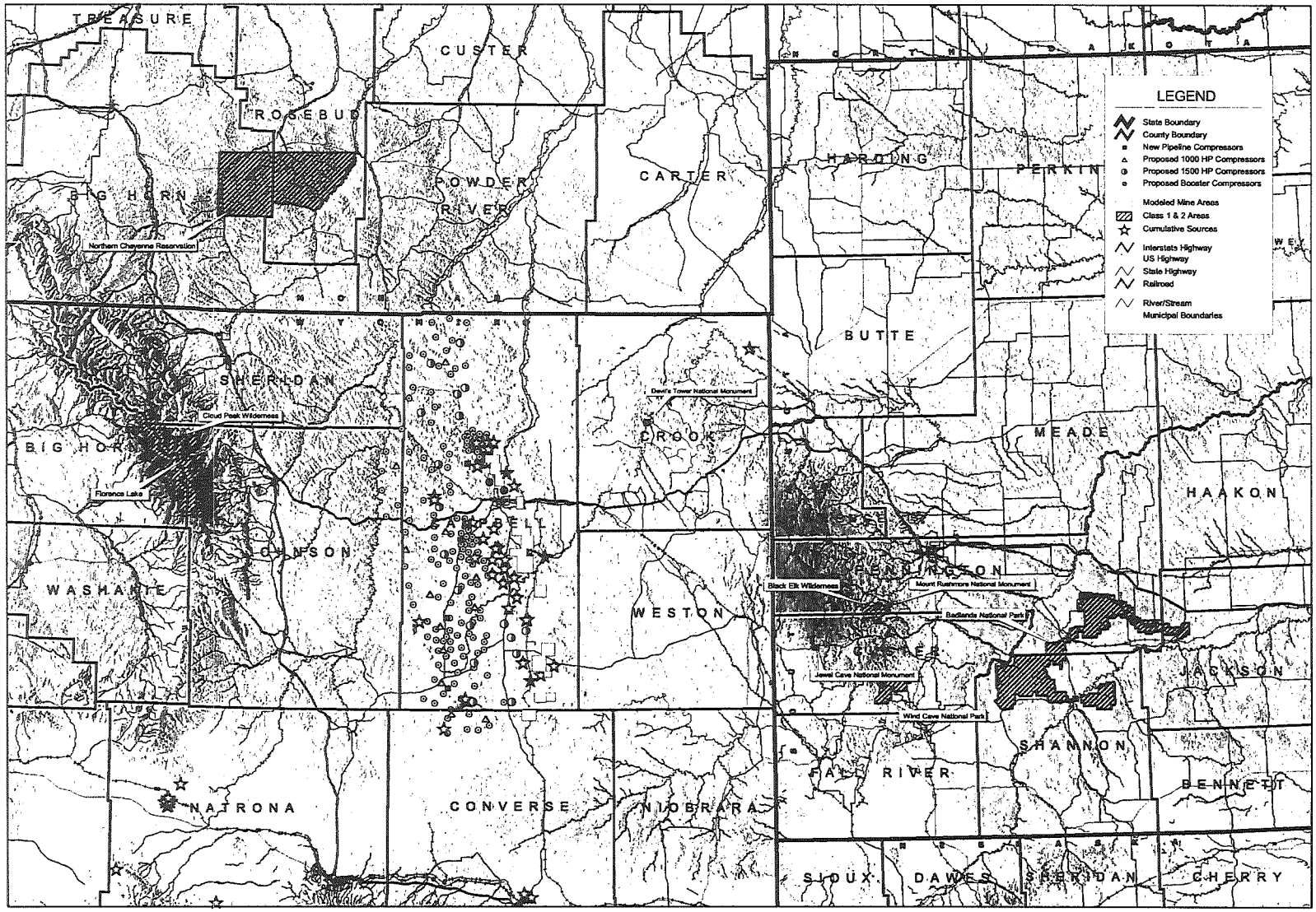
APPENDIX E

SUMMARY OF HORSE CREEK EIS CUMULATIVE AIR QUALITY ANALYSIS RESULTS



Transverse Mercator Projection
1927 North American Datum
Zone 13

Note: Map is from Wyodak CBM Project Air Quality Technical Reference Document (Greystone 1999).

Table E-1
Cumulative Pollutant Emissions for Far-Range Air Quality/AQRV Analysis

Source	Emissions after 1995 (tons/year)					Percent of Total				
	NO_x	SO_2	EC	OC	PM_{10}	NO_x	SO_2	EC	OC	PM_{10}
Coal Mining Sources										
Coal Mines Incremental increase (NO_x from blasting, trains, vehicles)	2,475					12.2	0.0	0.0	0.0	0.0
Coal Mines Incremental increase of fugitive dust					4,234	0.0	0.0	0.0	0.0	24.2
Coal Mines Incremental increase from mining vehicles		698	193	73	86	0.0	10.6	55.0	54.5	0.5
Coal Trains Incremental increase	7,262	888	158	61	70	35.9	13.4	45.0	45.5	0.4
Wyodak CBM Sources										
Proposed Compressors	2,806					13.9	0.0	0.0	0.0	0.0
Road Dust from Vehicle Traffic					11,224	0.0	0.0	0.0	0.0	64.2
Fugitive Dust from Disturbed Areas					956	0.0	0.0	0.0	0.0	5.5
Project Vehicle Exhaust	18					0.1	0.0	0.0	0.0	0.0
Other Sources										
Other Point Sources	7,662	5,032			917	37.9	76.0	0.0	0.0	5.2
Total	**20,223**	**6,618**	**351**	**134**	**17,487**	**100**	**100**	**100**	**100**	**100**

Source: Horse Creek EIS Cumulative Air Quality Analysis (BLM, 2000)

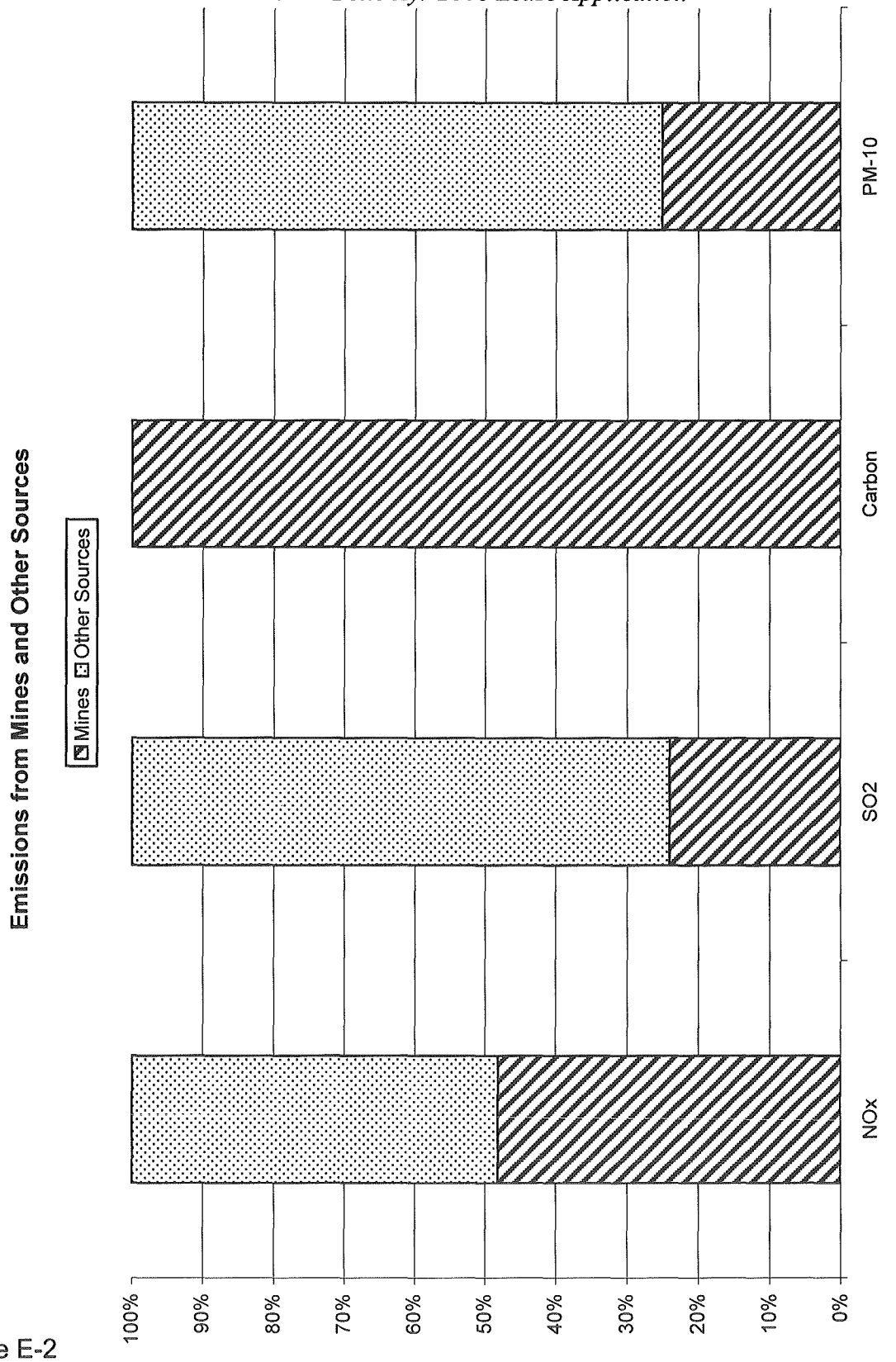

Emissions from Mines and Other Sources
Mines
Other Sources
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
NOx
SO2
Carbon
PM-10

Figure E-2

Table E-2
Cumulative Far-field Concentrations (Percent of Standard)

Area	Annual NO_2	24-hr PM_{10}	Annual PM_{10}	3-hr SO_2	24-hr SO_2	Annual SO_2
CUMULATIVE IMPACTS						
Northern Cheyenne	1.2	14.5	0.25	6.4	11.2	1.0
Badlands National Park, SD	50.4	16.2	1.25	14.4	24	10.5
Wind Cave National Park, SD	6.4	15.5	0.75	8.68	16.8	4
Class I PSD Increment	2.5	4	8	25	5	2
Black Elk Wilderness, SD	0.09	0.69	0.1	0.19	0.22	0.088
Jewel Cave National	0.13	0.51	0.16	0.30	0.24	0.13
Mt. Rushmore National	0.08	0.67	0.10	1.93	0.15	0.075
Cloud Peak Wilderness, WY	0.01	0.60	0.026	1.08	0.08	0.013
Devils Tower National	0.13	0.53	0.32	0.22	0.14	0.088
National Ambient Air Quality Standard	100	150	50	1300	365	80
Wyoming Standard				260	60	

Source: Horse Creek EIS Cumulative Air Quality Analysis (BLM, 2000)

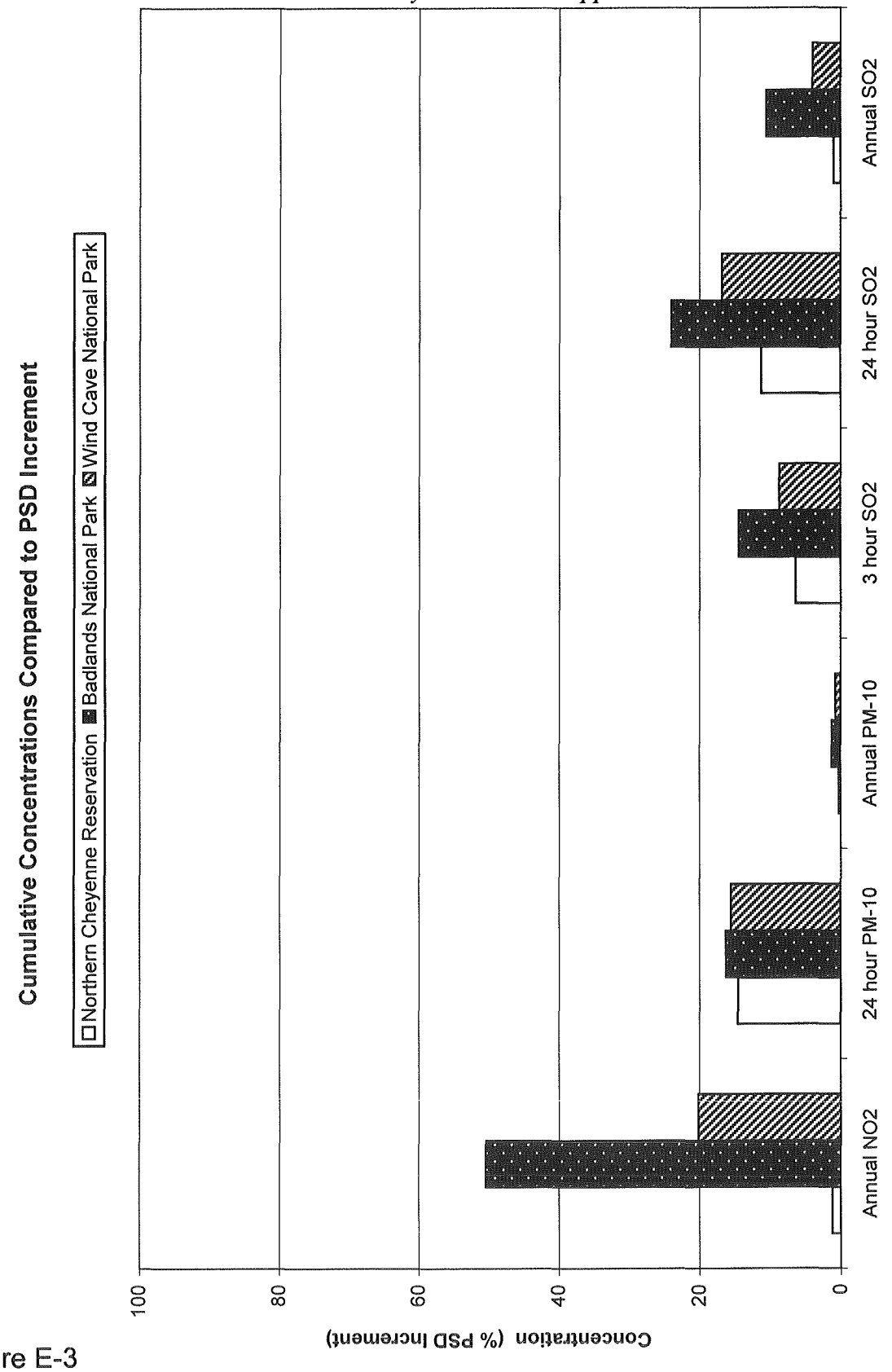

Cumulative Concentrations Compared to PSD Increment
Northern Cheyenne Reservation
Badlands National Park
Wind Cave National Park
Concentration (% PSD Increment)
100
80
60
40
20
0
Annual NO2
24 hour PM-10
Annual PM-10
3 hour SO2
24 hour SO2
Annual SO2

Figure E-3

Figure E-4

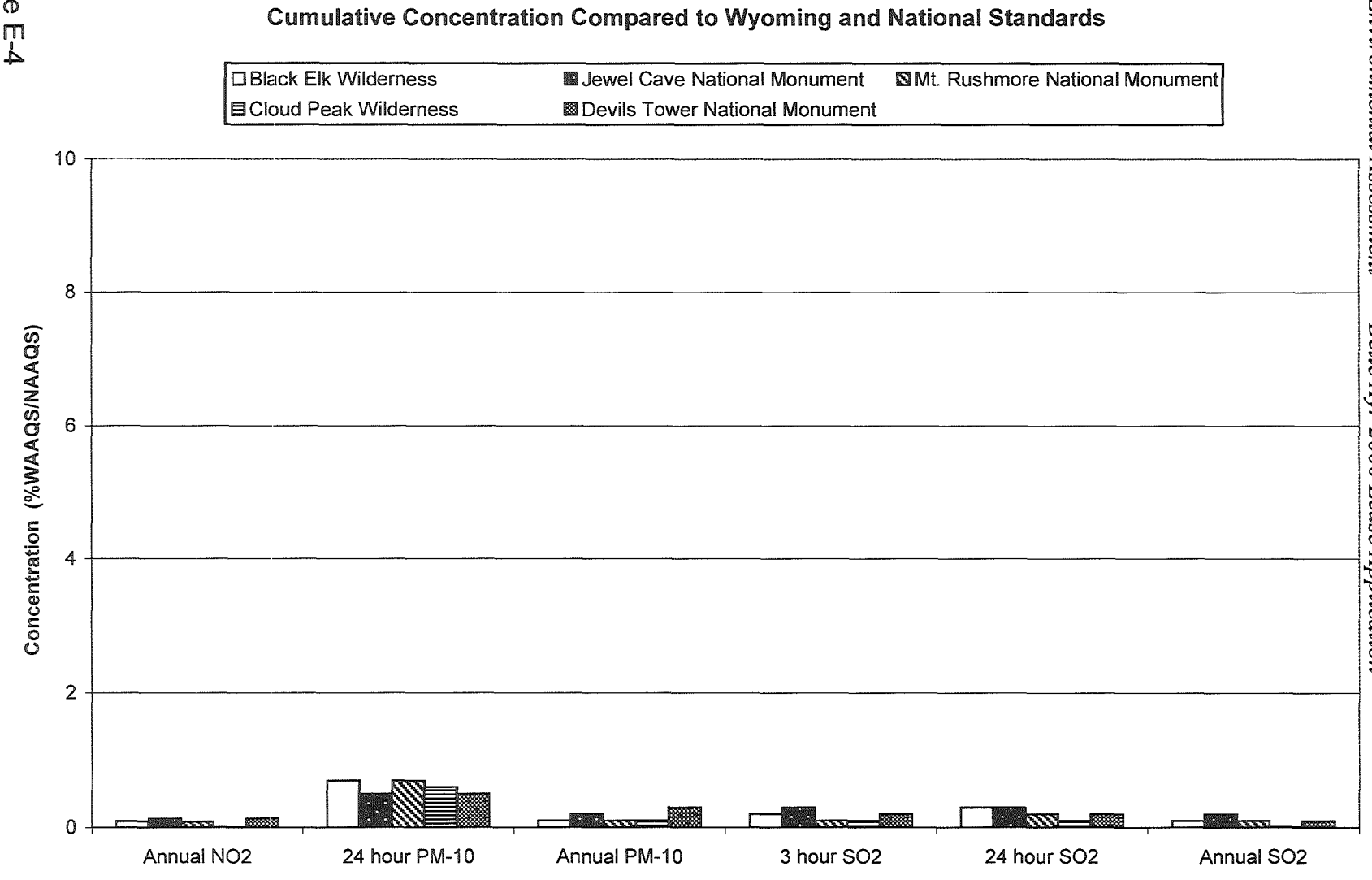

Cumulative Concentration Compared to Wyoming and National Standards
Black Elk Wilderness
Jewel Cave National Monument
Mt. Rushmore National Monument
Cloud Peak Wilderness
Devils Tower National Monument
Concentration (%WAAQS/NAAQS)
10
8
6
4
2
0
Annual NO2
24 hour PM-10
Annual PM-10
3 hour SO2
24 hour SO2
Annual SO2

Table E-3
Predicted Annual Days of Visibility Reductions
At Class I and Class II Sensitive Areas from Cumulative Sources

Location	Type of Area	Number of Days deciview change >0.5	Number of Days deciview change >1.0
Northern Cheyenne Reservation	Class I	18	8
Badlands National Park	Class I	173	70
Wind Cave National Park	Class I	94	45
Black Elk Wilderness	Class II	66	28
Jewel Cave National Monument	Class II	72	32
Mt. Rushmore National Monument	Class II	58	22
Cloud Peak Wilderness	Class II	15	4
Devils Tower National Monument	Class II	70	28

Note: The Northern Cheyenne Reservation is a redesignated Class I area and is not addressed by existing visibility regulations which apply to the federally mandated Badlands and Wind Cave Class I areas.

Source: Horse Creek EIS (BLM, 2000)

Table E-4
Predicted Levels of Acid Deposition from Cumulative Sources
(lb/acre/year)

Area	Significance Level	Total Nitrogen Deposition	Total Sulfur Deposition
Northern Cheyenne Reservation	2.7 - 4.5	0.067	0.011
Badlands National Park	2.7 - 4.5	0.238	0.075
Wind Cave National Park	2.7 - 4.5	0.066	0.061
Black Elk Wilderness	2.7 - 4.5	0.047	0.059
Jewel Cave National Monument	2.7 - 4.5	0.051	0.076
Mt. Rushmore National Monument	2.7 - 4.5	0.030	0.050
Cloud Peak Wilderness	2.7 - 4.5	0.004	0.006
Devils Tower National Monument	2.7 - 4.5	0.044	0.055

Source: Horse Creek EIS (BLM, 2000)

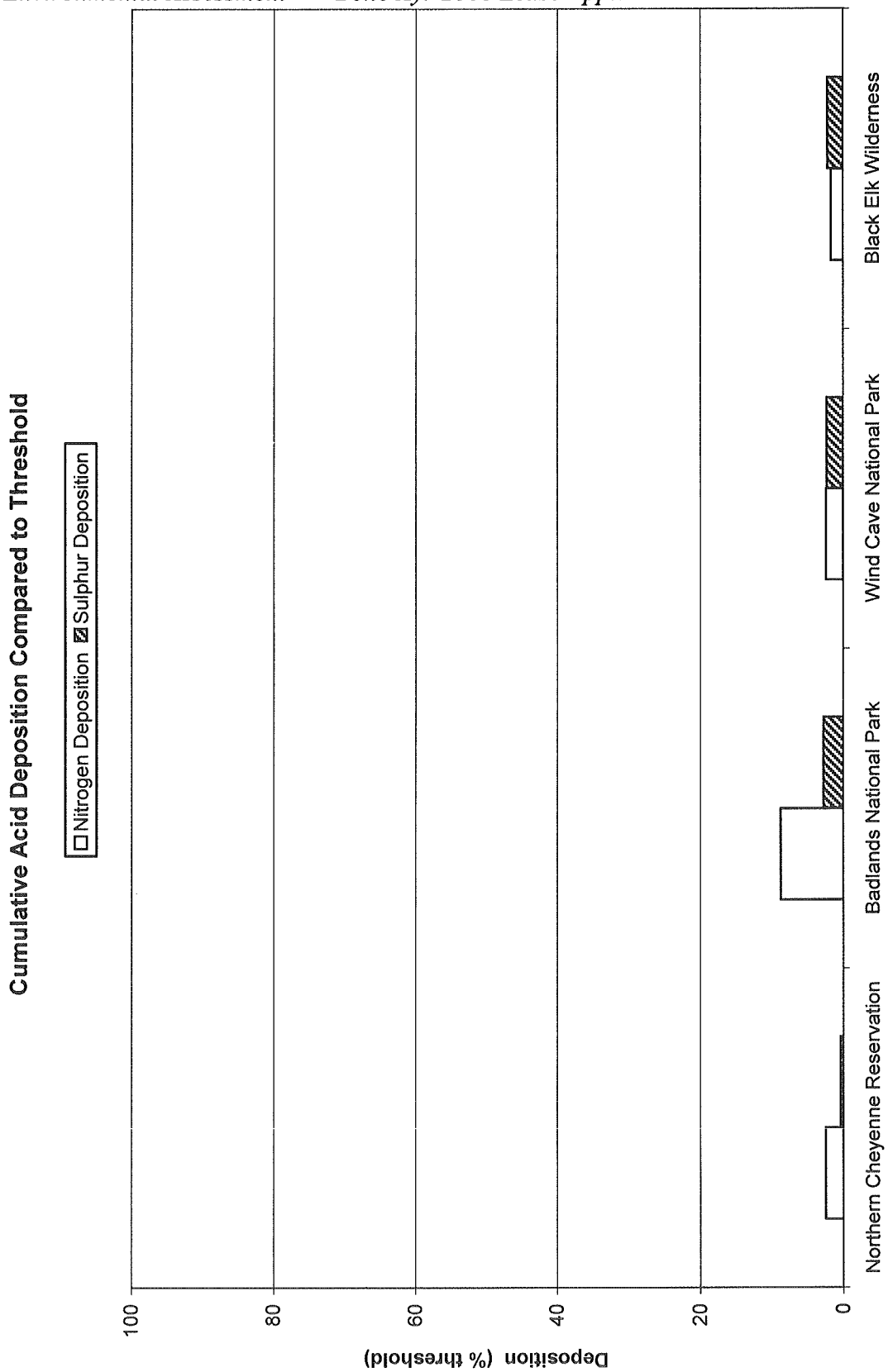


Figure E-5

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