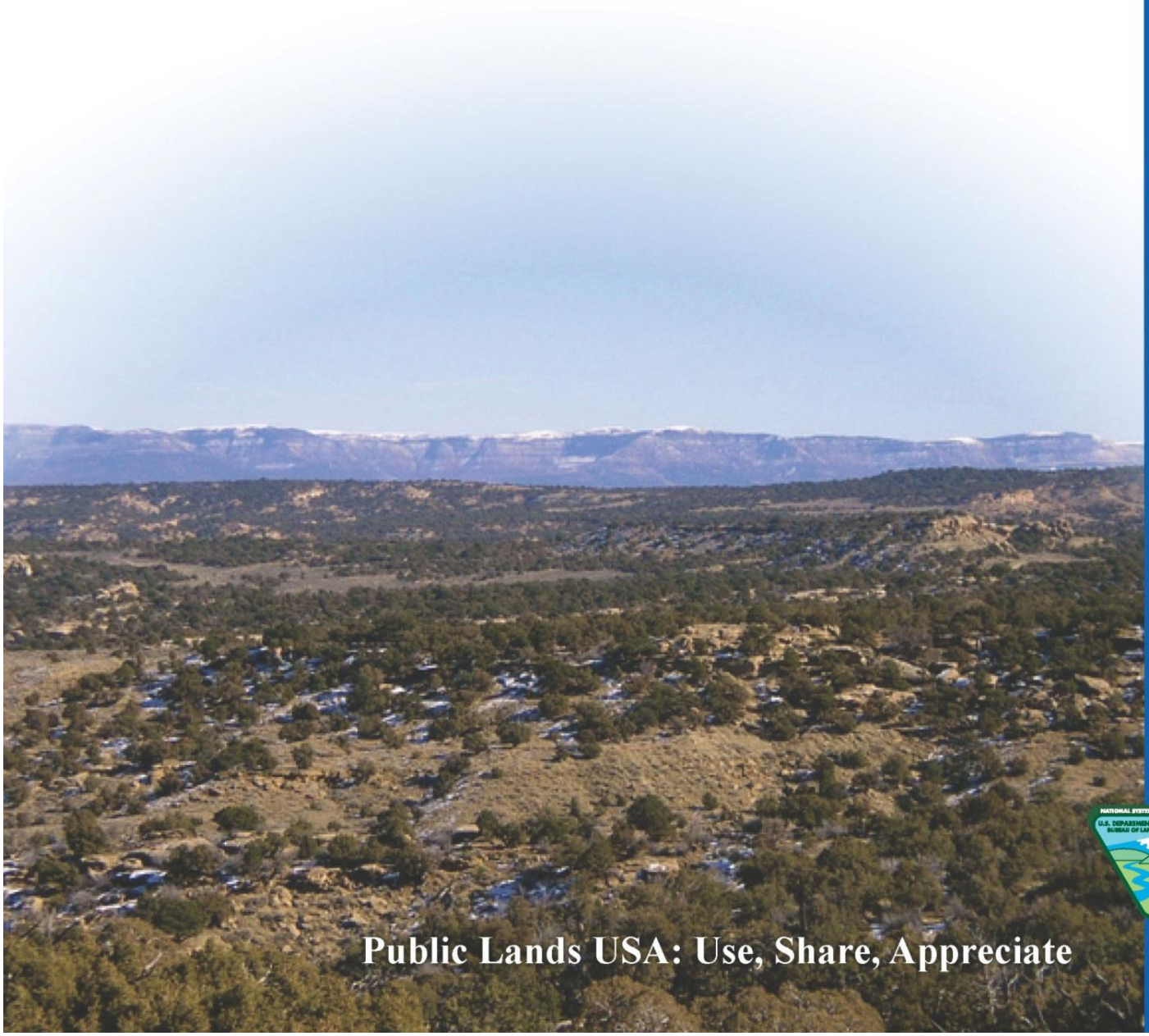
BLM

Appendix F

Air Quality Impacts



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1.0 Air Quality Impacts from the Air Resources Technical Support Document

The Air Resources Technical Support Document (ARTSD) provides detailed information on the emissions inventory and modeling procedures and results. Tables and maps from the ARTSD that are referenced in the Chapter 4 Impacts Analysis are provided again here as a quick reference for the reader. Table F-42 provides a crosswalk to explain the source within the ARTSD of the tables and figures referenced in Chapter 4.

2.0 Near-Field Impacts

Table F-1. Near-Field Criteria Pollutant Predicted Concentrations

Criteria Pollutant	Avg. Period	Year	Concentration (μg/m³, [ppm])			Ambient Standard (μg/m³, [ppm])		Percent of NAAQS
			Modeled	Back-ground	Total [a]	NAAQS	CAAQS	
CO	1-hour	2001	1177.07	4,656	**5,833 [5.104]**	40,000 [35]	40,000 [35]	15%
		2002	821.04	4,656	**5,477 [4.792]**			14%
		2003	769.74	4,656	**5,426 [4.748]**			14%
CO	8-hour	2001	261.78	2,328	**2,590 [2.266]**	10,000 [9]	10,000 [9]	26%
		2002	280.15	2,328	**2,608 [2.282]**			26%
		2003	275.16	2,328	**2,603 [2.278]**			26%
NO_2	1-hour	2001	94.91	32.08	**126.99 [b] [0.0673]**	189 [0.100]	NA	67%
		2002		32.08				
		2003		32.08				
NO_2	Annual	2001	10.73	30.6	**41.33 [0.0219]**	100 [0.053]	100 [0.053]	41%
		2002	9.01	30.6	**39.61 [0.0210]**			40%
		2003	9.41	30.6	**40.01 [0.0212]**			40%
PM_{10}	24-hour	2001	61.75	56	**117.75 [NA]**	150 [NA]	150 [NA]	78%
		2002	69.58	56	**125.58 [NA]**			84%
		2003	74.79	56	**130.79 [NA]**			87%
$PM_{2.5}$	24-hour	2001	5.17	24	**29.17 [b] [NA]**	35 [NA]	NA	83%
		2002		24				
		2003		24				
$PM_{2.5}$	Annual	2001	0.49	9	**9.49 [NA]**	12 [NA]	NA	68%
		2002	0.41	9	**9.41 [NA]**			67%
		2003	0.44	9	**9.44 [NA]**			67%
SO_2 [c]	1-hour	2001	6.91	80.82	**87.73 [b] [0.0337]**	196 [0.075]	NA	45%
		2002		80.82				
		2003		80.82				
SO_2 [d]	3-hour	2001	4.70	66.6	**71.30 [0.0274]**	1,300 [0.5]	700 [0.27]	5%
		2002	5.58	66.6	**72.18 [0.0278]**			6%
		2003	4.05	66.6	**70.65 [0.0272]**			5%

CAAQS = Colorado Ambient Air Quality Standards

μg/m³ = micrograms per cubic meter

NAAQS = National Ambient Air Quality Standards

[a] For short-term (non-annual) averaging times, compliance with the CO, PM_{10}, and SO_2 NAAQS is based on the highest-second-highest (H2H) short-term concentration, while compliance with the short-term $PM_{2.5}$ and NO_2 NAAQS is based on the highest 3-year average eighth-highest short-term concentration. Short-term modeled concentrations reported here are highest-second-highest for CO, PM_{10}, and SO_2, and highest-eighth-highest for $PM_{2.5}$ and NO_2. Annual (long-term) modeled concentrations are highest concentrations which are required for an annual average NAAQS compliance demonstration.

[b] Due to 1-hour NO_2, 24-hour $PM_{2.5}$, and 1-hour SO_2 NAAQS standard formats that use a three-year average to determine compliance, only one total concentration is reported for the three-year modeling period.

[c] The new 1-hour SO_2 standard became effective on August 23, 2010. To comply with the 1-hour SO_2 standard, the three-year average of the annual 99th percentile of the 1-hour daily maximum concentration must be less than or equal to 195.5 μg/m³ (75 ppb).

[d] As of August 23, 2010, this standard transitioned from a primary standard (protecting human health) to a secondary standard (protecting environment) at the federal level. However, state air quality agencies have discretion to continue enforcing this standard as a primary standard. The 3-hour standard will become obsolete at the federal level once attainment/nonattainment designations under the new 1-hour SO_2 standard are promulgated by USEPA.

Table F-2. Near-Field 1-Hour HAP Maximum Concentration Comparison to RELs

HAP	Modeled Year	Maximum 1-Hour Modeled Concentration (μg/m³)	Background Concentration (μg/m³) [a]	Maximum Total Concentration (μg/m³)	REL (μg/m³)	Percent of REL (%)
Benzene	2001	481.19	10.11	491.30	1,300 [b]	38
	2002	482.86	10.11	492.97		38
	2003	499.61	10.11	509.72		39
Ethylbenzene	2001	10.84	4.30	15.14	350,000	0.4
	2002	10.97	4.30	15.27		0.4
	2003	11.18	4.30	15.48		0.4
Formaldehyde	2001	16.75	17.30	34.04	94 [b]	36
	2002	3.37	17.30	20.67		22
	2003	2.69	17.30	19.99		21
n-Hexane	2001	2083.45	NA [d]	2083.45	390,000 [c]	0.5
	2002	2090.75	NA [d]	2090.75		0.5
	2003	2351.72	NA [d]	2351.72		0.6
Toluene	2001	642.40	47.08	689.47	37,000 [b]	2
	2002	668.29	47.08	715.36		2
	2003	673.90	47.08	720.98		2
Xylene	2001	331.06	20.70	351.76	22,000 [b]	2
	2002	338.98	20.70	359.68		2
	2003	345.71	20.70	366.41		2

NA = not applicable

μg/m³ = micrograms per cubic meter

REL = Reference Exposure Level

[a] Background concentrations are values averaged for years 2006 and 2007, based on monitored 24-hour maximum values collected in Grand Junction, Colorado (CDPHE-APCD 2008a).

[b] USEPA Air Toxics Database, Table 2 (USEPA, 2005a).

[c] No REL available for these HAPs. Values shown are from Immediately Dangerous to Life or Health (IDLH/10), USEPA Air Toxics Database, Table 2 (USEPA, 2005a).

[d] Monitored data was not available for this pollutant.

Table F-3. Near-Field Annual Average Predicted Concentrations Compared to RfCs

Pollutant	Year	Annual Modeled Concentration (μg/m³)	Background Concentration (μg/m³) [a]	Maximum Total Concentration (μg/m³)	RfC [b] (μg/m³)
Benzene	2001	12.95	1.66	14.61	30
	2002	11.58	1.66	13.24	
	2003	12.21	1.66	13.87	
Ethylbenzene	2001	0.35	0.64	0.99	1,000
	2002	0.31	0.64	0.95	
	2003	0.33	0.64	0.97	
Formaldehyde	2001	0.06	4.02	4.08	9.8
	2002	0.06	4.02	4.08	
	2003	0.06	4.02	4.08	
n-Hexane	2001	13.67	NA [c]	13.67	200
	2002	12.34	NA [c]	12.34	
	2003	12.99	NA [c]	12.99	
Toluene	2001	20.13	4.14	24.27	400
	2002	17.95	4.14	22.09	
	2003	18.94	4.14	23.08	
Xylene	2001	9.69	2.95	12.64	100
	2002	8.65	2.95	11.60	
	2003	9.12	2.95	12.07	
Diesel PM [d]	2001	0.40	NA [c]	0.40	5
	2002	0.34	NA [c]	0.34	
	2003	0.35	NA [c]	0.35	

μg/m³ = micrograms per cubic meter

RfC = Reference Concentration for Chronic Inhalation

[a] Background concentrations are values averaged for years 2006 and 2007, based on annual average values from data collected in Grand Junction, Colorado (CDPHE-APCD 2008a).

[b] USEPA Air Toxics Database, Table 1 (USEPA, 2005b).

[c] Monitored data was not available for this pollutant.

[d] USEPA 2007.

Table F-4. Near-Field Cancer Risk From Long-Term Exposure

HAP	Year	Analysis	Carcinogenic RfC URF [a] 1/(µg/m³)	Exposure Adj. Factor	Cancer Risk (per million)
Benzene	2001	MLE	7.8×10^{-6}	0.095	9.59
		MEI	7.8×10^{-6}	0.29	29.29
	2002	MLE	7.8×10^{-6}	0.095	8.58
		MEI	7.8×10^{-6}	0.29	26.19
	2003	MLE	7.8×10^{-6}	0.095	9.05
		MEI	7.8×10^{-6}	0.29	27.62
Formaldehyde	2001	MLE	5.5×10^{-9}	0.095	0.00003
		MEI	5.5×10^{-9}	0.29	0.00009
	2002	MLE	5.5×10^{-9}	0.095	0.00003
		MEI	5.5×10^{-9}	0.29	0.00009
	2003	MLE	5.5×10^{-9}	0.095	0.00003
		MEI	5.5×10^{-9}	0.29	0.0001
Total Combined	**2001 to 2003**	**MLE**			**9.59003**
		MEI			**29.2901**

MEI = maximally exposed individual
µg/m³ = micrograms per cubic meter
MLE = most likely exposure
URF = unit risk factor
[a] USEPA Air Toxics Database, Table 1 (USEPA 2005b).

3.0 Far-Field Non-Ozone Project Impacts

Table F-5. Maximum Predicted 1-Hour NO_2 Impacts from WRFO BLM Sources

Pollutant: NO_2
Averaging Time: 1-Hour

PSD Increments:
Class I Area N/A
Class II Area (Non-Sensitive) N/A

Area and Alternative	Annual 8th High Modeled Concentration at Any Receptor 2001 (µg/m³)	2002 (µg/m³)	2003 (µg/m³)	Max. Modeled 3-Year Average 8th High Daily 1-hour Conc. [1] (µg/m³)	PSD Increment (µg/m³)	Back-ground Conc. [2] (µg/m³)	Max. Total Conc. (µg/m³)	NAAQS (µg/m³)	CAAQS (µg/m³)
Class I Areas									
Arches NP									
A	0.0339	0.0058	0.0032	0.0142	N/A	32.08	32.09	189	N/A
B	0.0697	0.0219	0.0225	0.0370	N/A	32.08	32.12	189	N/A
C	0.1090	0.0248	0.0262	0.0530	N/A	32.08	32.13	189	N/A
D	0.0956	0.0157	0.0134	0.0415	N/A	32.08	32.12	189	N/A
Eagles Nest WA									
A	0.1256	0.1525	0.2593	0.1721	N/A	32.08	32.25	189	N/A
B	0.2035	0.2200	0.3528	0.2442	N/A	32.08	32.32	189	N/A
C	0.3195	0.3549	0.5519	0.3797	N/A	32.08	32.46	189	N/A
D	0.2988	0.3200	0.4817	0.3444	N/A	32.08	32.42	189	N/A
Flat Tops WA									N/A
A	0.7406	0.7630	0.8540	0.7596	N/A	32.08	32.84	189	N/A
B	1.0267	1.0547	1.3506	1.1402	N/A	32.08	33.22	189	N/A
C	1.4775	1.6116	1.8969	1.6620	N/A	32.08	33.74	189	N/A
D	1.2994	1.3958	1.5974	1.4309	N/A	32.08	33.51	189	N/A
Maroon Bells-Snowmass WA									
A	0.3152	0.3663	0.3717	0.3377	N/A	32.08	32.42	189	N/A
B	0.4257	0.4803	0.5492	0.4701	N/A	32.08	32.55	189	N/A
C	0.5618	0.7047	0.8214	0.6786	N/A	32.08	32.76	189	N/A
D	0.6362	0.7107	0.7367	0.6848	N/A	32.08	32.76	189	N/A
Mount Zirkel WA									
A	0.1979	0.1689	0.2148	0.1823	N/A	32.08	32.26	189	N/A
B	0.3099	0.2820	0.3146	0.2948	N/A	32.08	32.37	189	N/A
C	0.4491	0.4004	0.4691	0.4205	N/A	32.08	32.50	189	N/A
D	0.4528	0.4112	0.4921	0.4232	N/A	32.08	32.50	189	N/A
Sensitive Class II Areas									
Colorado NM									
A	0.3165	0.2758	0.3293	0.3072	N/A	32.08	32.39	189	N/A
B	0.6370	0.4850	0.5831	0.5663	N/A	32.08	32.65	189	N/A
C	1.0113	0.7768	0.9845	0.9242	N/A	32.08	33.00	189	N/A
D	0.9226	0.7836	0.9919	0.8994	N/A	32.08	32.98	189	N/A
Dinosaur NM									
A	1.3248	1.5111	1.4252	1.3432	N/A	32.08	33.42	189	N/A
B	1.8803	2.1377	1.9004	1.8873	N/A	32.08	33.97	189	N/A
C	2.7072	2.9281	2.9087	2.6884	N/A	32.08	34.77	189	N/A
D	2.8132	3.0608	3.0270	2.8240	N/A	32.08	34.90	189	N/A
Class II Areas (Gridded Receptors)[3]									
A	36.1730	41.8080	29.4400	35.8070	N/A	32.08	67.89	189	N/A
B	57.2560	47.5780	53.6480	52.8273	N/A	32.08	84.91	189	N/A
C	56.3480	51.6270	57.2580	53.7900	N/A	32.08	85.87	189	N/A
D	35.5520	39.5280	33.3660	35.9367	N/A	32.08	68.02	189	N/A

[1] This is the three-year average of the annual modeled 8th-highest concentration within the area, as determined on a receptor-specific basis. The three-year average in this column is less than the average of the three annual 8th high modeled concentrations when the locations of the annual 8th high receptors vary from one year to another.

[2] The background concentration data is based on the 98th percentile of 1-hour NO_2 data from a U.S. Forest Service monitor (ID 08-067-1004) located in Bayfield, Colorado in La Plata County.

[3] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO.

Table F-6. Maximum Predicted Annual NO_2 Impacts from WRFO BLM Sources

Pollutant: NO_2 **PSD Increments:**

Averaging Time: Annual **Class I Area** 2.5 $\mu g/m^3$

Class II Area (Non-Sensitive) 25 $\mu g/m^3$

Area and Alternative	Modeled Concentration 2001 ($\mu g/m^3$)	2002 ($\mu g/m^3$)	2003 ($\mu g/m^3$)	Max. Modeled Conc. ($\mu g/m^3$)	PSD Increment [1] ($\mu g/m^3$)	Back-ground Conc. [2] ($\mu g/m^3$)	Max. Total Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Class I Areas									
Arches NP									
A	0.0004	0.0001	0.0001	0.0004	2.5	30.6	30.60	100	100
B	0.0009	0.0004	0.0004	0.0009	2.5	30.6	30.60	100	100
C	0.0015	0.0006	0.0005	0.0015	2.5	30.6	30.60	100	100
D	0.0012	0.0005	0.0004	0.0012	2.5	30.6	30.60	100	100
Eagles Nest WA									
A	0.0025	0.0026	0.0029	0.0029	2.5	30.6	30.60	100	100
B	0.0038	0.0040	0.0045	0.0045	2.5	30.6	30.60	100	100
C	0.0060	0.0064	0.0072	0.0072	2.5	30.6	30.61	100	100
D	0.0052	0.0055	0.0062	0.0062	2.5	30.6	30.61	100	100
Flat Tops WA									
A	0.0247	0.0229	0.0249	0.0249	2.5	30.6	30.62	100	100
B	0.0330	0.0311	0.0343	0.0343	2.5	30.6	30.63	100	100
C	0.0537	0.0507	0.0561	0.0561	2.5	30.6	30.66	100	100
D	0.0451	0.0430	0.0466	0.0466	2.5	30.6	30.65	100	100
Maroon Bells-Snowmass WA									
A	0.0036	0.0040	0.0036	0.0040	2.5	30.6	30.60	100	100
B	0.0057	0.0059	0.0055	0.0059	2.5	30.6	30.61	100	100
C	0.0094	0.0098	0.0090	0.0098	2.5	30.6	30.61	100	100
D	0.0081	0.0083	0.0076	0.0083	2.5	30.6	30.61	100	100
Mount Zirkel WA									
A	0.0039	0.0033	0.0043	0.0043	2.5	30.6	30.60	100	100
B	0.0060	0.0051	0.0066	0.0066	2.5	30.6	30.61	100	100
C	0.0094	0.0078	0.0101	0.0101	2.5	30.6	30.61	100	100
D	0.0083	0.0069	0.0092	0.0092	2.5	30.6	30.61	100	100
Sensitive Class II Areas [3]									
Colorado NM									
A	0.0035	0.0036	0.0031	0.0036	2.5	30.6	30.60	100	100
B	0.0076	0.0082	0.0068	0.0082	2.5	30.6	30.61	100	100
C	0.0121	0.0132	0.0106	0.0132	2.5	30.6	30.61	100	100
D	0.0106	0.0113	0.0092	0.0113	2.5	30.6	30.61	100	100
Dinosaur NM									
A	0.0616	0.0613	0.0523	0.0616	2.5	30.6	30.66	100	100
B	0.0964	0.0936	0.0793	0.0964	2.5	30.6	30.70	100	100
C	0.1429	0.1311	0.1114	0.1429	2.5	30.6	30.74	100	100
D	0.1367	0.1300	0.1088	0.1367	2.5	30.6	30.74	100	100
Class II Areas (Gridded Receptors)[4]									
A	0.6158	0.7915	0.7470	0.7915	25	30.6	31.39	100	100
B	0.9080	1.1277	1.0584	1.1277	25	30.6	31.73	100	100
C	1.6274	2.0410	1.8795	2.0410	25	30.6	32.64	100	100
D	1.5015	1.9271	1.7867	1.9271	25	30.6	32.53	100	100

[1] Background concentrations are not added to the modeled concentration when comparing to PSD increments. PSD increment comparisons are for information only; they do not represent a regulatory increment consumption analysis.

[2] The annual NO_2 background concentration was recommended by CDPHE and is based on the monitors at Woodmen and Colorado College stations, Colorado Springs, El Paso County. (2005-2006 data).

[3] For sensitive Class II areas, PSD increment comparisons are based on Class I PSD increments.

[4] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO.

Table F-7. Maximum Predicted 24-Hour PM_{10} Impacts from WRFO BLM Sources

Pollutant: PM_{10}
Averaging Time: 24-Hour

PSD Increments:

Class I Area	8	$\mu g/m^3$
Class II Area (Non-Sensitive)	30	$\mu g/m^3$

Area and Alternative	Modeled Concentration 2001 ($\mu g/m^3$)	2002 ($\mu g/m^3$)	2003 ($\mu g/m^3$)	Maximum High 2nd High Modeled Conc.[1] ($\mu g/m^3$)	PSD Increment[2] ($\mu g/m^3$)	Back-ground Conc.[3] ($\mu g/m^3$)	Maximum High 2nd High Total Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Class I Areas									
Arches NP									
A	0.0681	0.0502	0.0622	0.0681	8	56	56.07	150	---
B	0.1204	0.0564	0.0598	0.1204	8	56	56.12	150	---
C	0.1939	0.0874	0.0977	0.1939	8	56	56.19	150	---
D	0.1805	0.0790	0.0898	0.1805	8	56	56.18	150	---
Eagles Nest WA									
A	0.0878	0.1142	0.1023	0.1142	8	56	56.11	150	---
B	0.0533	0.0970	0.0726	0.0970	8	56	56.10	150	---
C	0.0821	0.1459	0.1185	0.1459	8	56	56.15	150	---
D	0.0859	0.1662	0.1082	0.1662	8	56	56.17	150	---
Flat Tops WA									
A	0.4561	0.6710	1.1567	1.1567	8	56	57.16	150	---
B	0.1606	0.2691	0.2558	0.2691	8	56	56.27	150	---
C	0.2959	0.4945	0.5484	0.5484	8	56	56.55	150	---
D	0.2907	0.4926	0.5361	0.5361	8	56	56.54	150	---
Maroon Bells-Snowmass WA									
A	0.1496	0.2196	0.1202	0.2196	8	56	56.22	150	---
B	0.1077	0.1297	0.1125	0.1297	8	56	56.13	150	---
C	0.1660	0.2004	0.1761	0.2004	8	56	56.20	150	---
D	0.1595	0.2087	0.1636	0.2087	8	56	56.21	150	---
Mount Zirkel WA									
A	0.1179	0.1831	0.1715	0.1831	8	56	56.18	150	---
B	0.0732	0.1505	0.0943	0.1505	8	56	56.15	150	---
C	0.1362	0.2458	0.1492	0.2458	8	56	56.25	150	---
D	0.1318	0.2360	0.1462	0.2360	8	56	56.24	150	---
Sensitive Class II Areas[4]									
Colorado NM									
A	0.2622	0.2412	0.2955	0.2955	8	56	56.30	150	---
B	0.1030	0.2426	0.1334	0.2426	8	56	56.24	150	---
C	0.1839	0.3828	0.2166	0.3828	8	56	56.38	150	---
D	0.1797	0.3797	0.2072	0.3797	8	56	56.38	150	---
Dinosaur NM									
A	1.5770	2.2886	1.9494	2.2886	8	56	58.29	150	---
B	0.4170	0.4951	0.5066	0.5066	8	56	56.51	150	---
C	0.8322	1.1125	1.0716	1.1125	8	56	57.11	150	---
D	0.8304	1.0727	1.0205	1.0727	8	56	57.07	150	---
Class II Areas (Gridded Receptors)[5]									
A	26.1150	33.7040	30.2960	33.7040	30	56	89.70	150	---
B	5.3854	7.0311	6.1682	7.0311	30	56	63.03	150	---
C	12.9770	16.5640	14.7360	16.5640	30	56	72.56	150	---
D	12.0530	15.5820	13.7910	15.5820	30	56	71.58	150	---

[1] The maximum modeled high 2nd high concentration over all three years (2001-2003).

[2] Background concentrations are not added to the modeled concentration when comparing to PSD increments. PSD increment comparisons are for information only; they do not represent a regulatory increment consumption analysis.

[3] The 24-hour PM_{10} background concentration was recommended by CDPHE and is based on the monitor at Rifle, Garfield County (2006 data).

[4] For sensitive Class II areas, PSD increment comparisons are based on Class I PSD increments.

[5] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO.

Table F-8. Maximum Predicted 24-Hour $PM_{2.5}$ Impacts from WRFO BLM Sources

Pollutant: $PM_{2.5}$
Averaging Time: 24-Hour

PSD Increments:

Class I Area	2	$\mu g/m^3$
Class II Area (Non-Sensitive)	9	$\mu g/m^3$

Area and Alternative	Annual 8th-High Modeled Concentration at Any Receptor 2001 ($\mu g/m^3$)	2002 ($\mu g/m^3$)	2003 ($\mu g/m^3$)	3-Year Average of Annual Max. Modeled 8th-High Conc. [2] ($\mu g/m^3$)	PSD Increment ($\mu g/m^3$)	Back-ground Conc. [1] ($\mu g/m^3$)	High 8th High Total Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Class I Areas									
Arches NP									
A	0.0303	0.0139	0.0127	0.0179	2	24	24.02	35	---
B	0.0561	0.0206	0.0132	0.0300	2	24	24.03	35	---
C	0.0904	0.0331	0.0207	0.0481	2	24	24.05	35	---
D	0.0791	0.0297	0.0206	0.0431	2	24	24.04	35	---
Eagles Nest WA									
A	0.0355	0.0532	0.0379	0.0420	2	24	24.04	35	---
B	0.0308	0.0564	0.0367	0.0413	2	24	24.04	35	---
C	0.0479	0.0863	0.0603	0.0648	2	24	24.06	35	---
D	0.0462	0.0789	0.0552	0.0599	2	24	24.06	35	---
Flat Tops WA									
A	0.0919	0.1223	0.1173	0.1050	2	24	24.10	35	---
B	0.0821	0.0925	0.1205	0.0983	2	24	24.10	35	---
C	0.1220	0.1578	0.1977	0.1592	2	24	24.16	35	---
D	0.1176	0.1492	0.1855	0.1508	2	24	24.15	35	---
Maroon Bells-Snowmass WA									
A	0.0471	0.0466	0.0381	0.0419	2	24	24.04	35	---
B	0.0606	0.0561	0.0419	0.0517	2	24	24.05	35	---
C	0.0982	0.0899	0.0664	0.0824	2	24	24.08	35	---
D	0.0930	0.0813	0.0635	0.0772	2	24	24.08	35	---
Mount Zirkel WA									
A	0.0381	0.0516	0.0465	0.0454	2	24	24.05	35	---
B	0.0474	0.0604	0.0524	0.0509	2	24	24.05	35	---
C	0.0718	0.0945	0.0780	0.0787	2	24	24.08	35	---
D	0.0683	0.0898	0.0778	0.0771	2	24	24.08	35	---
Sensitive Class II Areas									
Colorado NM									
A	0.0516	0.0726	0.0588	0.0587	2	24	24.06	35	---
B	0.0666	0.1029	0.0694	0.0797	2	24	24.08	35	---
C	0.1075	0.1737	0.1117	0.1310	2	24	24.13	35	---
D	0.0992	0.1658	0.1100	0.1250	2	24	24.12	35	---
Dinosaur NM									
A	0.2277	0.2567	0.2775	0.2540	2	24	24.25	35	---
B	0.2346	0.2533	0.2234	0.2358	2	24	24.24	35	---
C	0.3281	0.3689	0.3654	0.3542	2	24	24.35	35	---
D	0.3407	0.3716	0.3614	0.3553	2	24	24.36	35	---
Class II Areas (Gridded Receptors)[3]									
A	2.7421	3.2224	2.8844	2.9342	9	24	26.93	35	---
B	0.8754	1.0486	1.0007	0.9749	9	24	24.97	35	---
C	1.6275	2.0894	1.8631	1.8600	9	24	25.86	35	---
D	1.6701	2.0342	1.9568	1.8812	9	24	25.88	35	---

[1] The 24-hour $PM_{2.5}$ background concentration was recommended by CDPHE and is based on the monitor at Rifle, Garfield County (2006 data).

[2] This is the three-year average of the annual modeled 8th-highest concentration within the area, as determined on a receptor-specific basis. The three-year average in this column is less than the average of the three annual 8th high modeled concentrations when the locations of the annual 8th high receptors vary from one year to another.

[3] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO.

Table F-9. Maximum Predicted Annual $PM_{2.5}$ Impacts from WRFO BLM Sources

Pollutant: $PM_{2.5}$
Averaging Time: Annual

PSD Increments:

Class I Area	1	$\mu g/m^3$
Class II Area (Non-Sensitive)	4	$\mu g/m^3$

Area and Alternative	Modeled Concentration 2001 ($\mu g/m^3$)	2002 ($\mu g/m^3$)	2003 ($\mu g/m^3$)	Max. Modeled 3 year Average Conc. ($\mu g/m^3$)	PSD Increment ($\mu g/m^3$)	Back-ground Conc. [1] ($\mu g/m^3$)	Max. Total 3 year Average Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Class I Areas									
Arches NP									
A	0.0017	0.0012	0.0010	0.0013	1	9	9.00	15	---
B	0.0029	0.0017	0.0012	0.0020	1	9	9.00	15	---
C	0.0046	0.0028	0.0020	0.0031	1	9	9.00	15	---
D	0.0042	0.0025	0.0018	0.0028	1	9	9.00	15	---
Eagles Nest WA									
A	0.0064	0.0090	0.0072	0.0075	1	9	9.01	15	---
B	0.0066	0.0093	0.0074	0.0078	1	9	9.01	15	---
C	0.0107	0.0151	0.0121	0.0126	1	9	9.01	15	---
D	0.0101	0.0142	0.0113	0.0119	1	9	9.01	15	---
Flat Tops WA									
A	0.0195	0.0227	0.0229	0.0217	1	9	9.02	15	---
B	0.0187	0.0214	0.0220	0.0207	1	9	9.02	15	---
C	0.0305	0.0347	0.0357	0.0336	1	9	9.03	15	---
D	0.0293	0.0333	0.0341	0.0322	1	9	9.03	15	---
Maroon Bells-Snowmass WA									
A	0.0063	0.0072	0.0062	0.0066	1	9	9.01	15	---
B	0.0075	0.0083	0.0067	0.0075	1	9	9.01	15	---
C	0.0121	0.0136	0.0110	0.0122	1	9	9.01	15	---
D	0.0113	0.0125	0.0102	0.0113	1	9	9.01	15	---
Mount Zirkel WA									
A	0.0091	0.0098	0.0095	0.0095	1	9	9.01	15	---
B	0.0096	0.0106	0.0104	0.0102	1	9	9.01	15	---
C	0.0153	0.0169	0.0165	0.0162	1	9	9.02	15	---
D	0.0144	0.0161	0.0159	0.0155	1	9	9.02	15	---
Sensitive Class II Areas									
Colorado NM									
A	0.0051	0.0069	0.0063	0.0061	1	9	9.01	15	---
B	0.0069	0.0093	0.0070	0.0077	1	9	9.01	15	---
C	0.0111	0.0150	0.0113	0.0125	1	9	9.01	15	---
D	0.0102	0.0138	0.0105	0.0115	1	9	9.01	15	---
Dinosaur NM									
A	0.0569	0.0597	0.0512	0.0559	1	9	9.06	15	---
B	0.0476	0.0524	0.0446	0.0482	1	9	9.05	15	---
C	0.0772	0.0837	0.0719	0.0776	1	9	9.08	15	---
D	0.0765	0.0837	0.0715	0.0773	1	9	9.08	15	---
Class II Areas (Gridded Receptors)[2]									
A	0.7672	0.9938	0.9733	0.9114	4	9	9.91	15	---
B	0.2634	0.3616	0.3454	0.3235	4	9	9.32	15	---
C	0.5437	0.7369	0.7050	0.6619	4	9	9.66	15	---
D	0.5347	0.7249	0.6961	0.6519	4	9	9.65	15	---

[1] The annual $PM_{2.5}$ background concentration was recommended by CDPHE and is based on the monitor at Rifle, Garfield County (2006 data).

[2] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO.

Table F-10. Maximum Predicted 1-Hour SO_2 Impacts from WRFO BLM Sources

Pollutant: SO_2
Averaging Time: 1-hour

PSD Increments:
Class I Area N/A $\mu g/m^3$
Class II Area (Non-Sensitive) N/A $\mu g/m^3$

Area and Alternative	Modeled Concentration[1] 2001 ($\mu g/m^3$)	2002 ($\mu g/m^3$)	2003 ($\mu g/m^3$)	Max. Modeled 3-Year Average 4th High Daily 1-hour Conc. ($\mu g/m^3$)	PSD Increment ($\mu g/m^3$)	Back-ground Conc.[2] ($\mu g/m^3$)	Max. Total Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Class I Areas									
Arches NP									
A	0.0007	0.0004	0.0005	0.0005	N/A	80.82	80.82	195.54	N/A
B	0.0013	0.0008	0.0009	0.0010	N/A	80.82	80.82	195.54	N/A
C	0.0021	0.0012	0.0015	0.0015	N/A	80.82	80.82	195.54	N/A
D	0.0028	0.0016	0.0021	0.0021	N/A	80.82	80.82	195.54	N/A
Eagles Nest WA									
A	0.0015	0.0012	0.0014	0.0013	N/A	80.82	80.82	195.54	N/A
B	0.0026	0.0021	0.0026	0.0024	N/A	80.82	80.82	195.54	N/A
C	0.0042	0.0033	0.0043	0.0038	N/A	80.82	80.82	195.54	N/A
D	0.0056	0.0044	0.0058	0.0051	N/A	80.82	80.83	195.54	N/A
Flat Tops WA									N/A
A	0.0041	0.0050	0.0048	0.0043	N/A	80.82	80.82	195.54	N/A
B	0.0075	0.0085	0.0085	0.0079	N/A	80.82	80.83	195.54	N/A
C	0.0125	0.0131	0.0140	0.0125	N/A	80.82	80.83	195.54	N/A
D	0.0162	0.0174	0.0171	0.0157	N/A	80.82	80.84	195.54	N/A
Maroon Bells-Snowmass WA									
A	0.0023	0.0021	0.0020	0.0021	N/A	80.82	80.82	195.54	N/A
B	0.0041	0.0038	0.0037	0.0037	N/A	80.82	80.82	195.54	N/A
C	0.0070	0.0063	0.0060	0.0062	N/A	80.82	80.83	195.54	N/A
D	0.0091	0.0083	0.0075	0.0081	N/A	80.82	80.83	195.54	N/A
Mount Zirkel WA									
A	0.0013	0.0016	0.0015	0.0014	N/A	80.82	80.82	195.54	N/A
B	0.0024	0.0028	0.0025	0.0024	N/A	80.82	80.82	195.54	N/A
C	0.0038	0.0041	0.0039	0.0037	N/A	80.82	80.82	195.54	N/A
D	0.0050	0.0054	0.0051	0.0048	N/A	80.82	80.82	195.54	N/A
Sensitive Class II Areas									
Colorado NM									
A	0.0024	0.0026	0.0029	0.0026	N/A	80.82	80.82	195.54	N/A
B	0.0048	0.0047	0.0045	0.0046	N/A	80.82	80.82	195.54	N/A
C	0.0076	0.0073	0.0064	0.0071	N/A	80.82	80.83	195.54	N/A
D	0.0100	0.0087	0.0082	0.0090	N/A	80.82	80.83	195.54	N/A
Dinosaur NM									
A	0.0091	0.0080	0.0085	0.0081	N/A	80.82	80.83	195.54	N/A
B	0.0151	0.0136	0.0145	0.0135	N/A	80.82	80.83	195.54	N/A
C	0.0211	0.0194	0.0219	0.0192	N/A	80.82	80.84	195.54	N/A
D	0.0262	0.0240	0.0258	0.0242	N/A	80.82	80.84	195.54	N/A
Class II Areas (Gridded Receptors)[3]									
A	0.0956	0.1287	0.0938	0.0870	N/A	80.82	80.91	195.54	N/A
B	0.1440	0.1883	0.1501	0.1339	N/A	80.82	80.95	195.54	N/A
C	0.1883	0.2449	0.1694	0.1662	N/A	80.82	80.99	195.54	N/A
D	0.2104	0.2502	0.2097	0.2099	N/A	80.82	81.03	195.54	N/A

[1] Maximum 99th percentile daily maximum 1-hour average SO_2 values are reported for "Modeled Concentration."

[2] The background concentration data is based on the 99th percentile of year 2006 1-hour SO_2 data from a monitor (ID 08-031-0002) located on Broadway Street, Denver, Colorado in Denver County.

[3] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO.

Table F-11. Maximum Predicted 3-Hour SO_2 Impacts from WRFO BLM Sources

Pollutant: SO_2
Averaging Time: 3-Hour

PSD Increments:

Class I Area	25	$\mu g/m^3$
Class II Area (Non-Sensitive)	512	$\mu g/m^3$

Area and Alternative	Modeled Concentration 2001 ($\mu g/m^3$)	2002 ($\mu g/m^3$)	2003 ($\mu g/m^3$)	Max. High 2nd High Modeled Conc. ($\mu g/m^3$)	PSD Increment [1] ($\mu g/m^3$)	Back-ground Conc. [2] ($\mu g/m^3$)	Max. High 2nd High Total Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Class I Areas									
Arches NP									
A	0.0010	0.0005	0.0007	0.0010	25	66.6	66.60	1300	700
B	0.0021	0.0009	0.0013	0.0021	25	66.6	66.60	1300	700
C	0.0033	0.0015	0.0020	0.0033	25	66.6	66.60	1300	700
D	0.0043	0.0020	0.0027	0.0043	25	66.6	66.60	1300	700
Eagles Nest WA									
A	0.0015	0.0009	0.0012	0.0015	25	66.6	66.60	1300	700
B	0.0029	0.0016	0.0023	0.0029	25	66.6	66.60	1300	700
C	0.0049	0.0028	0.0038	0.0049	25	66.6	66.60	1300	700
D	0.0064	0.0037	0.0049	0.0064	25	66.6	66.61	1300	700
Flat Tops WA									
A	0.0033	0.0041	0.0035	0.0041	25	66.6	66.60	1300	700
B	0.0059	0.0072	0.0073	0.0073	25	66.6	66.61	1300	700
C	0.0093	0.0094	0.0125	0.0125	25	66.6	66.61	1300	700
D	0.0122	0.0125	0.0153	0.0153	25	66.6	66.62	1300	700
Maroon Bells-Snowmass WA									
A	0.0021	0.0023	0.0017	0.0023	25	66.6	66.60	1300	700
B	0.0038	0.0041	0.0032	0.0041	25	66.6	66.60	1300	700
C	0.0058	0.0062	0.0056	0.0062	25	66.6	66.61	1300	700
D	0.0077	0.0082	0.0072	0.0082	25	66.6	66.61	1300	700
Mount Zirkel WA									
A	0.0010	0.0010	0.0013	0.0013	25	66.6	66.60	1300	700
B	0.0020	0.0019	0.0023	0.0023	25	66.6	66.60	1300	700
C	0.0032	0.0031	0.0037	0.0037	25	66.6	66.60	1300	700
D	0.0041	0.0041	0.0046	0.0046	25	66.6	66.60	1300	700
Sensitive Class II Areas [3]									
Colorado NM									
A	0.0023	0.0027	0.0024	0.0027	25	66.6	66.60	1300	700
B	0.0045	0.0048	0.0043	0.0048	25	66.6	66.60	1300	700
C	0.0072	0.0074	0.0071	0.0074	25	66.6	66.61	1300	700
D	0.0090	0.0089	0.0092	0.0092	25	66.6	66.61	1300	700
Dinosaur NM									
A	0.0077	0.0068	0.0083	0.0083	25	66.6	66.61	1300	700
B	0.0129	0.0116	0.0135	0.0135	25	66.6	66.61	1300	700
C	0.0184	0.0170	0.0186	0.0186	25	66.6	66.62	1300	700
D	0.0251	0.0220	0.0230	0.0251	25	66.6	66.63	1300	700
Class II Areas (Gridded Receptors)[4]									
A	0.0696	0.0695	0.0722	0.0722	512	66.6	66.67	1300	700
B	0.1118	0.1169	0.1233	0.1233	512	66.6	66.72	1300	700
C	0.1438	0.1493	0.1573	0.1573	512	66.6	66.76	1300	700
D	0.1711	0.1873	0.1757	0.1873	512	66.6	66.79	1300	700

[1] Background concentrations are not added to the modeled concentration when comparing to PSD increments. PSD increment comparisons are for information only; they do not represent a regulatory increment consumption analysis.

[2] The 3-hour SO_2 background concentration was recommended by CDPHE and is based on the monitor at Colorado College, Colorado Springs, El Paso County. (2005-2006 data)

[3] For sensitive Class II areas, PSD increment comparisons are based on Class I PSD increments.

[4] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO.

Table F-12. Maximum Predicted 1-Hour CO Impacts from WRFO BLM Sources

Pollutant: CO
Averaging Time: 1-Hour

PSD Increments:
Class I Area N/A
Class II Area (Non-Sensitive) N/A

Area and Alternative	Modeled Concentration 2001 (µg/m³)	2002 (µg/m³)	2003 (µg/m³)	Max. High 2nd High Modeled Conc. (µg/m³)	PSD Increment [1] (µg/m³)	Back-ground Conc. [2] (µg/m³)	Max. High 2nd High Total Conc. (µg/m³)	NAAQS (µg/m³)	CAAQS (µg/m³)
Class I Areas									
Arches NP									
A	1.0269	0.3502	1.6615	1.6615	N/A	4656.4	4658.06	40000	40000
B	1.8862	0.6734	3.0500	3.0500	N/A	4656.4	4659.45	40000	40000
C	3.1046	1.0868	5.0831	5.0831	N/A	4656.4	4661.48	40000	40000
D	2.8810	0.9976	4.7190	4.7190	N/A	4656.4	4661.12	40000	40000
Eagles Nest WA									
A	1.5114	1.6673	2.0217	2.0217	N/A	4656.4	4658.42	40000	40000
B	2.3299	2.7095	3.3358	3.3358	N/A	4656.4	4659.74	40000	40000
C	3.6274	4.1353	5.2669	5.2669	N/A	4656.4	4661.67	40000	40000
D	3.4421	4.0161	5.1497	5.1497	N/A	4656.4	4661.55	40000	40000
Flat Tops WA									
A	3.7538	3.4480	3.7724	3.7724	N/A	4656.4	4660.17	40000	40000
B	5.6087	5.3310	5.8951	5.8951	N/A	4656.4	4662.30	40000	40000
C	7.5728	7.8267	9.2488	9.2488	N/A	4656.4	4665.65	40000	40000
D	6.9674	7.7356	9.2620	9.2620	N/A	4656.4	4665.66	40000	40000
Maroon Bells-Snowmass WA									
A	3.4112	3.4272	2.3317	3.4272	N/A	4656.4	4659.83	40000	40000
B	5.5218	6.2084	3.7150	6.2084	N/A	4656.4	4662.61	40000	40000
C	8.3911	9.5891	5.5520	9.5891	N/A	4656.4	4665.99	40000	40000
D	8.1440	9.0930	5.5252	9.0930	N/A	4656.4	4665.49	40000	40000
Mount Zirkel WA									
A	1.1774	1.7050	1.3587	1.7050	N/A	4656.4	4658.11	40000	40000
B	2.2398	2.9538	2.1526	2.9538	N/A	4656.4	4659.35	40000	40000
C	3.4871	4.5611	3.3521	4.5611	N/A	4656.4	4660.96	40000	40000
D	3.1449	4.0411	3.1672	4.0411	N/A	4656.4	4660.44	40000	40000
Sensitive Class II Areas [3]									
Colorado NM									
A	1.5348	1.5733	2.6372	2.6372	N/A	4656.4	4659.04	40000	40000
B	2.8472	3.0059	4.7833	4.7833	N/A	4656.4	4661.18	40000	40000
C	4.4446	4.8324	7.8610	7.8610	N/A	4656.4	4664.26	40000	40000
D	4.3912	4.2362	7.2176	7.2176	N/A	4656.4	4663.62	40000	40000
Dinosaur NM									
A	5.3773	4.3922	4.8476	5.3773	N/A	4656.4	4661.78	40000	40000
B	8.4095	6.8315	7.2392	8.4095	N/A	4656.4	4664.81	40000	40000
C	12.8550	9.1004	10.9420	12.8550	N/A	4656.4	4669.26	40000	40000
D	13.1070	8.9931	11.4050	13.1070	N/A	4656.4	4669.51	40000	40000
Class II Areas (Gridded Receptors)[4]									
A	150.1800	135.7900	128.1600	150.1800	N/A	4656.4	4806.58	40000	40000
B	167.3100	154.7400	200.0900	200.0900	N/A	4656.4	4856.49	40000	40000
C	204.2300	203.7600	205.4300	205.4300	N/A	4656.4	4861.83	40000	40000
D	116.7500	129.8100	118.8500	129.8100	N/A	4656.4	4786.21	40000	40000

[1] Background concentrations are not added to the modeled concentration when comparing to PSD increments. PSD increment comparisons are for information only; they do not represent a regulatory increment consumption analysis.

[2] The 1-hour CO background concentration was recommended by CDPHE and is based on the monitor at Grand Junction, Mesa County. (average of -2004-2006 data)

[3] For sensitive Class II areas, PSD increment comparisons are based on Class I PSD increments.

[4] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO.

Table F-13. Maximum Predicted 8-Hour CO Impacts from WRFO BLM Sources

Pollutant: CO
Averaging Time: 8-Hour

PSD Increments:
Class I Area N/A
Class II Area (Non-Sensitive) N/A

Area and Alternative	Modeled Concentration 2001 (µg/m³)	2002 (µg/m³)	2003 (µg/m³)	Max. High 2nd High Modeled Conc. (µg/m³)	PSD Increment [1] (µg/m³)	Back-ground Conc. [2] (µg/m³)	Max. High 2nd High Total Conc. (µg/m³)	NAAQS (µg/m³)	CAAQS (µg/m³)
Class I Areas									
Arches NP									
A	0.5531	0.2181	0.2794	0.5531	N/A	2328.2	2328.75	10000	10000
B	1.0784	0.4423	0.7264	1.0784	N/A	2328.2	2329.28	10000	10000
C	1.7278	0.7294	1.2989	1.7278	N/A	2328.2	2329.93	10000	10000
D	1.5855	0.6538	1.1552	1.5855	N/A	2328.2	2329.79	10000	10000
Eagles Nest WA									
A	0.6155	0.7380	0.5790	0.7380	N/A	2328.2	2328.94	10000	10000
B	1.0425	1.1095	1.0954	1.1095	N/A	2328.2	2329.31	10000	10000
C	1.6006	1.6562	1.8947	1.8947	N/A	2328.2	2330.09	10000	10000
D	1.5410	1.5436	1.7004	1.7004	N/A	2328.2	2329.90	10000	10000
Flat Tops WA									
A	1.4090	1.6193	1.5317	1.6193	N/A	2328.2	2329.82	10000	10000
B	1.8790	2.7225	2.2031	2.7225	N/A	2328.2	2330.92	10000	10000
C	2.9170	4.3648	3.4233	4.3648	N/A	2328.2	2332.56	10000	10000
D	3.0171	4.2123	3.3757	4.2123	N/A	2328.2	2332.41	10000	10000
Maroon Bells-Snowmass WA									
A	1.1600	1.2892	1.1625	1.2892	N/A	2328.2	2329.49	10000	10000
B	1.9534	1.7738	1.4579	1.9534	N/A	2328.2	2330.15	10000	10000
C	3.1399	2.8957	2.3794	3.1399	N/A	2328.2	2331.34	10000	10000
D	2.9352	2.8723	2.1148	2.9352	N/A	2328.2	2331.14	10000	10000
Mount Zirkel WA									
A	0.5805	0.6899	0.6034	0.6899	N/A	2328.2	2328.89	10000	10000
B	1.0230	1.2598	1.0849	1.2598	N/A	2328.2	2329.46	10000	10000
C	1.5877	1.8858	1.6879	1.8858	N/A	2328.2	2330.09	10000	10000
D	1.4611	1.8250	1.6060	1.8250	N/A	2328.2	2330.03	10000	10000
Sensitive Class II Areas [3]									
Colorado NM									
A	1.0731	1.0020	1.0383	1.0731	N/A	2328.2	2329.27	10000	10000
B	1.9334	1.9247	1.9034	1.9334	N/A	2328.2	2330.13	10000	10000
C	3.0619	3.2852	3.1738	3.2852	N/A	2328.2	2331.49	10000	10000
D	2.9399	2.9665	2.9194	2.9665	N/A	2328.2	2331.17	10000	10000
Dinosaur NM									
A	2.7959	2.4108	3.4825	3.4825	N/A	2328.2	2331.68	10000	10000
B	4.2472	3.5782	5.0924	5.0924	N/A	2328.2	2333.29	10000	10000
C	6.1792	5.2845	7.4633	7.4633	N/A	2328.2	2335.66	10000	10000
D	6.0876	5.3345	7.2980	7.2980	N/A	2328.2	2335.50	10000	10000
Class II Areas (Gridded Receptors)[4]									
A	21.1440	26.6440	20.5880	26.6440	N/A	2328.2	2354.84	10000	10000
B	44.3430	48.2420	41.7400	48.2420	N/A	2328.2	2376.44	10000	10000
C	44.3580	73.5770	70.2370	73.5770	N/A	2328.2	2401.78	10000	10000
D	35.4920	38.4130	42.3740	42.3740	N/A	2328.2	2370.57	10000	10000

[1] Background concentrations are not added to the modeled concentration when comparing to PSD increments. PSD increment comparisons are for information only; they do not represent a regulatory increment consumption analysis.

[2] The 8-hour CO background concentration was recommended by CDPHE and is based on the monitor at Grand Junction, Mesa County. (average of -2004-2006 data)

[3] For sensitive Class II areas, PSD increment comparisons are based on Class I PSD increments.

[4] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO.

Table F-14. Maximum Predicted Nitrogen Deposition Impacts from WRFO BLM Sources

Air Quality Related Value: N Deposition

Area and Alternative	Modeled Deposition 2001 (kg/ha/yr)	Modeled Deposition 2002 (kg/ha/yr)	Modeled Deposition 2003 (kg/ha/yr)	Maximum Modeled Deposition (kg/ha/yr)	DAT [1] (kg/ha/yr)	Background Deposition [2] (kg/ha/yr)	Total Deposition (kg/ha/yr)	Level of Concern (kg/ha/yr)
Class I Areas								
Arches NP								
A	0.0004	0.0001	0.0002	0.0004	0.005	1.9	1.90	3.0
B	0.0007	0.0002	0.0003	0.0007	0.005	1.9	1.90	3.0
C	0.0011	0.0003	0.0005	0.0011	0.005	1.9	1.90	3.0
D	0.0009	0.0003	0.0005	0.0009	0.005	1.9	1.90	3.0
Eagles Nest WA								
A	0.0019	0.0021	0.0031	0.0031	0.005	1.5	1.50	3.0
B	0.0030	0.0034	0.0049	0.0049	0.005	1.5	1.50	3.0
C	0.0047	0.0054	0.0078	0.0078	0.005	1.5	1.51	3.0
D	0.0042	0.0047	0.0070	0.0070	0.005	1.5	1.51	3.0
Flat Tops WA								
A	0.0117	0.0105	0.0118	0.0118	0.005	1.5	1.51	3.0
B	0.0163	0.0149	0.0172	0.0172	0.005	1.5	1.52	3.0
C	0.0264	0.0238	0.0276	0.0276	0.005	1.5	1.53	3.0
D	0.0224	0.0207	0.0238	0.0238	0.005	1.5	1.52	3.0
Maroon Bells-Snowmass WA								
A	0.0032	0.0018	0.0027	0.0032	0.005	1.5	1.50	3.0
B	0.0051	0.0028	0.0045	0.0051	0.005	1.5	1.51	3.0
C	0.0081	0.0047	0.0073	0.0081	0.005	1.5	1.51	3.0
D	0.0073	0.0040	0.0063	0.0073	0.005	1.5	1.51	3.0
Mount Zirkel WA								
A	0.0029	0.0025	0.0034	0.0034	0.005	2.7	2.70	3.0
B	0.0047	0.0039	0.0055	0.0055	0.005	2.7	2.71	3.0
C	0.0073	0.0061	0.0086	0.0086	0.005	2.7	2.71	3.0
D	0.0066	0.0054	0.0077	0.0077	0.005	2.7	2.71	3.0
Sensitive Class II Areas								
Colorado NM								
A	0.0013	0.0012	0.0016	0.0016	0.005	1.9	1.90	3.0
B	0.0027	0.0026	0.0031	0.0031	0.005	1.9	1.90	3.0
C	0.0043	0.0041	0.0049	0.0049	0.005	1.9	1.90	3.0
D	0.0037	0.0036	0.0043	0.0043	0.005	1.9	1.90	3.0
Dinosaur NM								
A	0.0190	0.0170	0.0161	0.0190	0.005	1.5	1.52	3.0
B	0.0308	0.0266	0.0255	0.0308	0.005	1.5	1.53	3.0
C	0.0469	0.0389	0.0377	0.0469	0.005	1.5	1.55	3.0
D	0.0439	0.0373	0.0355	0.0439	0.005	1.5	1.54	3.0

[1] The Deposition Analysis Threshold (DAT) is a significance threshold. If the modeled deposition rate (without adding the background concentration) is below the DAT, predicted impacts are considered to be insignificant.

[2] Total (wet and dry) nitrogen background deposition values were obtained from the Clean Air Status and Trends Network (CASTNet) web page (http://www.epa.gov/castnet/index.html) on December 4, 2008. The following monitored data was used for each Class I Area:

Canyonlands (CAN407) Year 2000: Arches NP, Colorado NM

Gothic (GTH161) Year 2000: Dinosaur NM, Eagles Nest WA, Flat Tops WA, Maroon Bells-Snowmass WA

Rocky Mountain NP (ROM206) Year 2002: Mount Zirkel WA

Table F-15. Maximum Predicted Sulfur Deposition Impacts from WRFO BLM Sources

Air Quality Related Value: S Deposition

Area and Alternative	Modeled Deposition 2001 (kg/ha/yr)	Modeled Deposition 2002 (kg/ha/yr)	Modeled Deposition 2003 (kg/ha/yr)	Maximum Modeled Deposition (kg/ha/yr)	DAT [1] (kg/ha/yr)	Background Deposition [2] (kg/ha/yr)	Total Deposition (kg/ha/yr)	Level of Concern (kg/ha/yr)
Class I Areas								
Arches NP								
A	0.0000	0.0000	0.0000	0.0000	0.005	0.64	0.64	5.0
B	0.0000	0.0000	0.0000	0.0000	0.005	0.64	0.64	5.0
C	0.0000	0.0000	0.0000	0.0000	0.005	0.64	0.64	5.0
D	0.0000	0.0000	0.0000	0.0000	0.005	0.64	0.64	5.0
Eagles Nest WA								
A	0.0000	0.0000	0.0000	0.0000	0.005	0.73	0.73	5.0
B	0.0001	0.0001	0.0001	0.0001	0.005	0.73	0.73	5.0
C	0.0001	0.0001	0.0001	0.0001	0.005	0.73	0.73	5.0
D	0.0001	0.0001	0.0002	0.0002	0.005	0.73	0.73	5.0
Flat Tops WA								
A	0.0001	0.0001	0.0001	0.0001	0.005	0.73	0.73	5.0
B	0.0002	0.0002	0.0003	0.0003	0.005	0.73	0.73	5.0
C	0.0004	0.0004	0.0005	0.0005	0.005	0.73	0.73	5.0
D	0.0006	0.0005	0.0006	0.0006	0.005	0.73	0.73	5.0
Maroon Bells-Snowmass WA								
A	0.0000	0.0000	0.0000	0.0000	0.005	0.73	0.73	5.0
B	0.0001	0.0000	0.0001	0.0001	0.005	0.73	0.73	5.0
C	0.0001	0.0001	0.0001	0.0001	0.005	0.73	0.73	5.0
D	0.0002	0.0001	0.0002	0.0002	0.005	0.73	0.73	5.0
Mount Zirkel WA								
A	0.0000	0.0000	0.0001	0.0001	0.005	0.85	0.85	5.0
B	0.0001	0.0001	0.0001	0.0001	0.005	0.85	0.85	5.0
C	0.0001	0.0001	0.0002	0.0002	0.005	0.85	0.85	5.0
D	0.0002	0.0001	0.0002	0.0002	0.005	0.85	0.85	5.0
Sensitive Class II Areas								
Colorado NM								
A	0.0000	0.0000	0.0000	0.0000	0.005	0.64	0.64	5.0
B	0.0000	0.0000	0.0000	0.0000	0.005	0.64	0.64	5.0
C	0.0001	0.0001	0.0001	0.0001	0.005	0.64	0.64	5.0
D	0.0001	0.0001	0.0001	0.0001	0.005	0.64	0.64	5.0
Dinosaur NM								
A	0.0002	0.0002	0.0002	0.0002	0.005	0.73	0.73	5.0
B	0.0004	0.0004	0.0004	0.0004	0.005	0.73	0.73	5.0
C	0.0006	0.0006	0.0005	0.0006	0.005	0.73	0.73	5.0
D	0.0009	0.0007	0.0007	0.0009	0.005	0.73	0.73	5.0

[1] The Deposition Analysis Threshold (DAT) is a significance threshold. If the modeled deposition rate (without adding the background concentration) is below the DAT, predicted impacts are considered to be insignificant.

[2] Total (wet and dry) sulfur background deposition values were obtained from the Clean Air Status and Trends Network (CASTNet) web page (http://www.epa.gov/castnet/index.html) on December 4, 2008. The following monitored data was used for each Class I Area:

Canyonlands (CAN407) Year 2000: Arches NP, Colorado NM

Gothic (GTH161) Year 2000: Dinosaur NM, Eagles Nest WA, Flat Tops WA, Maroon Bells-Snowmass WA

Rocky Mountain NP (ROM206) Year 2002: Mount Zirkel WA

Table F-16. Maximum Predicted Lake Acid Neutralizing Capacity Changes from WRFO BLM Sources

Air Quality Related Value: Change in Lake ANC

Lake and Alternative	H Deposition [1] 2001 (eq)	2002 (eq)	2003 (eq)	Background ANC [2] (eq)	Level of Acceptable Change [3] (eq)	Maximum ANC Change (eq)	Maximum Percent ANC Change (%)
Avalanche Lake							
A	79.4	39.3	62.6	451,000	45,100	79.4	0.02
B	124.6	63.2	104.8	451,000	45,100	124.6	0.03
C	196.2	104.6	171.2	451,000	45,100	196.2	0.04
D	179.5	90.3	151.8	451,000	45,100	179.5	0.04
Moon Lake							
A	31.8	15.8	26.0	56,400	5,640	31.8	0.06
B	49.9	25.5	43.5	56,400	5,640	49.9	0.09
C	78.5	42.3	71.0	56,400	5,640	78.5	0.14
D	71.6	36.4	63.1	56,400	5,640	71.6	0.13
Ned Wilson Lake							
A	4.0	4.0	4.6	2,240	224	4.6	0.20
B	6.1	6.0	7.0	2,240	224	7.0	0.31
C	9.7	9.4	11.1	2,240	224	11.1	0.50
D	8.6	8.4	9.9	2,240	224	9.9	0.44
Seven Lakes							
A	9.5	6.8	11.6	15,100	1,510	11.6	0.08
B	15.5	11.1	18.7	15,100	1,510	18.7	0.12
C	23.9	17.1	29.2	15,100	1,510	29.2	0.19
D	21.8	15.4	26.7	15,100	1,510	26.7	0.18
Summit Lake							
A	1.6	1.5	2.0	2,860	286	2.0	0.07
B	2.6	2.3	3.2	2,860	286	3.2	0.11
C	4.1	3.6	5.1	2,860	286	5.1	0.18
D	3.7	3.3	4.6	2,860	286	4.6	0.16
Trappers Lake							
A	51.1	50.7	60.0	528,000	52,800	60.0	0.01
B	77.6	77.0	92.0	528,000	52,800	92.0	0.02
C	123.6	120.9	144.8	528,000	52,800	144.8	0.03
D	108.8	108.0	130.1	528,000	52,800	130.1	0.02
Upper Ned Wilson Lake							
A	1.5	1.4	1.7	271	21.2	1.7	0.62
B	2.2	2.2	2.6	271	21.2	2.6	0.95
C	3.6	3.4	4.1	271	21.2	4.1	1.50
D	3.1	3.1	3.6	271	21.2	3.6	1.34

ANC = acid neutralizing capacity.

μeq/l = microequivalents per liter.

[1] The 10th-percentile lowest ANC values were calculated in accordance with the USFS Rocky Mountain Region's *Screening Methodology for Calculating ANC Change to High Elevation Lakes, User's Guide* (USFS 2000).

[2] Background ANC values were obtained from http://www.fs.fed.us/waterdata on January 25, 2007.

[3] The level of acceptable change is 10 percent change for lakes with ANC background values greater than 25 μeq/l. For lakes with lower ANC background values (such as Upper Ned Wilson Lake), the level of acceptable change is 1 μeq/l, which is comparable to 21.2 equivalents.

Table F-17. Days of Visibility Change Greater Than or Equal to 0.5 dv at Class I and Sensitive Class II Areas from WRFO BLM Sources

Air Quality Related Value: Visibility

Area and Alternative	2001			2002			2003		
	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily
Class I Areas									
Arches NP									
A	0	0	0	0	0	0	0	0	0
B	2	3	0	0	0	0	0	0	0
C	4	7	2	0	1	0	2	2	1
D	4	6	2	0	0	0	2	2	1
Eagles Nest WA									
A	0	0	0	1	0	0	0	0	0
B	1	0	0	2	0	1	2	0	1
C	2	1	1	10	4	4	4	2	3
D	1	1	1	8	4	4	3	2	1
Flat Tops WA									
A	1	1	0	8	3	4	11	7	5
B	6	4	5	19	9	7	17	12	12
C	25	19	10	34	24	24	31	32	23
D	18	19	9	32	22	19	27	30	22
Maroon Bells-Snowmass WA									
A	1	0	0	0	0	1	1	0	1
B	7	2	1	4	2	1	2	2	1
C	11	7	9	5	7	5	7	4	3
D	11	7	9	5	5	5	6	4	3
Mount Zirkel WA									
A	0	0	0	4	1	1	2	0	1
B	2	1	0	7	2	4	6	1	1
C	7	1	3	15	5	6	14	5	8
D	7	1	2	12	6	6	12	5	5
Sensitive Class II Areas									
Colorado NM									
A	1	1	0	3	3	2	0	0	0
B	3	1	1	6	8	5	2	2	4
C	10	10	8	13	13	11	10	10	8
D	10	10	5	10	13	11	5	9	7
Dinosaur NM									
A	43	42	16	59	53	34	46	39	26
B	43	55	29	50	65	41	47	53	33
C	86	98	57	101	107	74	95	97	71
D	88	103	59	103	109	75	94	97	76

Visibility calculation methods include the following:

FLAG 2000 (Protocol): This method was specified in the *Air Quality Impact Assessment Protocol: White River Resource Management Plan Amendment and Environmental Impact Statement* (BLM 2007a).

BLM Seasonal: This method uses seasonal natural background extinction data and monthly relative humidity data for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

BLM Daily: This method uses observed daily aerosol measurements and relative humidity data, with f(RH) limited at 90 percent for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

Table F-18. Days of Visibility Change Greater Than or Equal to 1.0 dv at Class I and Sensitive Class II Areas from WRFO BLM Sources

Air Quality Related Value: Visibility

Area and Alternative	2001			2002			2003		
	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily
Class I Areas									
Arches NP									
A	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0
C	0	2	0	0	0	0	0	0	0
D	0	2	0	0	0	0	0	0	0
Eagles Nest WA									
A	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0
C	1	0	0	1	0	1	1	0	0
D	1	0	0	1	0	1	1	0	0
Flat Tops WA									
A	0	0	0	1	0	0	2	0	0
B	1	0	0	5	2	2	4	0	2
C	3	2	1	9	5	6	10	10	8
D	3	3	1	8	4	6	10	7	6
Maroon Bells-Snowmass WA									
A	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0
C	3	1	0	1	1	1	1	0	1
D	3	1	0	0	0	1	1	0	1
Mount Zirkel WA									
A	0	0	0	0	0	0	0	0	0
B	0	0	0	3	0	0	1	0	1
C	0	0	0	5	2	3	2	0	1
D	0	0	0	5	2	2	2	0	1
Sensitive Class II Areas									
Colorado NM									
A	0	0	0	1	0	0	0	0	0
B	1	1	0	3	3	1	0	0	0
C	2	1	1	4	5	4	1	1	1
D	1	1	1	3	5	3	1	1	1
Dinosaur NM									
A	3	4	1	7	7	6	8	6	5
B	9	10	7	14	13	10	12	11	8
C	28	32	21	35	41	25	32	28	22
D	29	32	19	35	38	25	30	30	23

Visibility calculation methods include the following:

FLAG 2000 (Protocol): This method was specified in the *Air Quality Impact Assessment Protocol: White River Resource Management Plan Amendment and Environmental Impact Statement* (BLM 2007a).

BLM Seasonal: This method uses seasonal natural background extinction data and monthly relative humidity data for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

BLM Daily: This method uses observed daily aerosol measurements and relative humidity data, with f(RH) limited at 90 percent for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

Table F-19. Days of Visibility Change Greater Than or Equal to 0.5 dv at Scenic Views from WRFO BLM Sources

Air Quality Related Value: Visibility

Area and Alternative	2001 FLAG 2000 (Protocol)	2001 BLM Seasonal	2001 BLM Daily	2002 FLAG 2000 (Protocol)	2002 BLM Seasonal	2002 BLM Daily	2003 FLAG 2000 (Protocol)	2003 BLM Seasonal	2003 BLM Daily
Big Mountain View									
A	12	10	6	27	25	17	20	20	15
B	16	20	13	30	32	23	24	26	22
C	44	47	30	57	68	49	57	60	48
D	40	43	29	54	56	41	53	54	42
Holy Cross View									
A	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0
C	0	0	0	4	0	1	0	0	0
D	0	0	0	1	0	1	0	0	0
Holy Cross Wilderness View									
A	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0
C	0	0	0	3	0	1	0	0	0
D	0	0	0	2	0	1	0	0	0
Rabbit's Ear View									
A	2	1	1	2	2	1	0	0	0
B	3	3	2	3	5	3	1	3	2
C	6	7	4	11	12	7	4	4	4
D	6	6	4	8	9	5	4	4	4
Roan Cliffs View									
A	9	5	4	14	14	10	10	8	7
B	14	12	10	20	21	16	14	19	15
C	29	34	26	37	43	34	31	33	27
D	28	29	22	34	41	31	28	28	27

Visibility calculation methods include the following:

FLAG 2000 (Protocol): This method was specified in the *Air Quality Impact Assessment Protocol: White River Resource Management Plan Amendment and Environmental Impact Statement* (BLM 2007a).

BLM Seasonal: This method uses seasonal natural background extinction data and monthly relative humidity data for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

BLM Daily: This method uses observed daily aerosol measurements and relative humidity data, with f(RH) limited at 90 percent for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

Table F-20. Days of Visibility Change Greater Than or Equal to 1.0 dv at Scenic Views from WRFO BLM Sources

Air Quality Related Value: Visibility

Area and Alternative	2001 FLAG 2000 (Protocol)	2001 BLM Seasonal	2001 BLM Daily	2002 FLAG 2000 (Protocol)	2002 BLM Seasonal	2002 BLM Daily	2003 FLAG 2000 (Protocol)	2003 BLM Seasonal	2003 BLM Daily
Big Mountain View									
A	3	2	2	7	4	4	2	0	2
B	2	2	3	10	7	7	7	7	4
C	9	9	6	22	21	15	16	16	12
D	10	8	6	21	19	12	16	14	13
Holy Cross View									
A	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0
Holy Cross Wilderness View									
A	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0
Rabbit's Ear View									
A	0	0	0	0	0	0	0	0	0
B	2	1	0	2	1	1	0	0	0
C	3	3	1	2	2	2	0	1	1
D	3	2	1	2	2	2	0	1	1
Roan Cliffs View									
A	2	2	1	4	4	3	2	1	2
B	3	3	1	8	5	5	5	3	2
C	10	7	6	16	17	11	10	8	9
D	7	6	5	17	14	10	8	8	6

Visibility calculation methods include the following:

FLAG 2000 (Protocol): This method was specified in the *Air Quality Impact Assessment Protocol: White River Resource Management Plan Amendment and Environmental Impact Statement* (BLM 2007a).

BLM Seasonal: This method uses seasonal natural background extinction data and monthly relative humidity data for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

BLM Daily: This method uses observed daily aerosol measurements and relative humidity data, with f(RH) limited at 90 percent for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

4.0 Far-Field Non-Ozone Cumulative Impacts

Table F-21. Maximum Predicted 1-Hour NO_2 Impacts from Cumulative Sources

Pollutant: NO_2
Averaging Time: 1-Hour

PSD Increments:
Class I Area N/A
Class II Area (Non-Sensitive) N/A

Area and Alternative	Annual 8th High Modeled Concentration at Any Receptor 2001 (µg/m³)	2002 (µg/m³)	2003 (µg/m³)	3-Year Average of Annual Max. Modeled 8th-High Conc. [1] (µg/m³)	PSD Increment (µg/m³)	Back-ground Conc. [2] (µg/m³)	Max. Total Conc. (µg/m³)	NAAQS (µg/m³)	CAAQS (µg/m³)
Class I Areas									
Arches NP									
A	0.2163	0.1462	0.1970	0.1779	N/A	32.08	32.26	189	N/A
B	0.2570	0.1803	0.1976	0.1894	N/A	32.08	32.27	189	N/A
C	0.2730	0.2205	0.1976	0.2167	N/A	32.08	32.30	189	N/A
D	0.2750	0.2131	0.1974	0.2139	N/A	32.08	32.29	189	N/A
Eagles Nest WA									
A	0.3054	0.3585	0.5408	0.3975	N/A	32.08	32.48	189	N/A
B	0.3438	0.4609	0.6255	0.4682	N/A	32.08	32.55	189	N/A
C	0.4979	0.6307	0.7917	0.6052	N/A	32.08	32.69	189	N/A
D	0.4912	0.6471	0.8581	0.6438	N/A	32.08	32.72	189	N/A
Flat Tops WA									N/A
A	1.8814	2.3528	2.1602	1.9741	N/A	32.08	34.05	189	N/A
B	1.6700	2.1449	2.1087	1.7829	N/A	32.08	33.86	189	N/A
C	2.0161	2.3092	2.8062	2.2630	N/A	32.08	34.34	189	N/A
D	2.2756	2.8446	2.7376	2.4619	N/A	32.08	34.54	189	N/A
Maroon Bells-Snowmass WA									
A	1.5280	1.8620	1.6696	1.6865	N/A	32.08	33.77	189	N/A
B	1.1180	1.4660	1.3030	1.2688	N/A	32.08	33.35	189	N/A
C	1.3007	1.6467	1.5451	1.4665	N/A	32.08	33.55	189	N/A
D	1.6290	2.2685	1.9570	1.8648	N/A	32.08	33.94	189	N/A
Mount Zirkel WA									
A	0.4104	0.5152	0.4679	0.4402	N/A	32.08	32.52	189	N/A
B	0.5286	0.5421	0.5704	0.5229	N/A	32.08	32.60	189	N/A
C	0.6973	0.7089	0.7831	0.6980	N/A	32.08	32.78	189	N/A
D	0.7192	0.7617	0.8198	0.7208	N/A	32.08	32.80	189	N/A
Sensitive Class II Areas									
Colorado NM									
A	1.1411	1.4326	1.5356	1.3526	N/A	32.08	33.43	189	N/A
B	1.2200	1.4615	1.5361	1.3533	N/A	32.08	33.43	189	N/A
C	1.4738	1.6033	1.5631	1.4500	N/A	32.08	33.53	189	N/A
D	1.4599	1.6317	1.5921	1.5155	N/A	32.08	33.60	189	N/A
Dinosaur NM									
A	2.0856	2.2265	2.1312	2.0371	N/A	32.08	34.12	189	N/A
B	2.7453	2.9004	2.6649	2.6916	N/A	32.08	34.77	189	N/A
C	3.9303	4.0466	3.9801	3.7392	N/A	32.08	35.82	189	N/A
D	4.2322	4.3620	4.2505	4.0818	N/A	32.08	36.16	189	N/A
Class II Areas (Gridded Receptors)[3]									
A	49.8860	81.1020	70.9720	64.4217	N/A	32.08	96.50	189	N/A
B	49.8880	81.1280	70.9720	64.4303	N/A	32.08	96.51	189	N/A
C	49.8910	81.1400	70.9720	64.4343	N/A	32.08	96.51	189	N/A
D	49.8890	81.1290	70.9720	64.4307	N/A	32.08	96.51	189	N/A

[1] This is the three-year average of the annual modeled 8th-highest concentration within the area, as determined on a receptor-specific basis. The three-year average in this column is less than the average of the three annual 8th high modeled concentrations when the locations of the annual 8th high receptors vary from one year to another.

[2] The background concentration data is based on the 98th percentile of 1-hour NO_2 data from a U.S. Forest Service monitor (ID 08-067-1004) located in Bayfield, Colorado in La Plata County.

[3] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO. Near-field receptors also excluded within 15 kilometers of RFFA (Colorado and Utah) and Vernal Field Office oil and gas point sources (gas plants and rill rigs).

Table F-22. Maximum Predicted Annual NO_2 Impacts from Cumulative Sources

Pollutant: NO_2
Averaging Time: Annual

PSD Increments:

Class I Area	2.5	µg/m³
Class II Area (Non-Sensitive)	25	µg/m³

Area and Alternative	Modeled Concentration 2001 (µg/m³)	2002 (µg/m³)	2003 (µg/m³)	Max. Modeled Conc. (µg/m³)	PSD Increment [1] (µg/m³)	Back-ground Conc. [2] (µg/m³)	Max. Total Conc. (µg/m³)	NAAQS (µg/m³)	CAAQS (µg/m³)
Class I Areas									
Arches NP									
A	0.0034	0.0028	0.0030	0.0034	2.5	30.6	30.60	100	100
B	0.0039	0.0030	0.0031	0.0039	2.5	30.6	30.60	100	100
C	0.0045	0.0032	0.0033	0.0045	2.5	30.6	30.60	100	100
D	0.0045	0.0031	0.0033	0.0045	2.5	30.6	30.60	100	100
Eagles Nest WA									
A	0.0129	0.0129	0.0155	0.0155	2.5	30.6	30.62	100	100
B	0.0118	0.0118	0.0141	0.0141	2.5	30.6	30.61	100	100
C	0.0144	0.0146	0.0173	0.0173	2.5	30.6	30.62	100	100
D	0.0173	0.0176	0.0207	0.0207	2.5	30.6	30.62	100	100
Flat Tops WA									
A	0.1024	0.0961	0.1084	0.1084	2.5	30.6	30.71	100	100
B	0.0826	0.0768	0.0877	0.0877	2.5	30.6	30.69	100	100
C	0.1046	0.0946	0.1111	0.1111	2.5	30.6	30.71	100	100
D	0.1244	0.1212	0.1340	0.1340	2.5	30.6	30.73	100	100
Maroon Bells-Snowmass WA									
A	0.0476	0.0582	0.0532	0.0582	2.5	30.6	30.66	100	100
B	0.0356	0.0410	0.0391	0.0410	2.5	30.6	30.64	100	100
C	0.0399	0.0454	0.0432	0.0454	2.5	30.6	30.65	100	100
D	0.0553	0.0656	0.0598	0.0656	2.5	30.6	30.67	100	100
Mount Zirkel WA									
A	0.0190	0.0189	0.0196	0.0196	2.5	30.6	30.62	100	100
B	0.0203	0.0199	0.0213	0.0213	2.5	30.6	30.62	100	100
C	0.0242	0.0231	0.0256	0.0256	2.5	30.6	30.63	100	100
D	0.0257	0.0244	0.0269	0.0269	2.5	30.6	30.63	100	100
Sensitive Class II Areas [3]									
Colorado NM									
A	0.0480	0.0547	0.0512	0.0547	2.5	30.6	30.65	100	100
B	0.0500	0.0573	0.0529	0.0573	2.5	30.6	30.66	100	100
C	0.0534	0.0611	0.0553	0.0611	2.5	30.6	30.66	100	100
D	0.0543	0.0615	0.0555	0.0615	2.5	30.6	30.66	100	100
Dinosaur NM									
A	0.1629	0.1414	0.1389	0.1629	2.5	30.6	30.76	100	100
B	0.2000	0.1755	0.1672	0.2000	2.5	30.6	30.80	100	100
C	0.2660	0.2348	0.2180	0.2660	2.5	30.6	30.87	100	100
D	0.2692	0.2405	0.2218	0.2692	2.5	30.6	30.87	100	100
Class II Areas (Gridded Receptors) [4]									
A	3.6623	4.0572	3.7519	4.0572	25	30.6	34.66	100	100
B	3.6825	4.0719	3.7663	4.0719	25	30.6	34.67	100	100
C	3.7168	4.0959	3.7908	4.0959	25	30.6	34.70	100	100
D	3.7202	4.0989	3.7933	4.0989	25	30.6	34.70	100	100

[1] Background concentrations are not added to the modeled concentration when comparing to PSD increments. PSD increment comparisons are for information only; they do not represent a regulatory increment consumption analysis.

[2] The annual NO_2 background concentration was recommended by CDPHE and is based on the monitors at Woodmen and Colorado College stations, Colorado Springs, El Paso County. (2005-2006 data).

[3] For sensitive Class II areas, PSD increment comparisons are based on Class I PSD increments.

[4] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO. Near-field receptors also excluded within 15 kilometers of RFFA (Colorado and Utah) and Vernal Field Office oil and gas point sources (gas plants and rill rigs).

Table F-23. Maximum Predicted 24-Hour PM_{10} Impacts from Cumulative Sources

Pollutant: PM_{10}
Averaging Time: 24-Hour

PSD Increments:

Class I Area	8	$\mu g/m^3$
Class II Area (Non-Sensitive)	30	$\mu g/m^3$

Area and Alternative	Modeled Concentration 2001 ($\mu g/m^3$)	2002 ($\mu g/m^3$)	2003 ($\mu g/m^3$)	Maximum High 2nd High Modeled Conc.[1] ($\mu g/m^3$)	PSD Increment [2] ($\mu g/m^3$)	Back-ground Conc. [3] ($\mu g/m^3$)	Maximum High 2nd High Total Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Class I Areas									
Arches NP									
A	0.3585	0.2069	0.3238	0.3585	8	56	56.36	150	---
B	0.4181	0.2205	0.2594	0.4181	8	56	56.42	150	---
C	0.5132	0.2582	0.3051	0.5132	8	56	56.51	150	---
D	0.5229	0.2736	0.3078	0.5229	8	56	56.52	150	---
Eagles Nest WA									
A	0.4277	0.7520	0.3633	0.7520	8	56	56.75	150	---
B	0.3802	0.5242	0.3313	0.5242	8	56	56.52	150	---
C	0.4295	0.6175	0.3910	0.6175	8	56	56.62	150	---
D	0.4425	0.6502	0.4056	0.6502	8	56	56.65	150	---
Flat Tops WA									
A	2.9099	3.1295	3.2874	3.2874	8	56	59.29	150	---
B	1.4110	1.9806	1.5151	1.9806	8	56	57.98	150	---
C	1.4114	1.9972	1.6962	1.9972	8	56	58.00	150	---
D	1.4120	2.0005	1.7415	2.0005	8	56	58.00	150	---
Maroon Bells-Snowmass WA									
A	2.5300	3.1579	3.0012	3.1579	8	56	59.16	150	---
B	0.3796	0.8073	0.4175	0.8073	8	56	56.81	150	---
C	0.5185	1.3851	0.5041	1.3851	8	56	57.39	150	---
D	0.6454	1.5790	0.5916	1.5790	8	56	57.58	150	---
Mount Zirkel WA									
A	0.7373	1.0827	0.8539	1.0827	8	56	57.08	150	---
B	0.7377	1.0985	0.8665	1.0985	8	56	57.10	150	---
C	0.7728	1.1290	0.8865	1.1290	8	56	57.13	150	---
D	0.7792	1.1327	0.8896	1.1327	8	56	57.13	150	---
Sensitive Class II Areas [4]									
Colorado NM									
A	1.7777	1.6892	1.5569	1.7777	8	56	57.78	150	---
B	1.7792	1.6892	1.5126	1.7792	8	56	57.78	150	---
C	1.7792	1.6892	1.5338	1.7792	8	56	57.78	150	---
D	1.7785	1.6892	1.5429	1.7785	8	56	57.78	150	---
Dinosaur NM									
A	3.0134	3.6933	3.2448	3.6933	8	56	59.69	150	---
B	2.8095	3.7361	3.0293	3.7361	8	56	59.74	150	---
C	2.9713	3.7946	3.8142	3.8142	8	56	59.81	150	---
D	2.9956	3.7953	3.7885	3.7953	8	56	59.80	150	---
Class II Areas (Gridded Receptors)[5]									
A	39.8440	55.1960	47.8840	55.1960	30	56	111.20	150	---
B	18.2800	22.1730	23.0930	23.0930	30	56	79.09	150	---
C	18.2940	22.1930	23.1840	23.1840	30	56	79.18	150	---
D	22.2490	26.8840	23.2340	26.8840	30	56	82.88	150	---

[1] The maximum modeled high 2nd high concentration over all three years (2001-2003).

[2] Background concentrations are not added to the modeled concentration when comparing to PSD increments. PSD increment comparisons are for

[3] The 24-hour PM_{10} background concentration was recommended by CDPHE and is based on the monitor at Rifle, Garfield County (2006 data).

[4] For sensitive Class II areas, PSD increment comparisons are based on Class I PSD increments.

[5] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO. Near-field receptors also excluded within 15 kilometers of RFFA (Colorado and Utah) and Vernal Field Office oil and gas point sources (gas plants and rill rigs).

Table F-24. Maximum Predicted 24-Hour $PM_{2.5}$ Impacts from Cumulative Sources

Pollutant: $PM_{2.5}$
Averaging Time: 24-Hour

PSD Increments:

Class I Area	2	$\mu g/m^3$
Class II Area (Non-Sensitive)	9	$\mu g/m^3$

Area and Alternative	Annual 8th-High Modeled Concentration at Any Receptor 2001 ($\mu g/m^3$)	2002 ($\mu g/m^3$)	2003 ($\mu g/m^3$)	3-Year Average of Annual Max. Modeled 8th-High Conc. [2] ($\mu g/m^3$)	PSD Increment ($\mu g/m^3$)	Back-ground Conc. [1] ($\mu g/m^3$)	High 8th High Total Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Class I Areas									
Arches NP									
A	0.2261	0.1231	0.1176	0.1476	2	24	24.15	35	---
B	0.2437	0.1362	0.1071	0.1550	2	24	24.16	35	---
C	0.2703	0.1621	0.1213	0.1836	2	24	24.18	35	---
D	0.2772	0.1664	0.1226	0.1887	2	24	24.19	35	---
Eagles Nest WA									
A	0.2390	0.3657	0.2274	0.2748	2	24	24.27	35	---
B	0.2222	0.3237	0.2126	0.2522	2	24	24.25	35	---
C	0.2630	0.3878	0.2447	0.2969	2	24	24.30	35	---
D	0.2707	0.4019	0.2567	0.3072	2	24	24.31	35	---
Flat Tops WA									
A	0.7120	0.8238	0.8184	0.7847	2	24	24.78	35	---
B	0.7335	0.7864	0.8198	0.7760	2	24	24.78	35	---
C	0.7609	0.8925	0.8387	0.8297	2	24	24.83	35	---
D	0.7600	0.8956	0.8401	0.8319	2	24	24.83	35	---
Maroon Bells-Snowmass WA									
A	0.5765	0.7848	0.6974	0.6862	2	24	24.69	35	---
B	0.2643	0.3329	0.2697	0.2855	2	24	24.29	35	---
C	0.3260	0.3945	0.3132	0.3437	2	24	24.34	35	---
D	0.3650	0.4246	0.3406	0.3689	2	24	24.37	35	---
Mount Zirkel WA									
A	0.3740	0.5635	0.4144	0.4470	2	24	24.45	35	---
B	0.3718	0.5235	0.4094	0.4341	2	24	24.43	35	---
C	0.4138	0.6190	0.4531	0.4911	2	24	24.49	35	---
D	0.4195	0.6205	0.4620	0.5001	2	24	24.50	35	---
Sensitive Class II Areas									
Colorado NM									
A	0.3657	0.3429	0.3175	0.3391	2	24	24.34	35	---
B	0.3556	0.3705	0.3166	0.3384	2	24	24.34	35	---
C	0.4330	0.4333	0.3719	0.4042	2	24	24.40	35	---
D	0.4491	0.4427	0.3740	0.4148	2	24	24.41	35	---
Dinosaur NM									
A	1.5872	1.5269	1.5101	1.5055	2	24	25.51	35	---
B	1.6076	1.5498	1.4835	1.5326	2	24	25.53	35	---
C	1.6767	1.6194	1.6803	1.6390	2	24	25.64	35	---
D	1.6867	1.6280	1.7090	1.6548	2	24	25.65	35	---
Class II Areas (Gridded Receptors)[3]									
A	10.8130	12.8220	14.8910	11.6030	9	24	35.60	35	---
B	10.8180	12.8690	14.9070	11.6023	9	24	35.60	35	---
C	10.8420	12.9670	14.9810	11.6650	9	24	35.67	35	---
D	10.8530	12.9770	15.0220	11.6737	9	24	35.67	35	---

[1] The 24-hour $PM_{2.5}$ background concentration was recommended by CDPHE and is based on the monitor at Rifle, Garfield County (2006 data).

[2] This is the three-year average of the annual modeled 8th-highest concentration within the area, as determined on a receptor-specific basis. The three-year average in this column is less than the average of the three annual 8th high modeled concentrations when the locations of the annual 8th high receptors vary from one year to another.

[3] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO. Near-field receptors also excluded within 15 kilometers of RFFA (Colorado and Utah) and Vernal Field Office oil and gas point sources (gas plants and rill rigs).

Table F-25. Maximum Predicted Annual $PM_{2.5}$ Impacts from Cumulative Sources

Pollutant: $PM_{2.5}$ **PSD Increments:**

Averaging Time: Annual **Class I Area** 1 $\mu g/m^3$

Class II Area (Non-Sensitive) 4 $\mu g/m^3$

Area and Alternative	Modeled Concentration 2001 ($\mu g/m^3$)	2002 ($\mu g/m^3$)	2003 ($\mu g/m^3$)	Max. Modeled 3 year Average Conc. ($\mu g/m^3$)	PSD Increment ($\mu g/m^3$)	Back-ground Conc. [1] ($\mu g/m^3$)	Max. Total 3 year Average Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Class I Areas									
Arches NP									
A	0.0151	0.0160	0.0139	0.0150	1	9	9.01	12	---
B	0.0158	0.0157	0.0134	0.0150	1	9	9.01	12	---
C	0.0181	0.0173	0.0148	0.0167	1	9	9.02	12	---
D	0.0186	0.0175	0.0149	0.0170	1	9	9.02	12	---
Eagles Nest WA									
A	0.0573	0.0752	0.0600	0.0642	1	9	9.06	12	---
B	0.0456	0.0608	0.0504	0.0523	1	9	9.05	12	---
C	0.0528	0.0713	0.0586	0.0609	1	9	9.06	12	---
D	0.0568	0.0759	0.0625	0.0650	1	9	9.07	12	---
Flat Tops WA									
A	0.1603	0.1818	0.1796	0.1739	1	9	9.17	12	---
B	0.1426	0.1640	0.1552	0.1539	1	9	9.15	12	---
C	0.1585	0.1828	0.1735	0.1716	1	9	9.17	12	---
D	0.1646	0.1890	0.1813	0.1783	1	9	9.18	12	---
Maroon Bells-Snowmass WA									
A	0.1131	0.1454	0.1509	0.1365	1	9	9.14	12	---
B	0.0458	0.0585	0.0478	0.0507	1	9	9.05	12	---
C	0.0532	0.0674	0.0552	0.0586	1	9	9.06	12	---
D	0.0619	0.0787	0.0656	0.0687	1	9	9.07	12	---
Mount Zirkel WA									
A	0.1004	0.1126	0.1050	0.1060	1	9	9.11	12	---
B	0.0936	0.1062	0.1004	0.1000	1	9	9.10	12	---
C	0.1038	0.1175	0.1110	0.1108	1	9	9.11	12	---
D	0.1071	0.1206	0.1139	0.1139	1	9	9.11	12	---
Sensitive Class II Areas									
Colorado NM									
A	0.0670	0.0809	0.0732	0.0737	1	9	9.07	12	---
B	0.0646	0.0778	0.0686	0.0703	1	9	9.07	12	---
C	0.0704	0.0863	0.0760	0.0776	1	9	9.08	12	---
D	0.0723	0.0883	0.0774	0.0794	1	9	9.08	12	---
Dinosaur NM									
A	0.3859	0.4118	0.4086	0.4021	1	9	9.40	12	---
B	0.3559	0.3881	0.3862	0.3767	1	9	9.38	12	---
C	0.4188	0.4541	0.4433	0.4387	1	9	9.44	12	---
D	0.4290	0.4647	0.4518	0.4485	1	9	9.45	12	---
Class II Areas (Gridded Receptors)[2]									
A	2.4620	2.9544	2.9463	2.7876	4	9	11.79	12	---
B	2.4334	2.9298	2.9258	2.7630	4	9	11.76	12	---
C	2.5009	2.9974	2.9987	2.8323	4	9	11.83	12	---
D	2.5159	3.0116	3.0119	2.8465	4	9	11.85	12	---

[1] The annual $PM_{2.5}$ background concentration was recommended by CDPHE and is based on the monitor at Rifle, Garfield County (2006 data).

[2] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO. Near-field receptors also excluded within 15 kilometers of RFFA (Colorado and Utah) and Vernal Field Office oil and gas point sources (gas plants and rill rigs).

Table F-26. Maximum Predicted 1-Hour SO_2 Impacts from Cumulative Sources

Pollutant: SO_2 **PSD Increments:**

Averaging Time: 1-hour **Class I Area** N/A $\mu g/m^3$

Class II Area (Non-Sensitive) N/A $\mu g/m^3$

Area and Alternative	Modeled Concentration[1] 2001 ($\mu g/m^3$)	2002 ($\mu g/m^3$)	2003 ($\mu g/m^3$)	Max. Modeled 3-Year Average 4th High Daily 1-hour Conc. ($\mu g/m^3$)	PSD Increment ($\mu g/m^3$)	Back-ground Conc.[2] ($\mu g/m^3$)	Max. Total Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Class I Areas									
Arches NP									
A	0.0201	0.0072	0.0144	0.0130	N/A	80.82	80.83	195.54	N/A
B	0.0210	0.0073	0.0148	0.0133	N/A	80.82	80.83	195.54	N/A
C	0.0215	0.0081	0.0152	0.0140	N/A	80.82	80.83	195.54	N/A
D	0.0221	0.0088	0.0159	0.0146	N/A	80.82	80.83	195.54	N/A
Eagles Nest WA									
A	0.0338	0.0347	0.0269	0.0306	N/A	80.82	80.85	195.54	N/A
B	0.0340	0.0347	0.0275	0.0310	N/A	80.82	80.85	195.54	N/A
C	0.0358	0.0347	0.0286	0.0316	N/A	80.82	80.85	195.54	N/A
D	0.0373	0.0347	0.0304	0.0328	N/A	80.82	80.85	195.54	N/A
Flat Tops WA									N/A
A	0.0924	0.0779	0.0864	0.0817	N/A	80.82	80.90	195.54	N/A
B	0.0936	0.0786	0.0907	0.0836	N/A	80.82	80.90	195.54	N/A
C	0.0947	0.0796	0.0966	0.0861	N/A	80.82	80.91	195.54	N/A
D	0.0963	0.0824	0.1027	0.0911	N/A	80.82	80.91	195.54	N/A
Maroon Bells-Snowmass WA									
A	0.0513	0.0450	0.0427	0.0424	N/A	80.82	80.86	195.54	N/A
B	0.0531	0.0456	0.0444	0.0438	N/A	80.82	80.86	195.54	N/A
C	0.0553	0.0477	0.0473	0.0456	N/A	80.82	80.87	195.54	N/A
D	0.0589	0.0502	0.0504	0.0476	N/A	80.82	80.87	195.54	N/A
Mount Zirkel WA									
A	0.0325	0.0408	0.0391	0.0374	N/A	80.82	80.86	195.54	N/A
B	0.0333	0.0421	0.0398	0.0383	N/A	80.82	80.86	195.54	N/A
C	0.0342	0.0437	0.0404	0.0393	N/A	80.82	80.86	195.54	N/A
D	0.0353	0.0454	0.0411	0.0403	N/A	80.82	80.86	195.54	N/A
Sensitive Class II Areas									
Colorado NM									
A	0.0682	0.0549	0.0989	0.0732	N/A	80.82	80.89	195.54	N/A
B	0.0692	0.0566	0.0997	0.0746	N/A	80.82	80.89	195.54	N/A
C	0.0710	0.0576	0.1013	0.0762	N/A	80.82	80.90	195.54	N/A
D	0.0729	0.0588	0.1028	0.0774	N/A	80.82	80.90	195.54	N/A
Dinosaur NM									
A	0.3042	0.4520	0.5368	0.4135	N/A	80.82	81.23	195.54	N/A
B	0.3073	0.4525	0.5393	0.4170	N/A	80.82	81.24	195.54	N/A
C	0.3117	0.4531	0.5426	0.4219	N/A	80.82	81.24	195.54	N/A
D	0.3156	0.4537	0.5448	0.4262	N/A	80.82	81.25	195.54	N/A
Class II Areas (Gridded Receptors)[3]									
A	2.2028	3.1583	3.0147	2.7919	N/A	80.82	83.61	195.54	N/A
B	2.2032	3.1644	3.0172	2.7949	N/A	80.82	83.61	195.54	N/A
C	2.2035	3.1733	3.0215	2.7994	N/A	80.82	83.62	195.54	N/A
D	2.2048	3.1944	3.0260	2.8084	N/A	80.82	83.63	195.54	N/A

[1] Maximum 99th percentile daily maximum 1-hour average SO2 values are reported for "Modeled Concentration."

[2] The background concentration data is based on the 99th percentile of year 2006 1-hour SO_2 data from a monitor (ID 08-031-0002) located on Broadway Street, Denver, Colorado in Denver County.

[3] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO. Near-field receptors also excluded within 15 kilometers of RFFA (Colorado and Utah) and Vernal Field Office oil and gas point sources (gas plants and rill rigs).

Table F-27. Maximum Predicted 3-Hour SO_2 Impacts from Cumulative Sources

Pollutant: SO_2 **PSD Increments:**

Averaging Time: 3-Hour **Class I Area** 25 $\mu g/m^3$

Class II Area (Non-Sensitive) 512 $\mu g/m^3$

Area and Alternative	Modeled Concentration 2001 ($\mu g/m^3$)	2002 ($\mu g/m^3$)	2003 ($\mu g/m^3$)	Max. High 2nd High Modeled Conc. ($\mu g/m^3$)	PSD Increment [1] ($\mu g/m^3$)	Back-ground Conc. [2] ($\mu g/m^3$)	Max. High 2nd High Total Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Class I Areas									
Arches NP									
A	0.0290	0.0081	0.0168	0.0290	25	66.6	66.63	1300	700
B	0.0300	0.0085	0.0175	0.0300	25	66.6	66.63	1300	700
C	0.0312	0.0090	0.0183	0.0312	25	66.6	66.63	1300	700
D	0.0324	0.0095	0.0192	0.0324	25	66.6	66.63	1300	700
Eagles Nest WA									
A	0.0311	0.0235	0.0219	0.0311	25	66.6	66.63	1300	700
B	0.0314	0.0242	0.0230	0.0314	25	66.6	66.63	1300	700
C	0.0317	0.0250	0.0246	0.0317	25	66.6	66.63	1300	700
D	0.0322	0.0253	0.0260	0.0322	25	66.6	66.63	1300	700
Flat Tops WA									
A	0.0778	0.0762	0.0905	0.0905	25	66.6	66.69	1300	700
B	0.0778	0.0762	0.0908	0.0908	25	66.6	66.69	1300	700
C	0.0778	0.0762	0.0911	0.0911	25	66.6	66.69	1300	700
D	0.0778	0.0763	0.0914	0.0914	25	66.6	66.69	1300	700
Maroon Bells-Snowmass WA									
A	0.0409	0.0353	0.0409	0.0409	25	66.6	66.64	1300	700
B	0.0426	0.0376	0.0413	0.0426	25	66.6	66.64	1300	700
C	0.0453	0.0398	0.0420	0.0453	25	66.6	66.65	1300	700
D	0.0478	0.0429	0.0441	0.0478	25	66.6	66.65	1300	700
Mount Zirkel WA									
A	0.0321	0.0434	0.0330	0.0434	25	66.6	66.64	1300	700
B	0.0325	0.0440	0.0343	0.0440	25	66.6	66.64	1300	700
C	0.0330	0.0447	0.0362	0.0447	25	66.6	66.64	1300	700
D	0.0335	0.0456	0.0378	0.0456	25	66.6	66.65	1300	700
Sensitive Class II Areas [3]									
Colorado NM									
A	0.0774	0.0538	0.1091	0.1091	25	66.6	66.71	1300	700
B	0.0792	0.0562	0.1107	0.1107	25	66.6	66.71	1300	700
C	0.0817	0.0588	0.1124	0.1124	25	66.6	66.71	1300	700
D	0.0839	0.0613	0.1142	0.1142	25	66.6	66.71	1300	700
Dinosaur NM									
A	0.3242	0.3812	0.2890	0.3812	25	66.6	66.98	1300	700
B	0.3255	0.3833	0.2913	0.3833	25	66.6	66.98	1300	700
C	0.3275	0.3856	0.2944	0.3856	25	66.6	66.99	1300	700
D	0.3294	0.3885	0.2975	0.3885	25	66.6	66.99	1300	700
Class II Areas (Gridded Receptors)[4]									
A	1.5662	2.7393	1.9293	2.7393	512	66.6	69.34	1300	700
B	1.5684	2.7416	1.9383	2.7416	512	66.6	69.34	1300	700
C	1.5744	2.7455	1.9536	2.7455	512	66.6	69.35	1300	700
D	1.5846	2.7487	1.9828	2.7487	512	66.6	69.35	1300	700

[1] Background concentrations are not added to the modeled concentration when comparing to PSD increments. PSD increment comparisons are for information only; they do not represent a regulatory increment consumption analysis.

[2] The 3-hour SO_2 background concentration was recommended by CDPHE and is based on the monitor at Colorado College, Colorado Springs, El Paso County. (2005-2006 data)

[3] For sensitive Class II areas, PSD increment comparisons are based on Class I PSD increments.

[4] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO. Near-field receptors also excluded within 15 kilometers of RFFA (Colorado and Utah) and Vernal Field Office oil and gas point sources (gas plants and rill rigs).

Table F-28. Maximum Predicted 1-Hour CO Impacts from Cumulative Sources

Pollutant: CO
Averaging Time: 1-Hour

PSD Increments:
Class I Area NA
Class II Area (Non-Sensitive) NA

Area and Alternative	Modeled Concentration 2001 (µg/m³)	2002 (µg/m³)	2003 (µg/m³)	Max. High 2nd High Modeled Conc. (µg/m³)	PSD Increment [1] (µg/m³)	Back-ground Conc. [2] (µg/m³)	Max. High 2nd High Total Conc. (µg/m³)	NAAQS (µg/m³)	CAAQS (µg/m³)
Class I Areas									
Arches NP									
A	2.4458	1.8439	3.4685	3.4685	NA	4656.4	4659.87	40000	40000
B	2.9904	1.8967	4.7319	4.7319	NA	4656.4	4661.13	40000	40000
C	4.4239	1.9540	7.0914	7.0914	NA	4656.4	4663.49	40000	40000
D	4.5258	1.9383	7.4483	7.4483	NA	4656.4	4663.85	40000	40000
Eagles Nest WA									
A	4.8265	3.6702	3.3271	4.8265	NA	4656.4	4661.23	40000	40000
B	4.6295	3.8262	4.6217	4.6295	NA	4656.4	4661.03	40000	40000
C	5.9409	5.3621	6.7231	6.7231	NA	4656.4	4663.12	40000	40000
D	7.6206	5.7840	7.3883	7.6206	NA	4656.4	4664.02	40000	40000
Flat Tops WA									
A	5.1544	6.7590	6.6997	6.7590	NA	4656.4	4663.16	40000	40000
B	7.2256	7.2282	8.9508	8.9508	NA	4656.4	4665.35	40000	40000
C	9.1364	10.0160	10.4060	10.4060	NA	4656.4	4666.81	40000	40000
D	9.2746	10.7340	11.7700	11.7700	NA	4656.4	4668.17	40000	40000
Maroon Bells-Snowmass WA									
A	7.0500	8.0009	6.5311	8.0009	NA	4656.4	4664.40	40000	40000
B	8.5636	9.9922	6.0471	9.9922	NA	4656.4	4666.39	40000	40000
C	11.8880	13.9600	8.4520	13.9600	NA	4656.4	4670.36	40000	40000
D	13.3300	14.8370	9.3500	14.8370	NA	4656.4	4671.24	40000	40000
Mount Zirkel WA									
A	3.4717	4.5173	6.0133	6.0133	NA	4656.4	4662.41	40000	40000
B	3.4717	4.8636	6.1067	6.1067	NA	4656.4	4662.51	40000	40000
C	4.2959	6.0585	6.3695	6.3695	NA	4656.4	4662.77	40000	40000
D	4.3764	6.2751	6.4613	6.4613	NA	4656.4	4662.86	40000	40000
Sensitive Class II Areas [3]									
Colorado NM									
A	4.4010	4.5012	5.9566	5.9566	NA	4656.4	4662.36	40000	40000
B	4.5826	4.5167	8.0633	8.0633	NA	4656.4	4664.46	40000	40000
C	6.2986	6.0759	11.5760	11.5760	NA	4656.4	4667.98	40000	40000
D	6.9642	6.5382	12.3320	12.3320	NA	4656.4	4668.73	40000	40000
Dinosaur NM									
A	9.9114	14.3610	20.9520	20.9520	NA	4656.4	4677.35	40000	40000
B	11.6210	14.6110	20.9520	20.9520	NA	4656.4	4677.35	40000	40000
C	17.2030	15.3090	20.9550	20.9550	NA	4656.4	4677.36	40000	40000
D	18.1100	15.6230	20.9550	20.9550	NA	4656.4	4677.36	40000	40000
Class II Areas (Gridded Receptors)[4]									
A	109.6800	148.2100	205.3900	205.3900	NA	4656.4	4861.79	40000	40000
B	109.6800	148.2300	205.3900	205.3900	NA	4656.4	4861.79	40000	40000
C	206.5400	208.7100	205.3900	208.7100	NA	4656.4	4865.11	40000	40000
D	204.9700	208.0500	205.3900	208.0500	NA	4656.4	4864.45	40000	40000

[1] Background concentrations are not added to the modeled concentration when comparing to PSD increments. PSD increment comparisons are for information only; they do not represent a regulatory increment consumption analysis.

[2] The 1-hour CO background concentration was recommended by CDPHE and is based on the monitor at Grand Junction, Mesa County. (average of -2004-2006 data)

[3] For sensitive Class II areas, PSD increment comparisons are based on Class I PSD increments.

[4] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO. Near-field receptors also excluded within 15 kilometers of RFFA (Colorado and Utah) and Vernal Field Office oil and gas point sources (gas plants and rill rigs).

Table F-29. Maximum Predicted 8-Hour CO Impacts from Cumulative Sources

Pollutant: CO
Averaging Time: 8-Hour

PSD Increments:
Class I Area NA
Class II Area (Non-Sensitive) NA

Area and Alternative	Modeled Concentration 2001 (µg/m³)	2002 (µg/m³)	2003 (µg/m³)	Max. High 2nd High Modeled Conc. (µg/m³)	PSD Increment [1] (µg/m³)	Back-ground Conc. [2] (µg/m³)	Max. High 2nd High Total Conc. (µg/m³)	NAAQS (µg/m³)	CAAQS (µg/m³)
Class I Areas									
Arches NP									
A	1.5477	1.0514	1.0168	1.5477	NA	2328.2	2329.75	10000	10000
B	2.1677	1.1063	1.4053	2.1677	NA	2328.2	2330.37	10000	10000
C	2.9729	1.2007	2.0591	2.9729	NA	2328.2	2331.17	10000	10000
D	3.1368	1.2375	2.0411	3.1368	NA	2328.2	2331.34	10000	10000
Eagles Nest WA									
A	1.3515	1.7893	2.2977	2.2977	NA	2328.2	2330.50	10000	10000
B	1.5288	1.8289	2.6812	2.6812	NA	2328.2	2330.88	10000	10000
C	2.2086	2.4904	3.6545	3.6545	NA	2328.2	2331.85	10000	10000
D	2.2571	2.8387	3.9884	3.9884	NA	2328.2	2332.19	10000	10000
Flat Tops WA									
A	2.8709	2.9043	2.8199	2.9043	NA	2328.2	2331.10	10000	10000
B	3.0585	4.0237	3.5439	4.0237	NA	2328.2	2332.22	10000	10000
C	3.9921	5.6570	4.8696	5.6570	NA	2328.2	2333.86	10000	10000
D	4.5491	6.1565	5.2646	6.1565	NA	2328.2	2334.36	10000	10000
Maroon Bells-Snowmass WA									
A	3.3825	3.1508	3.3374	3.3825	NA	2328.2	2331.58	10000	10000
B	3.4370	3.0305	3.1028	3.4370	NA	2328.2	2331.64	10000	10000
C	4.8275	4.0136	4.0392	4.8275	NA	2328.2	2333.03	10000	10000
D	5.3741	5.0938	5.0276	5.3741	NA	2328.2	2333.57	10000	10000
Mount Zirkel WA									
A	1.2801	2.2181	1.5108	2.2181	NA	2328.2	2330.42	10000	10000
B	1.6567	2.5639	2.0004	2.5639	NA	2328.2	2330.76	10000	10000
C	2.3251	3.4196	2.7016	3.4196	NA	2328.2	2331.62	10000	10000
D	2.4998	3.6592	2.8319	3.6592	NA	2328.2	2331.86	10000	10000
Sensitive Class II Areas [3]									
Colorado NM									
A	2.6298	2.2957	2.9218	2.9218	NA	2328.2	2331.12	10000	10000
B	2.7168	2.9858	3.6544	3.6544	NA	2328.2	2331.85	10000	10000
C	4.0661	4.3169	4.9734	4.9734	NA	2328.2	2333.17	10000	10000
D	4.2400	4.5480	5.2820	5.2820	NA	2328.2	2333.48	10000	10000
Dinosaur NM									
A	4.5543	4.0513	4.5764	4.5764	NA	2328.2	2332.78	10000	10000
B	6.1316	5.4233	6.3816	6.3816	NA	2328.2	2334.58	10000	10000
C	8.7515	7.5312	9.3317	9.3317	NA	2328.2	2337.53	10000	10000
D	9.1344	7.8305	9.6545	9.6545	NA	2328.2	2337.85	10000	10000
Class II Areas (Gridded Receptors)[4]									
A	30.6810	40.6670	32.8100	40.6670	NA	2328.2	2368.87	10000	10000
B	30.6810	40.6690	32.8110	40.6690	NA	2328.2	2368.87	10000	10000
C	33.4920	75.8190	33.3000	75.8190	NA	2328.2	2404.02	10000	10000
D	32.8090	75.0780	33.2100	75.0780	NA	2328.2	2403.28	10000	10000

[1] Background concentrations are not added to the modeled concentration when comparing to PSD increments. PSD increment comparisons are for information only; they do not represent a regulatory increment consumption analysis.

[2] The 8-hour CO background concentration was recommended by CDPHE and is based on the monitor at Grand Junction, Mesa County. (average of -2004-2006 data)

[3] For sensitive Class II areas, PSD increment comparisons are based on Class I PSD increments.

[4] Near-field receptors excluded from high potential O&G development areas of WRFO and CRVFO. Near-field receptors also excluded within 15 kilometers of RFFA (Colorado and Utah) and Vernal Field Office oil and gas point sources (gas plants and rill rigs).

Table F-30. Maximum Predicted Nitrogen Deposition from Cumulative Sources

Air Quality Related Value: N Deposition

Area and Alternative	Modeled Deposition 2001 (kg/ha/yr)	2002 (kg/ha/yr)	2003 (kg/ha/yr)	Maximum Modeled Deposition (kg/ha/yr)	DAT [1] (kg/ha/yr)	Background Deposition [2] (kg/ha/yr)	Total Deposition (kg/ha/yr)	Level of Concern (kg/ha/yr)
Class I Areas								
Arches NP								
A	0.0029	0.0017	0.0021	0.0029	0.005	1.9	1.90	3.0
B	0.0031	0.0018	0.0023	0.0031	0.005	1.9	1.90	3.0
C	0.0036	0.0019	0.0025	0.0036	0.005	1.9	1.90	3.0
D	0.0037	0.0019	0.0026	0.0037	0.005	1.9	1.90	3.0
Eagles Nest WA								
A	0.0105	0.0110	0.0143	0.0143	0.005	1.5	1.51	3.0
B	0.0101	0.0110	0.0143	0.0143	0.005	1.5	1.51	3.0
C	0.0123	0.0134	0.0177	0.0177	0.005	1.5	1.52	3.0
D	0.0140	0.0150	0.0201	0.0201	0.005	1.5	1.52	3.0
Flat Tops WA								
A	0.0405	0.0363	0.0459	0.0459	0.005	1.5	1.55	3.0
B	0.0406	0.0352	0.0453	0.0453	0.005	1.5	1.55	3.0
C	0.0513	0.0448	0.0568	0.0568	0.005	1.5	1.56	3.0
D	0.0575	0.0501	0.0636	0.0636	0.005	1.5	1.56	3.0
Maroon Bells-Snowmass WA								
A	0.0237	0.0191	0.0248	0.0248	0.005	1.5	1.52	3.0
B	0.0211	0.0162	0.0216	0.0216	0.005	1.5	1.52	3.0
C	0.0247	0.0184	0.0250	0.0250	0.005	1.5	1.52	3.0
D	0.0307	0.0236	0.0313	0.0313	0.005	1.5	1.53	3.0
Mount Zirkel WA								
A	0.0139	0.0135	0.0169	0.0169	0.005	2.7	2.72	3.0
B	0.0152	0.0144	0.0182	0.0182	0.005	2.7	2.72	3.0
C	0.0184	0.0170	0.0221	0.0221	0.005	2.7	2.72	3.0
D	0.0193	0.0179	0.0232	0.0232	0.005	2.7	2.72	3.0
Sensitive Class II Areas								
Colorado NM								
A	0.0139	0.0156	0.0178	0.0178	0.005	1.9	1.92	3.0
B	0.0148	0.0167	0.0190	0.0190	0.005	1.9	1.92	3.0
C	0.0164	0.0184	0.0209	0.0209	0.005	1.9	1.92	3.0
D	0.0167	0.0185	0.0211	0.0211	0.005	1.9	1.92	3.0
Dinosaur NM								
A	0.0612	0.0498	0.0570	0.0612	0.005	1.5	1.56	3.0
B	0.0733	0.0595	0.0665	0.0733	0.005	1.5	1.57	3.0
C	0.0948	0.0772	0.0836	0.0948	0.005	1.5	1.59	3.0
D	0.0960	0.0789	0.0847	0.0960	0.005	1.5	1.60	3.0

[1] The Deposition Analysis Threshold (DAT) is a significance threshold. If the modeled deposition rate (without adding the background concentration) is below the DAT, predicted impacts are considered to be insignificant.

[2] Total (wet and dry) nitrogen background deposition values were obtained from the Clean Air Status and Trends Network (CASTNet) web page (http://www.epa.gov/castnet/index.html) on December 4, 2008. The following monitored data was used for each Class I Area:

Canyonlands (CAN407) Year 2000: Arches NP, Colorado NM

Gothic (GTH161) Year 2000: Dinosaur NM, Eagles Nest WA, Flat Tops WA, Maroon Bells-Snowmass WA

Rocky Mountain NP (ROM206) Year 2002: Mount Zirkel WA

Table F-31. Maximum Predicted Sulfur Deposition from Cumulative Sources

Air Quality Related Value: S Deposition

Area and Alternative	Modeled Deposition 2001 (kg/ha/yr)	Modeled Deposition 2002 (kg/ha/yr)	Modeled Deposition 2003 (kg/ha/yr)	Maximum Modeled Deposition (kg/ha/yr)	DAT [1] (kg/ha/yr)	Background Deposition [2] (kg/ha/yr)	Total Deposition (kg/ha/yr)	Level of Concern (kg/ha/yr)
Class I Areas								
Arches NP								
A	0.0001	0.0001	0.0001	0.0001	0.005	0.64	0.64	5.0
B	0.0001	0.0001	0.0001	0.0001	0.005	0.64	0.64	5.0
C	0.0001	0.0001	0.0001	0.0001	0.005	0.64	0.64	5.0
D	0.0001	0.0001	0.0001	0.0001	0.005	0.64	0.64	5.0
Eagles Nest WA								
A	0.0006	0.0006	0.0007	0.0007	0.005	0.73	0.73	5.0
B	0.0006	0.0006	0.0007	0.0007	0.005	0.73	0.73	5.0
C	0.0006	0.0007	0.0008	0.0008	0.005	0.73	0.73	5.0
D	0.0007	0.0007	0.0008	0.0008	0.005	0.73	0.73	5.0
Flat Tops WA								
A	0.0021	0.0021	0.0022	0.0022	0.005	0.73	0.73	5.0
B	0.0022	0.0022	0.0024	0.0024	0.005	0.73	0.73	5.0
C	0.0024	0.0024	0.0026	0.0026	0.005	0.73	0.73	5.0
D	0.0026	0.0026	0.0028	0.0028	0.005	0.73	0.73	5.0
Maroon Bells-Snowmass WA								
A	0.0006	0.0005	0.0006	0.0006	0.005	0.73	0.73	5.0
B	0.0007	0.0005	0.0006	0.0007	0.005	0.73	0.73	5.0
C	0.0007	0.0005	0.0007	0.0007	0.005	0.73	0.73	5.0
D	0.0008	0.0006	0.0008	0.0008	0.005	0.73	0.73	5.0
Mount Zirkel WA								
A	0.0010	0.0009	0.0011	0.0011	0.005	0.85	0.85	5.0
B	0.0011	0.0010	0.0012	0.0012	0.005	0.85	0.85	5.0
C	0.0011	0.0010	0.0013	0.0013	0.005	0.85	0.85	5.0
D	0.0012	0.0011	0.0013	0.0013	0.005	0.85	0.85	5.0
Sensitive Class II Areas								
Colorado NM								
A	0.0005	0.0005	0.0007	0.0007	0.005	0.64	0.64	5.0
B	0.0005	0.0005	0.0007	0.0007	0.005	0.64	0.64	5.0
C	0.0005	0.0005	0.0008	0.0008	0.005	0.64	0.64	5.0
D	0.0006	0.0005	0.0008	0.0008	0.005	0.64	0.64	5.0
Dinosaur NM								
A	0.0071	0.0056	0.0056	0.0071	0.005	0.73	0.74	5.0
B	0.0073	0.0057	0.0058	0.0073	0.005	0.73	0.74	5.0
C	0.0076	0.0060	0.0060	0.0076	0.005	0.73	0.74	5.0
D	0.0079	0.0062	0.0063	0.0079	0.005	0.73	0.74	5.0

[1] The Deposition Analysis Threshold (DAT) is a significance threshold. If the modeled deposition rate (without adding the background concentration) is below the DAT, predicted impacts are considered to be insignificant.

[2] Total (wet and dry) sulfur background deposition values were obtained from the Clean Air Status and Trends Network (CASTNet) web page (http://www.epa.gov/castnet/index.html) on December 4, 2008. The following monitored data was used for each Class I Area:

Canyonlands (CAN407) Year 2000: Arches NP, Colorado NM

Gothic (GTH161) Year 2000: Dinosaur NM, Eagles Nest WA, Flat Tops WA, Maroon Bells-Snowmass WA

Rocky Mountain NP (ROM206) Year 2002: Mount Zirkel WA

Table F-32. Maximum Predicted Lake Acid Neutralizing Capacity Changes from Cumulative Sources

Air Quality Related Value: Change in Lake ANC

Lake and Alternative	H Deposition [1] 2001 (eq)	2002 (eq)	2003 (eq)	Background ANC [2] (eq)	Level of Acceptable Change [3] (eq)	Maximum ANC Change (eq)	Maximum Percent ANC Change (%)
Avalanche Lake							
A	457.8	333.4	458.0	451,000	45,100	458.0	0.10
B	425.9	291.2	415.1	451,000	45,100	425.9	0.09
C	513.4	339.6	495.9	451,000	45,100	513.4	0.11
D	616.0	421.2	599.6	451,000	45,100	616.0	0.14
Moon Lake							
A	186.3	138.5	189.7	56,400	5,640	189.7	0.34
B	171.5	118.6	170.9	56,400	5,640	171.5	0.30
C	206.6	138.2	204.4	56,400	5,640	206.6	0.37
D	248.6	173.2	248.5	56,400	5,640	248.6	0.44
Ned Wilson Lake							
A	17.3	15.5	20.4	2,240	224	20.4	0.91
B	17.2	15.6	20.4	2,240	224	20.4	0.91
C	21.4	19.6	25.2	2,240	224	25.2	1.12
D	24.3	22.2	28.7	2,240	224	28.7	1.28
Seven Lakes							
A	48.4	41.0	59.9	15,100	1,510	59.9	0.40
B	52.9	43.8	65.2	15,100	1,510	65.2	0.43
C	63.4	51.1	78.1	15,100	1,510	78.1	0.52
D	66.3	53.6	81.7	15,100	1,510	81.7	0.54
Summit Lake							
A	8.0	7.9	10.1	2,860	286	10.1	0.35
B	8.6	8.4	10.8	2,860	286	10.8	0.38
C	10.4	10.0	13.0	2,860	286	13.0	0.46
D	11.0	10.6	13.8	2,860	286	13.8	0.48
Trappers Lake							
A	216.0	195.8	258.9	528,000	52,800	258.9	0.05
B	221.3	203.8	266.1	528,000	52,800	266.1	0.05
C	274.6	255.8	328.8	528,000	52,800	328.8	0.06
D	307.2	284.4	368.3	528,000	52,800	368.3	0.07
Upper Ned Wilson Lake							
A	6.3	5.7	7.4	271	21.2	7.4	2.74
B	6.3	5.7	7.4	271	21.2	7.4	2.74
C	7.8	7.2	9.2	271	21.2	9.2	3.39
D	8.9	8.1	10.4	271	21.2	10.4	3.86

ANC = acid neutralizing capacity.

µeq/l = microequivalents per liter.

[1] The 10th-percentile lowest ANC values were calculated in accordance with the USFS Rocky Mountain Region's *Screening Methodology for Calculating ANC Change to High Elevation Lakes, User's Guide* (USFS 2000).

[2] Background ANC values were obtained from http://www.fs.fed.us/waterdata on January 25, 2007.

[3] The level of acceptable change is 10 percent change for lakes with ANC background values greater than 25 meq/l. For lakes with lower ANC background values (such as Upper Ned Wilson Lake), the level of acceptable change is 1 meq/l, which is comparable to 21.2 equivalents.

Table F-33. Days of Visibility Change Greater Than or Equal to 1.0 dv at Class I and Sensitive Class II Areas from Cumulative Sources

Air Quality Related Value: Visibility

Area and Alternative	2001			2002			2003		
	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily
Class I Areas									
Arches NP									
A	3	6	0	1	1	0	1	1	0
B	4	7	0	1	3	0	1	2	0
C	7	9	0	3	4	0	2	2	0
D	7	9	0	3	4	0	2	2	0
Eagles Nest WA									
A	1	1	1	8	2	5	2	1	1
B	1	1	1	10	5	6	3	1	1
C	3	1	2	15	9	11	6	2	5
D	3	2	2	16	10	13	8	2	5
Flat Tops WA									
A	40	27	20	54	33	29	58	43	36
B	35	25	16	42	26	25	51	38	34
C	49	40	26	56	44	33	62	54	39
D	54	48	31	61	56	40	68	64	43
Maroon Bells-Snowmass WA									
A	18	12	13	24	18	19	22	11	10
B	13	7	12	13	12	12	10	5	6
C	18	12	14	16	17	15	12	8	13
D	24	22	21	22	23	20	13	12	15
Mount Zirkel WA									
A	10	4	9	17	8	6	15	3	3
B	14	5	10	22	9	8	19	6	5
C	18	8	14	28	15	10	24	12	10
D	18	10	14	29	16	11	26	14	11
Sensitive Class II Areas									
Colorado NM									
A	22	17	17	23	26	22	18	17	11
B	24	19	17	25	28	24	19	17	14
C	28	23	19	29	31	30	22	22	19
D	31	24	21	30	32	30	24	22	19
Dinosaur NM									
A	180	160	100	168	154	114	172	153	115
B	167	157	99	156	148	110	162	149	110
C	202	189	127	194	178	138	193	176	141
D	209	195	130	198	185	146	195	180	143

Visibility calculation methods include the following:

FLAG 2000 (Protocol): This method was specified in the *Air Quality Impact Assessment Protocol: White River Resource Management Plan Amendment and Environmental Impact Statement* (BLM 2007a).

BLM Seasonal: This method uses seasonal natural background extinction data and monthly relative humidity data for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

BLM Daily: This method uses observed daily aerosol measurements and relative humidity data, with f(RH) limited at 90 percent for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

Table F-34. Days of Visibility Change Greater Than or Equal to 1.0 dv at Scenic Views from Cumulative Sources

Air Quality Related Value: Visibility

Area and Alternative	2001			2002			2003		
	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily	FLAG 2000 (Protocol)	BLM Seasonal	BLM Daily
Big Mountain View									
A	158	142	73	178	159	109	208	176	138
B	52	55	31	81	84	67	72	74	56
C	82	83	53	108	117	84	116	111	90
D	99	100	73	126	140	101	136	137	107
Holy Cross View									
A	0	0	0	2	1	2	0	0	0
B	0	0	0	2	1	1	0	0	0
C	0	0	0	6	2	2	2	0	1
D	1	0	0	8	3	3	2	0	1
Holy Cross Wilderness View									
A	0	0	0	2	0	0	0	0	0
B	0	0	0	2	0	0	0	0	0
C	1	0	0	6	1	1	0	0	0
D	2	0	0	7	3	1	0	0	1
Rabbit Ears View									
A	15	16	9	20	21	16	15	14	9
B	18	17	11	23	26	19	19	17	11
C	23	21	14	26	30	24	20	20	13
D	23	21	15	26	31	24	24	21	13
Roan Cliffs View									
A	314	338	319	331	349	342	312	335	325
B	279	314	244	316	336	279	300	328	283
C	287	320	253	320	341	289	302	331	293
D	316	341	311	331	350	319	316	339	319

Visibility calculation methods include the following:

FLAG 2000 (Protocol): This method was specified in the *Air Quality Impact Assessment Protocol: White River Resource Management Plan Amendment and Environmental Impact Statement* (BLM 2007a).

BLM Seasonal: This method uses seasonal natural background extinction data and monthly relative humidity data for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

BLM Daily: This method uses observed daily aerosol measurements and relative humidity data, with f(RH) limited at 90 percent for each sensitive area. This tool is based on FLAG published method to evaluate visibility at Class I areas.

5.0 Ozone Impacts

Table F-35. Future Ozone Design Values for Monitors in the 4km Domain

Monitor ID	Location Description	Episode / Alternative	CB (ppb)	CF (ppb)	RRF	DVB (ppb)	DVF (ppb)	Data Available for Years
Rural Monitors								
RPCK	Ripple Creek Pass	April						2006-2007
		A	70	70	1.00	66	65	
		B	70	70	1.00	66	65	
		C	70	70	1.00	66	65	
		D	70	70	1.00	66	65	
		July						2006–2007
		A	67	66	0.99	66	65	
		B	67	66	0.99	66	65	
		C	67	66	0.99	66	65	
		D	67	66	0.99	66	65	
SUNM	Sunlight	April						2006–2007
		A	69	68	0.99	70	69	
		B	69	68	0.99	70	69	
		C	69	68	0.99	70	69	
		D	69	68	0.99	70	69	
		July						2006–2007
		A	64	58	0.91	70	63	
		B	64	57	0.89	70	62	
		C	64	57	0.89	70	62	
		D	64	58	0.91	70	63	
COLM	Colorado NM	April						2006–2008
		A	67	66	0.99	69	68	
		B	67	66	0.99	69	68	
		C	67	66	0.99	69	68	
		D	67	66	0.99	69	68	
		July						2006–2008
		A	63	60	0.95	69	65	
		B	63	60	0.95	69	65	
		C	63	60	0.95	69	65	
		D	63	60	0.95	69	65	

Table F-35. Future Ozone Design Values for Monitors in the 4km Domain

Monitor ID	Location Description	Episode / Alternative	CB (ppb)	CF (ppb)	RRF	DVB (ppb)	DVF (ppb)	Data Available for Years
Rural Monitors (cont.)								
GTH161	Gothic	April						2004–2008
		A	71	70	0.99	67	66	
		B	71	70	0.99	67	66	
		C	71	70	0.99	67	66	
		D	71	70	0.99	67	66	
		July						2004–2008
		A	62	60	0.97	67	64	
		B	62	60	0.97	67	64	
		C	62	60	0.97	67	64	
		D	62	60	0.97	67	64	
DINO	Dinosaur NM	April						2005–2008
		A	65	65	1.00	66	65	
		B	65	65	1.00	66	65	
		C	65	65	1.00	66	65	
		D	65	65	1.00	66	65	
		July						2005–2008
		A	64	62	0.97	66	64	
		B	64	62	0.97	66	64	
		C	64	62	0.97	66	64	
		D	64	62	0.97	66	64	
080690007	Rocky Mountain NP	April						2004–2008
		A	71	70	0.99	75	74	
		B	71	70	0.99	75	74	
		C	71	70	0.99	75	74	
		D	71	70	0.99	75	74	
		July						2004–2008
		A	67	62	0.93	75	69	
		B	67	62	0.93	75	69	
		C	67	63	0.94	75	70	
		D	67	63	0.94	75	70	

Table F-35. Future Ozone Design Values for Monitors in the 4km Domain

Monitor ID	Location Description	Episode / Alternative	CB (ppb)	CF (ppb)	RRF	DVB (ppb)	DVF (ppb)	Data Available for Years
Rural Monitors (cont.)								
ROM206	Rocky Mountain NP Co-Located	April						2004–2008
		A	71	70	0.99	73	72	
		B	71	70	0.99	73	72	
		C	71	70	0.99	73	72	
		D	71	70	0.99	73	72	
		July						2004–2008
		A	67	62	0.93	73	67	
		B	67	62	0.93	73	67	
		C	67	63	0.94	73	68	
		D	67	63	0.94	73	68	
SHAM	Shamrock	April						2004–2008
		A	68	67	0.99	71	70	
		B	68	67	0.99	71	70	
		C	68	67	0.99	71	70	
		D	68	67	0.99	71	70	
		July						2004–2008
		A	63	62	0.98	71	69	
		B	63	62	0.98	71	69	
		C	63	62	0.98	71	69	
		D	63	62	0.98	71	69	
080830101	Mesa Verde NP	April						2004–2008
		A	67	67	1.00	72	71	
		B	67	67	1.00	72	71	
		C	67	67	1.00	72	71	
		D	67	67	1.00	72	71	
		July						2004–2008
		A	64	63	0.98	72	70	
		B	64	63	0.98	72	70	
		C	64	63	0.98	72	70	
		D	64	63	0.98	72	70	

Table F-35. Future Ozone Design Values for Monitors in the 4km Domain

Monitor ID	Location Description	Episode / Alternative	CB (ppb)	CF (ppb)	RRF	DVB (ppb)	DVF (ppb)	Data Available for Years
Urban Monitors								
080013001	Welby	April						2004–2008
		A	74	74	1.00	70	69	
		B	74	74	1.00	70	69	
		C	74	74	1.00	70	69	
		D	74	74	1.00	70	69	
		July						2004–2008
		A	77	72	0.94	70	65	
		B	77	72	0.94	70	65	
		C	77	72	0.94	70	65	
		D	77	72	0.94	70	65	
080050002	Highland	April						2004–2008
		A	73	72	0.99	75	74	
		B	73	72	0.99	75	74	
		C	73	72	0.99	75	74	
		D	73	72	0.99	75	74	
		July						2004–2008
		A	77	71	0.92	75	69	
		B	77	71	0.92	75	69	
		C	77	71	0.92	75	69	
		D	77	71	0.92	75	69	
080130011	South Boulder Creek	April						2004–2008
		A	73	71	0.97	79	76	
		B	73	71	0.97	79	76	
		C	73	71	0.97	79	76	
		D	73	71	0.97	79	76	
		July						2004–2008
		A	73	67	0.92	79	72	
		B	73	67	0.92	79	72	
		C	73	67	0.92	79	72	
		D	73	67	0.92	79	72	
080310002	CAMP	April						2005–2007
		A	74	74	1.00	56	56	
		B	74	74	1.00	56	56	
		C	74	74	1.00	56	56	
		D	74	74	1.00	56	56	
		July						2005–2007
		A	79	73	0.92	56	51	
		B	79	73	0.92	56	51	
		C	79	73	0.92	56	51	
		D	79	73	0.92	56	51	

Table F-35. Future Ozone Design Values for Monitors in the 4km Domain

Monitor ID	Location Description	Episode / Alternative	CB (ppb)	CF (ppb)	RRF	DVB (ppb)	DVF (ppb)	Data Available for Years
Urban Monitors (cont.)								
080310014	Carriage	April						2004–2008
		A	73	73	1.00	72	71	
		B	73	73	1.00	72	71	
		C	73	73	1.00	72	71	
		D	73	73	1.00	72	71	
		July						2004–2008
		A	79	73	0.92	72	66	
		B	79	73	0.92	72	66	
		C	79	73	0.92	72	66	
		D	79	73	0.92	72	66	
080350004	Chatfield Park	April						2004–2008
		A	73	72	0.99	82	81	
		B	73	72	0.99	82	81	
		C	73	72	0.99	82	81	
		D	73	72	0.99	82	81	
		July						2004–2008
		A	77	70	0.91	82	74	
		B	77	70	0.91	82	74	
		C	77	70	0.91	82	74	
		D	77	70	0.91	82	74	
080410013	USAF Academy	April						2004–2008
		A	71	70	0.99	72	71	
		B	71	70	0.99	72	71	
		C	71	70	0.99	72	71	
		D	71	70	0.99	72	71	
		July						2004–2008
		A	67	61	0.91	72	65	
		B	67	61	0.91	72	65	
		C	67	61	0.91	72	65	
		D	67	61	0.91	72	65	

Table F-35. Future Ozone Design Values for Monitors in the 4km Domain

Monitor ID	Location Description	Episode / Alternative	CB (ppb)	CF (ppb)	RRF	DVB (ppb)	DVF (ppb)	Data Available for Years
Urban Monitors (cont.)								
080410016	Manitou Springs	April						2004–2008
		A	71	70	0.99	73	72	
		B	71	70	0.99	73	72	
		C	71	70	0.99	73	72	
		D	71	70	0.99	73	72	
		July						2004–2008
		A	67	61	0.91	73	66	
		B	67	61	0.91	73	66	
		C	67	61	0.91	73	66	
		D	67	61	0.91	73	66	
080590002	Arvada	April						2004–2008
		A	73	72	0.99	77	76	
		B	73	72	0.99	77	76	
		C	73	72	0.99	77	76	
		D	73	72	0.99	77	76	
		July						2004–2008
		A	78	72	0.92	77	70	
		B	78	72	0.92	77	70	
		C	78	72	0.92	77	70	
		D	78	72	0.92	77	70	
080590005	Welch	April						2004–2008
		A	73	72	0.99	74	73	
		B	73	72	0.99	74	73	
		C	73	72	0.99	74	73	
		D	73	72	0.99	74	73	
		July						2004–2008
		A	77	71	0.92	74	68	
		B	77	71	0.92	74	68	
		C	77	71	0.92	74	68	
		D	77	71	0.92	74	68	

Table F-35. Future Ozone Design Values for Monitors in the 4km Domain

Monitor ID	Location Description	Episode / Alternative	CB (ppb)	CF (ppb)	RRF	DVB (ppb)	DVF (ppb)	Data Available for Years
Urban Monitors (cont.)								
080590006	Rocky Flats North	April						2004–2008
		A	73	72	0.99	83	82	
		B	73	72	0.99	83	82	
		C	73	72	0.99	83	82	
		D	73	72	0.99	83	82	
		July						2004–2008
		A	75	69	0.92	83	76	
		B	75	69	0.92	83	76	
		C	75	69	0.92	83	76	
		D	75	69	0.92	83	76	
080590011	NREL	April						2004–2008
		A	73	72	0.99	80	79	
		B	73	72	0.99	80	79	
		C	73	72	0.99	80	79	
		D	73	72	0.99	80	79	
		July						2004–2008
		A	77	72	0.94	80	75	
		B	77	72	0.94	80	75	
		C	77	72	0.94	80	75	
		D	77	72	0.94	80	75	
080690011	Fort Collins West	April						2006–2008
		A	71	69	0.97	82	79	
		B	71	69	0.97	82	79	
		C	71	69	0.97	82	79	
		D	71	69	0.97	82	79	
		July						2006–2008
		A	67	62	0.93	82	76	
		B	67	62	0.93	82	76	
		C	67	62	0.93	82	76	
		D	67	62	0.93	82	76	

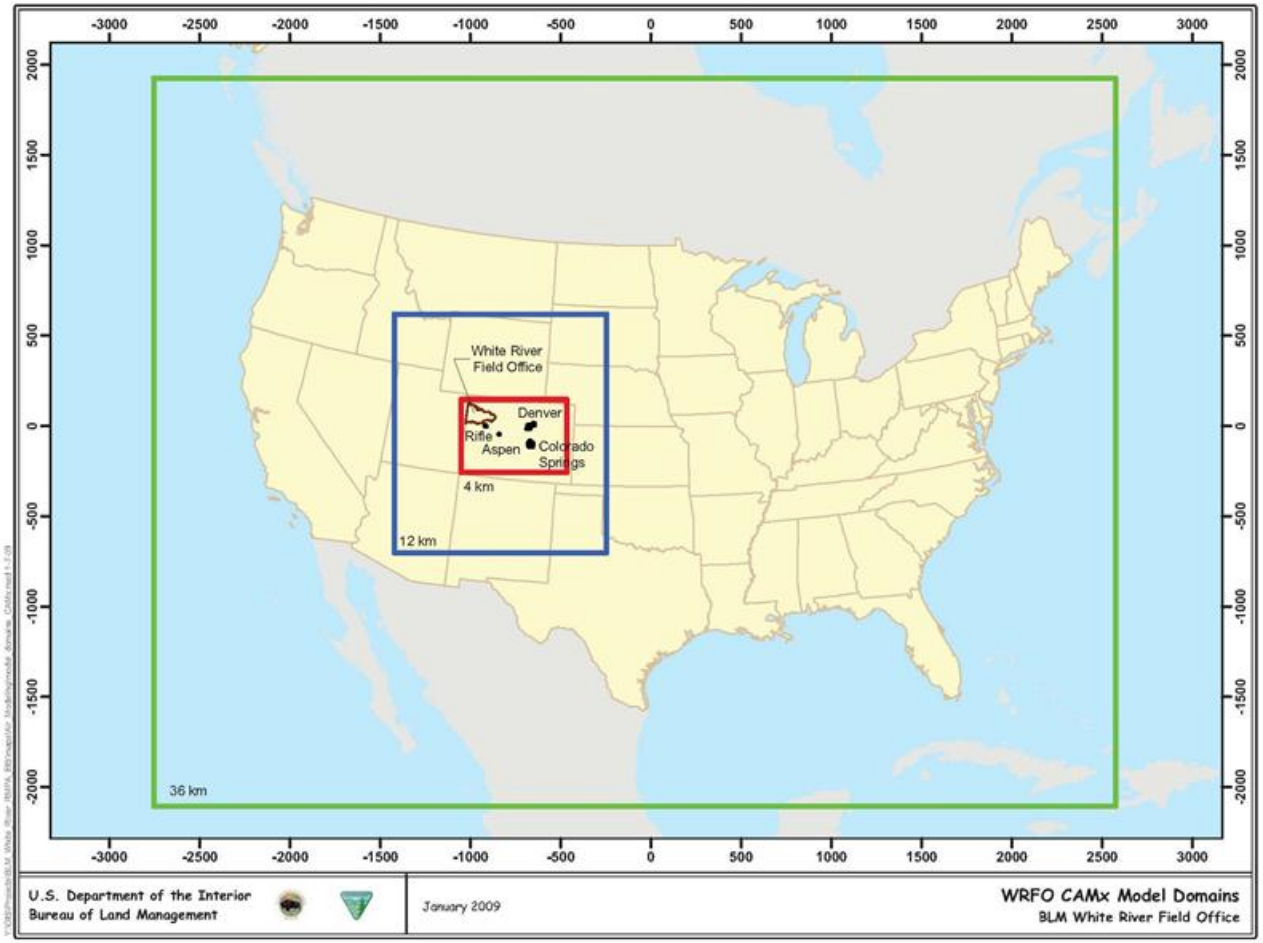
Table F-35. Future Ozone Design Values for Monitors in the 4km Domain

Monitor ID	Location Description	Episode / Alternative	CB (ppb)	CF (ppb)	RRF	DVB (ppb)	DVF (ppb)	Data Available for Years
Urban Monitors (cont.)								
080691004	Fort Collins	April						2004–2008
		A	71	70	0.99	72	71	
		B	71	70	0.99	72	71	
		C	71	70	0.99	72	71	
		D	71	70	0.99	72	71	
		July						2004–2008
		A	67	62	0.93	72	66	
		B	67	62	0.93	72	66	
		C	67	62	0.93	72	66	
		D	67	62	0.93	72	66	
081230009	Weld County Tower	April						2004–2008
		A	71	69	0.97	76	73	
		B	71	69	0.97	76	73	
		C	71	69	0.97	76	73	
		D	71	69	0.97	76	73	
		July						2004–2008
		A	69	63	0.91	76	69	
		B	69	63	0.91	76	69	
		C	69	63	0.91	76	69	
		D	69	63	0.91	76	69	

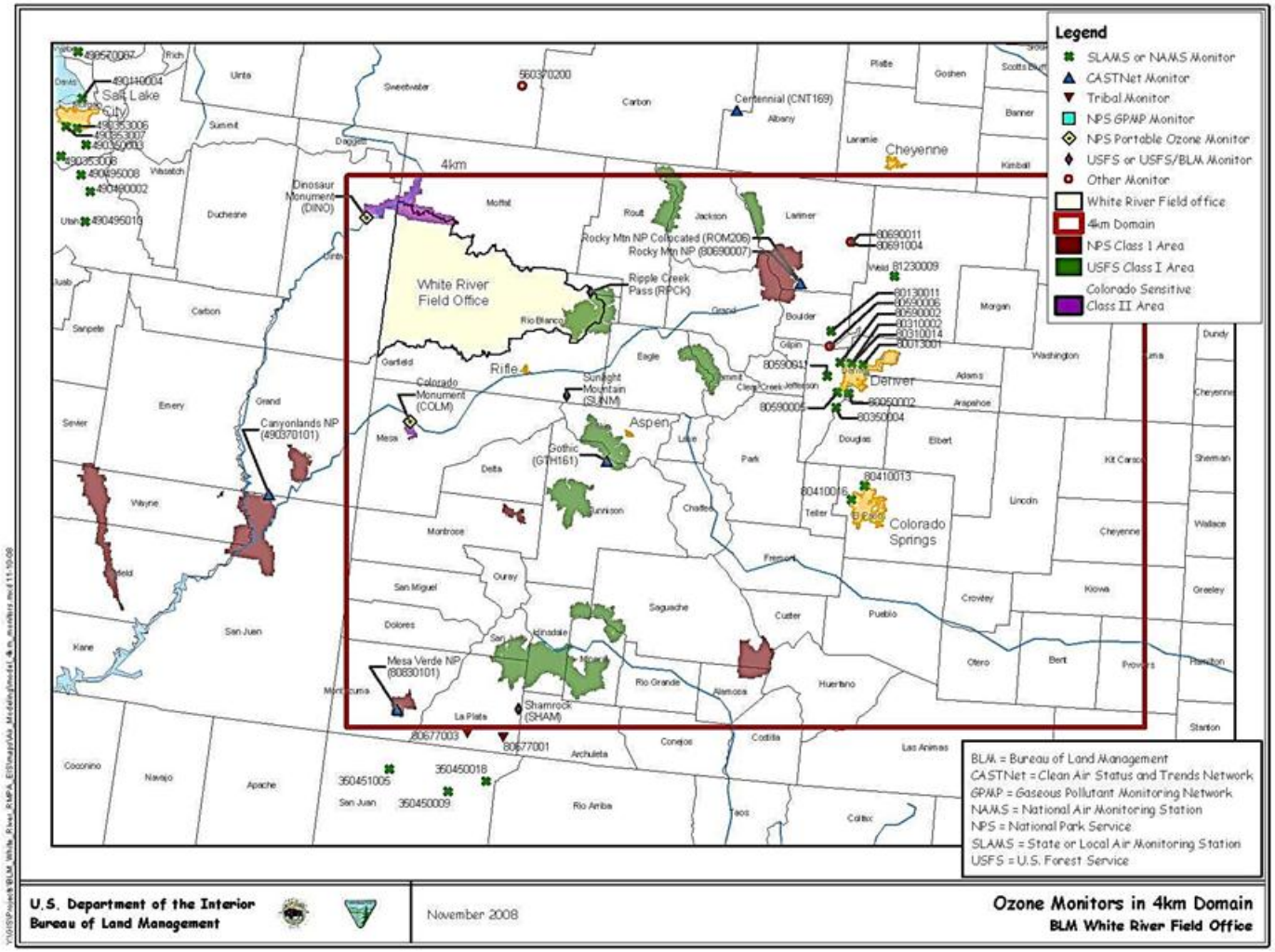
CB = Baseline concentration (mean modeled 8-hour daily maximum baseline [Base06c] concentration during the episode)
CF = Future concentration (mean modeled 8-hour daily maximum future concentration during the episode)
DVB = Baseline design value (Base06c)
DVF = Future design value
NM = National Monument
NP = National Park
ppb = parts per billion
RRF = Relative response factor

6.0 Maps

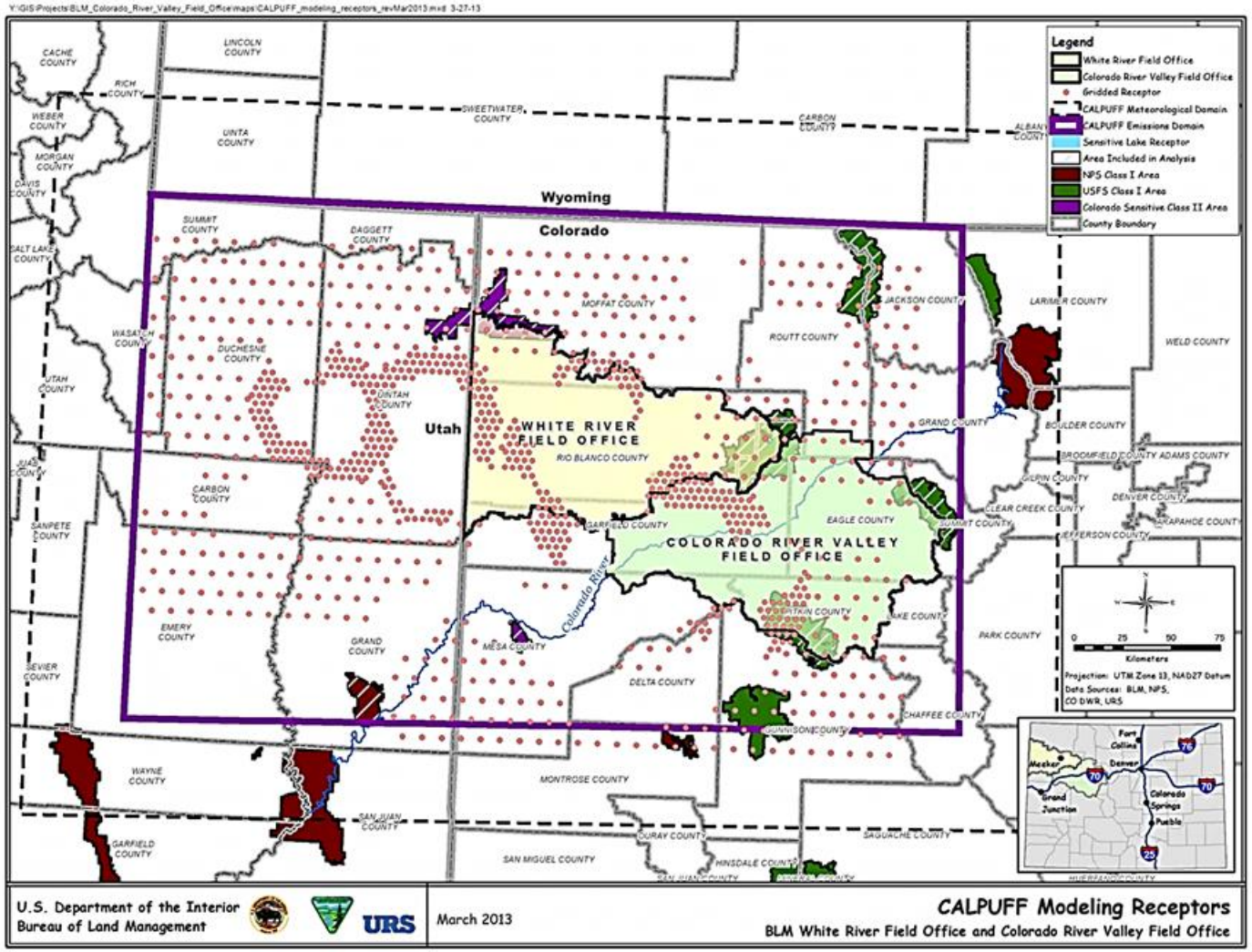
Map F-1. CAMx Model Domains



Map F-2. Ozone Monitors In and Near the 4km Domain



Map F-3. CALPUFF Receptor Locations



7.0 Proposed RMPA/Final EIS and ARTSD Crosswalk Table and Map Labels

Table F-36. Crosswalk between Draft RMPA/EIS Appendix F and ARTSD

Appendix F	Description	ARTSD
Near-Field Impacts		
Table F-1	Near-Field Criteria Pollutant Predicted Concentrations	3-5
Table F-2	Near-Field 1-Hour HAP Maximum Concentration Comparison to RELs	3-6
Table F-3	Near-Field Annual Average Predicted Concentrations Compared to RfCs	3-7
Table F-4	Near-Field Cancer Risk From Long-Term Exposure	3-8
Far-Field Non-Ozone Project Impacts		
Table F-5	Maximum Predicted 1-Hour NO_2 Impacts from WRFO BLM Sources	G-1
Table F-6	Maximum Predicted Annual NO_2 Impacts from WRFO BLM Sources	G-2
Table F-7	Maximum Predicted 24-Hour PM_{10} Impacts from WRFO BLM Sources	G-3
Table F-8	Maximum Predicted 24-Hour $PM_{2.5}$ Impacts from WRFO BLM Sources	G-4
Table F-9	Maximum Predicted Annual $PM_{2.5}$ Impacts from WRFO BLM Sources	G-5
Table F-10	Maximum Predicted 1-Hour SO_2 Impacts from WRFO BLM Sources	G-6
Table F-11	Maximum Predicted 3-Hour SO_2 Impacts from WRFO BLM Sources	G-7
Table F-12	Maximum Predicted 1-Hour CO Impacts from WRFO BLM Sources	G-8
Table F-13	Maximum Predicted 8-Hour CO Impacts from WRFO BLM Sources	G-9
Table F-14	Maximum Predicted Nitrogen Deposition Impacts from WRFO BLM Sources	G-10
Table F-15	Maximum Predicted Sulfur Deposition Impacts from WRFO BLM Sources	G-11
Table F-16	Maximum Predicted Lake Acid Neutralizing Capacity Changes from WRFO BLM Sources	G-12
Table F-17	Days of Visibility Change ≥0.5 dv at Class I and Sensitive Class II Areas from WRFO BLM Sources	G-13
Table F-18	Days of Visibility Change ≥1.0 dv at Class I and Sensitive Class II Areas from WRFO BLM Sources	G-14
Table F-19	Days of Visibility Change ≥0.5 dv at Scenic Views from WRFO BLM Sources	G-15
Table F-20	Days of Visibility Change ≥1.0 dv at Scenic Views from WRFO BLM Sources	G-16
Far-Field Non-Ozone Cumulative Impacts		
Table F-21	Maximum Predicted 1-Hour NO_2 Impacts from Cumulative Sources	H-1
Table F-22	Maximum Predicted Annual NO_2 Impacts from Cumulative Sources	H-2
Table F-23	Maximum Predicted 24-Hour PM_{10} Impacts from Cumulative Sources	H-3
Table F-24	Maximum Predicted 24-Hour $PM_{2.5}$ Impacts from Cumulative Sources	H-4
Table F-25	Maximum Predicted Annual $PM_{2.5}$ Impacts from Cumulative Sources	H-5
Table F-26	Maximum Predicted 1-Hour SO_2 Impacts from Cumulative Sources	H-6
Table F-27	Maximum Predicted 3-Hour SO_2 Impacts from Cumulative Sources	H-7
Table F-28	Maximum Predicted 1-Hour CO Impacts from Cumulative Sources	H-8
Table F-29	Maximum Predicted 8-Hour CO Impacts from Cumulative Sources	H-9
Table F-30	Maximum Predicted Nitrogen Deposition from Cumulative Sources	H-10
Table F-31	Maximum Predicted Sulfur Deposition from Cumulative Sources	H-11

Table F-36. Crosswalk between Draft RMPA/EIS Appendix F and ARTSD

Appendix F	Description	ARTSD
Table F-32	Maximum Predicted Lake Acid Neutralizing Capacity Changes from Cumulative Sources	H-12
Table F-33	Days of Visibility Change ≥1.0 dv at Class I and Sensitive Class II Areas from Cumulative Sources	H-13
Table F-34	Days of Visibility Change ≥1.0 dv at Scenic Views from Cumulative Sources	H-14
Ozone Impacts		
Table F-35	Future Ozone Design Values for Monitors in the 4km Domain	K-1
Maps		
Map F-1	CAMx Model Domains	Map 5-1
Map F-2	Ozone Monitors In and Near the 4km Domain	Map 5-2
Map F-3	CALPUFF Receptor Locations	Map 4-3