



*OPRA action*

**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

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January 24, 2011

James B. Martin  
Regional Administrator  
U.S. Environmental Protection Agency, Region 8  
1595 Wynkoop Street  
Denver, CO 80202-1129

Dear Mr. Martin:

On November 9, 2010, EPA notified the Governor of South Dakota that EPA revised the nitrogen dioxide National Ambient Air Quality Standard and initial area designations are due by January 25, 2011. EPA revised the primary nitrogen dioxide standard by adding a 1-hour average concentration.

On January 18, 2011, Governor Dugaard submitted a letter to you designating the Secretary of the Department of Environment and Natural Resources as his designee for submitting designations and other matters which involves South Dakota's Air Quality Program. In that capacity, I recommend EPA designate all counties in South Dakota as attaining the 1-hour nitrogen dioxide standard (see Attachment 1). Attachment 2 provides the supporting data for designating all of South Dakota's counties in attainment and Attachment 3 is a copy of the Air Quality System AMP450 report showing the yearly 98<sup>th</sup> percentile concentrations for each site and includes the one year of data collected near the Big Stone Power Plant.

Thank you for the opportunity to propose designations for the revised primary nitrogen dioxide standard. If you have questions, please contact Brian Gustafson at 605-773-3151.

Sincerely,

Steven M. Pirner, P.E.  
Secretary

Attachments

cc: Callie Videtich, EPA Region 8  
Nathan Sanderson, Policy Advisor, Governor Dugaard's Office

RECEIVED  
U.S. EPA Region 8  
RA's Office

JAN 28 2011

**Attachment 1**

**South Dakota Proposed 1-hour Nitrogen Dioxide Standard Area Designations**

Designated Area	Designation	Classification
	Type	Type
Aurora County	Attainment	
Beadle County	Attainment	
Bennett County	Attainment	
Bon Homme County	Attainment	
Brookings County	Attainment	
Brown County	Attainment	
Brule County	Attainment	
Buffalo County	Attainment	
Butte County	Attainment	
Campbell County	Attainment	
Charles County	Attainment	
Clark County	Attainment	
Clay County	Attainment	
Codington County	Attainment	
Corson County	Attainment	
Custer County	Attainment	
Davison County	Attainment	
Day County	Attainment	
Deuel County	Attainment	
Dewey County	Attainment	
Douglas County	Attainment	
Edmunds County	Attainment	
Fall River County	Attainment	
Faulk County	Attainment	
Grant County	Attainment	
Gregory County	Attainment	
Haakon County	Attainment	
Hamlin County	Attainment	
Hand County	Attainment	
Hanson County	Attainment	
Harding County	Attainment	
Hughes County	Attainment	
Hutchinson County	Attainment	
Hyde County	Attainment	
Jackson County	Attainment	
Jerauld County	Attainment	
Jones County	Attainment	
Kingsbury County	Attainment	
Lake County	Attainment	
Lawrence County	Attainment	
Lincoln County	Attainment	
Lyman County	Attainment	
Marshall County	Attainment	
McCook County	Attainment	

<b>Designated Area</b>	<b>Designation</b>	<b>Classification</b>
	<b>Type</b>	<b>Type</b>
<b>McPherson County</b>	Attainment	
<b>Meade County</b>	Attainment	
<b>Mellette County</b>	Attainment	
<b>Miner County</b>	Attainment	
<b>Minnehaha County</b>	Attainment	
<b>Moody County</b>	Attainment	
<b>Pennington County</b>	Attainment	
<b>Perkins County</b>	Attainment	
<b>Potter County</b>	Attainment	
<b>Roberts County</b>	Attainment	
<b>Sanborn County</b>	Attainment	
<b>Shannon County</b>	Attainment	
<b>Spink County</b>	Attainment	
<b>Stanley County</b>	Attainment	
<b>Sully County</b>	Attainment	
<b>Todd County</b>	Attainment	
<b>Tripp County</b>	Attainment	
<b>Turner County</b>	Attainment	
<b>Union County</b>	Attainment	
<b>Walworth County</b>	Attainment	
<b>Yankton County</b>	Attainment	
<b>Ziebach County</b>	Attainment	

## Attachment 2

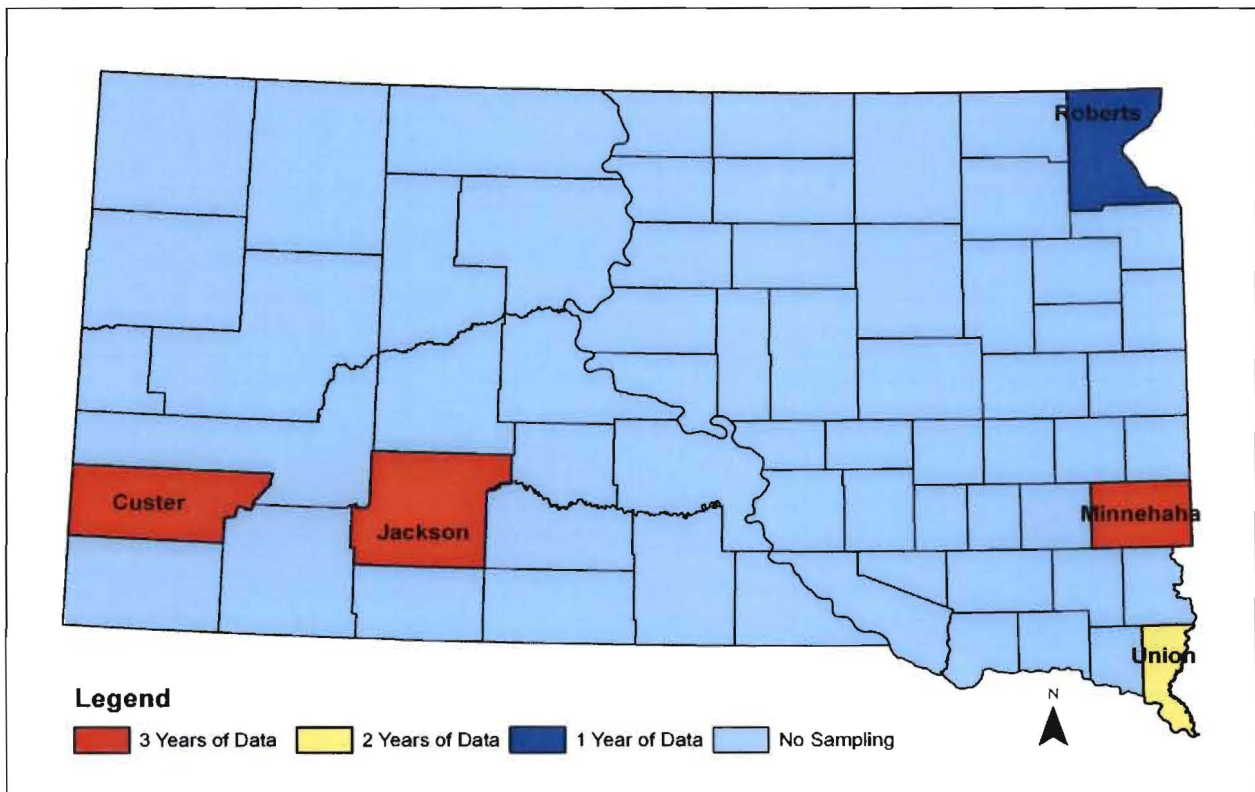
### Nitrogen Dioxide Monitoring Network in South Dakota

The first sampling effort to collect hourly nitrogen dioxide data was near the Big Stone Power Plant. A continuous 12-month period of air monitoring was completed near the facility in the years of 2001 and 2002 as part of a Prevention of Significant Deterioration permit application. Nitrogen dioxide levels were low with a 98<sup>th</sup> percentile 1-hour average concentration level of 15 parts per billion.

DENR operates a network of air monitoring sites which began collecting hourly nitrogen dioxide data in 2003. The first site was setup at the Hilltop Site in Sioux Falls. The monitor was later moved to the SD School Site and continues today. In 2005, two more locations were added at the Badlands and Wind Cave National Parks. In 2009, two more locations were added in Union County.

The current sampling network includes sites in several counties around the state with goals of high concentration, population, source impact, background and regional transport. See Figure 1 for a map of the state showing the counties with nitrogen dioxide air monitoring data.

*Figure 1 – South Dakota Counties with Nitrogen Dioxide Data*



## **Nitrogen Dioxide Emission Sources in South Dakota**

Nitrogen dioxide 1-hour concentrations are low statewide. The highest design value concentration site is at SD School Site in Sioux Falls at 41% of the standard. The Badlands and Wind Cave Sites have the lowest design value concentrations at 4% of the standard. The concentrations are low for two reasons. First, the state's population is low and therefore traffic counts are also low. Second, a majority of the industries in South Dakota do not emit high amounts of nitrogen dioxide emissions.

South Dakota's population is one of the lowest state populations in the nation with a 2010 census of 814,180. The largest city in South Dakota is Sioux Falls with a population of less than 150,000. The largest of the three Metropolitan Statistical Areas (MSA) in the state includes the city of Sioux Falls and the counties of Minnehaha, Lincoln and Turner. The combined estimated 2009 population for the Sioux Falls MSA is 232,503. Table 1 provides a list of the top 10 most populated counties in the state and the largest city within the county.

***Table 1 – Ten Highest Population Counties in South Dakota***

<b>Number</b>	<b>County</b>	<b>Population</b>	<b>Largest City</b>
<b>1</b>	Minnehaha	179,180	Sioux Falls
<b>2</b>	Pennington	98,533	Rapid City
<b>3</b>	Lincoln	39,713	Sioux Falls
<b>4</b>	Brown	35,154	Aberdeen
<b>5</b>	Brookings	29,668	Brookings
<b>6</b>	Codington	26,317	Watertown
<b>7</b>	Meade	23,989	Sturgis
<b>8</b>	Lawrence	23,524	Spearfish
<b>9</b>	Yankton	28,835	Yankton
<b>10</b>	Davison	18,931	Mitchell

Being a state with low population levels, South Dakota also has low traffic counts. The roads with the highest traffic counts in the state are in Sioux Falls. Interstate 29 passes through the western third of the city. The part of the interstate road south of the interchange of Interstate 29 and 12<sup>th</sup> Street in Sioux Falls has an average daily traffic count of 50,320 and is the highest in the state.

Nitrogen dioxide emissions from major sources throughout South Dakota are also low. Table 2 provides a list of the top 25 major sources emitting nitrogen oxide in calendar year 2008.

***Table 2 – Top 25 Nitrogen Oxide Emitters in South Dakota (tons per year)***

<b>#</b>	<b>City</b>	<b>Facility</b>	<b>Quantity</b>
1	Big Stone City	Otter Tail Power Company – Big Stone I	13,852
2	Rapid City	GCC Dacotah	1,253
3	Rapid City	Black Hills Corporation – Ben French	794
4	Rapid City	Pete Lien and Sons, Inc.	282
5	Sioux Falls	John Morrell & Company	143
6	Brookings	South Dakota State University	126
7	Belle Fourche	Williston Basin Interstate Pipeline Company	123

#	City	Facility	Quantity
8	Watertown	Glacial Lakes Energy	117
9	Ipswich	Northern Border Pipeline Company	94
10	Sioux Falls	Sioux Falls Water Reclamation Facility	92
11	Mitchell	Prairie Ethanol	87
12	Chancellor	Great Plains Ethanol	86
13	Belle Fourche	American Colloid Company	84
14	Brandt	Northern Border Pipeline Company	82
15	Aurora	VeraSun Energy	73
16	Crocker	Northern Border Pipeline Company	69
17	Wentworth	Dakota Ethanol	62
18	Aberdeen	Heartland Grain Fuels Limited Partnership	55
19	Big Stone City	Northern Lights Ethanol	54
20	Spearfish	Spearfish Forest Products, Inc.	53
21	Marion	NuGen Marion Energy	53
22	Redfield	Redfield Energy	52
23	Sioux Falls	Northern States Power Company	49
24	Hudson	Sioux River Ethanol	46
25	Groton	Basin Electric Power Cooperative	45
		<b>Total Tons of Nitrogen Dioxide</b>	<b>17,826</b>

### Nitrogen Dioxide Concentrations in South Dakota

Table 3 shows the three year calculated design value concentration for each site. The design value concentration for the SD School and Badlands Sites used data from 2008 to 2010. Because of a low percentage of valid data recovery at Wind Cave in 2010 the data from 2007 to 2009 was used for Wind Cave Site. Both Union County sites have only two years of data.

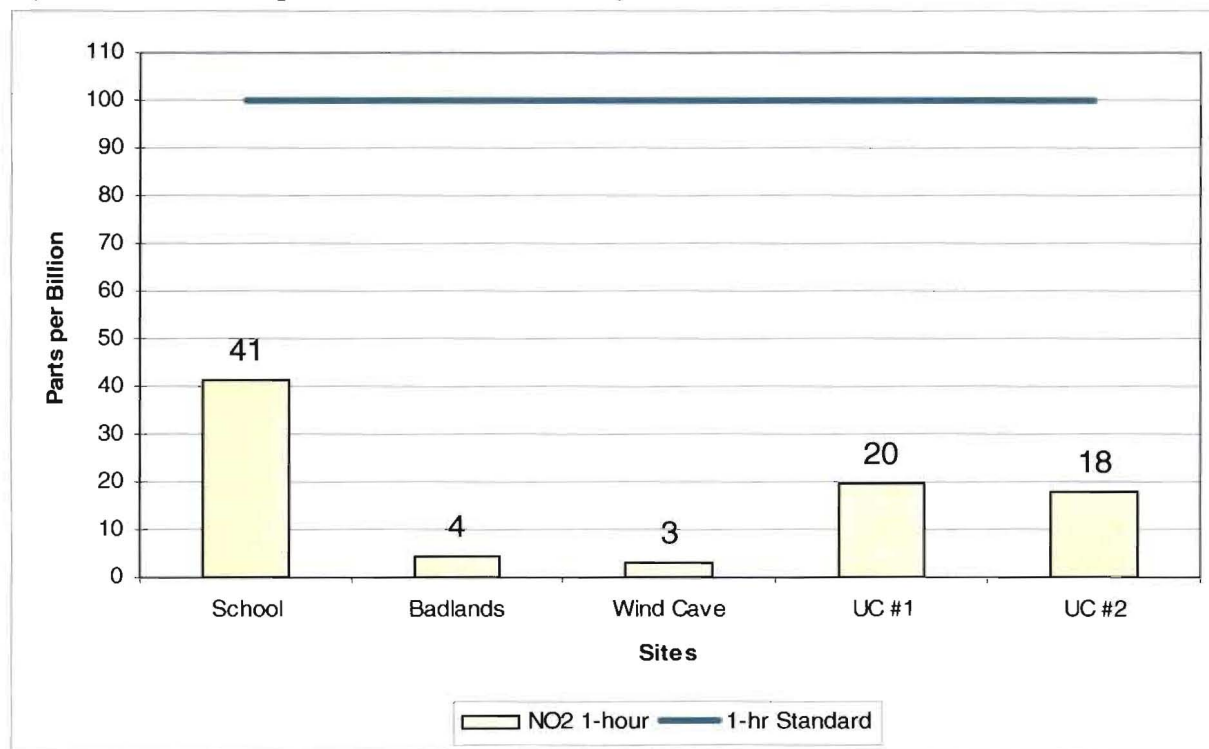
**Table 3 – Site Design Values for South Dakota**

Site	98 <sup>th</sup> Percentile - Concentration	3-Year Average	Attainment
SD School	2008 – 38 parts per billion 2009 – 38 parts per billion 2010 – 48 parts per billion	41 parts per billion	Yes
Badlands	2008 – 4 parts per billion 2009 – 4 parts per billion 2010 – 5 parts per billion	4 parts per billion	Yes
Wind Cave	2007 – 7 parts per billion 2008 – 3 parts per billion 2009 – 3 parts per billion	4 parts per billion	Yes
Union County #1	2009 – 17 parts per billion 2010 – 22 parts per billion	20 parts per billion	<sup>1</sup>
Union County #2	2009 – 16 parts per billion 2010 – 20 parts per billion	18 parts per billion	<sup>1</sup>

<sup>1</sup> – Less than 3 years of data

The nitrogen dioxide 1-hour concentrations collected in the state during the years of 2007 through 2010 show no 1-hour concentrations exceeding the new primary standard as calculated following the form of the standard. The highest three year average was recorded at the Sioux Falls SD School Site with an average concentration level of 41 parts per billion. Figure 2 provides a comparison of the design values for each site compared to the 1-hour nitrogen dioxide standard. Although the Union County #1 and #2 Sites do not have three years of data yet, the two year average of the 98<sup>th</sup> percentile is provided for comparison purposes.

**Figure 2 – Data Compared to the 1-hour Nitrogen Dioxide Standard**



Based on the monitoring data which reflects the potential highest and lowest nitrogen dioxide concentrations in the state, South Dakota is attaining the 1-hour nitrogen dioxide National Ambient Air Quality Standard in every county in the state.

### Attachment 3 Air Quality System Report AMP450

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
AIR QUALITY SYSTEM  
QUICK LOOK REPORT (AMP450)

Jan. 19, 2011

Nitrogen dioxide (NO2) (42602)

South Dakota

Parts per billion (008)

SITE ID	P O C	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	COMP QTRS	1ST MAX 1-HR	2ND MAX 1-HR	98TH PCTL	OBS	PCT COMP	ARITH MEAN	CERT	EDT
46-033-0132	3	0973	Not in a city	Custer	WIND CAVE NATIONAL PARK, SOUTH DAKOTA	2007	074	3	10.0	9.0	7.0	7576	86	1.05		0
46-033-0132	3	0973	Not in a city	Custer	WIND CAVE NATIONAL PARK, SOUTH DAKOTA	2008	074	4	7.0	7.0	3.0	8676	99	.15	Y	0
46-033-0132	3	0973	Not in a city	Custer	WIND CAVE NATIONAL PARK, SOUTH DAKOTA	2009	074	4	135.0	14.0	3.0	8668	99	.64		5
46-033-0132	3	0973	Not in a city	Custer	WIND CAVE NATIONAL PARK, SOUTH DAKOTA	2010	074	2	68.0	26.0	4.0	6257	71	.23*		0
46-071-0001	3	0973	Not in a city	Jackson	BADLANDS PO BOX 6 HEADQUARTERS	2007	074	4	8.0	6.0	4.0	8618	98	.50		0
46-071-0001	3	0973	Not in a city	Jackson	BADLANDS PO BOX 6 HEADQUARTERS	2008	074	4	8.0	7.0	4.0	8612	98	.76	Y	0
46-071-0001	3	0973	Not in a city	Jackson	BADLANDS PO BOX 6 HEADQUARTERS	2009	074	4	6.0	6.0	4.0	8649	99	.51		0
46-071-0001	3	0973	Not in a city	Jackson	BADLANDS PO BOX 6 HEADQUARTERS	2010	074	4	7.0	6.0	5.0	8641	99	.51		0
46-099-0007	3	0973	Sioux Falls	Minnehaha	BAHNSON AVE, HILLTOP SITE	2007	074	4	43.0	40.0	32.0	8595	98	4.18		0
46-099-0008	3	0973	Sioux Falls	Minnehaha	2001 E 8th St	2008	074	4	45.0	41.0	38.0	8575	98	6.62	Y	0
46-099-0008	3	0973	Sioux Falls	Minnehaha	2001 E 8th St	2009	074	4	34.0	44.0	38.0	8489	97	5.57		0
46-099-0008	3	0973	Sioux Falls	Minnehaha	2001 E 8th St	2010	074	4	58.0	56.0	48.0	8675	99	6.58		0
46-109-4003	3	0973	Not in a city	Roberts	482ND AVE	2001	074	0	17.0	15.0	15.0	1392	16	3.10*	N	0
46-109-4003	3	0973	Not in a city	Roberts	482ND AVE	2002	074	3	25.0	19.0	16.0	6951	79	1.68		0
46-127-0001	3	0973	Not in a city	Union	31986 475th Ave	2009	074	4	21.0	21.0	17.0	8598	98	1.45		0
46-127-0001	3	0973	Not in a city	Union	31986 475th Ave	2010	074	4	37.0	35.0	22.0	8642	99	2.97		0
46-127-0002	3	0973	Not in a city	Union	31307 473rd Ave	2009	074	3	22.0	21.0	17.0	6865	78	1.80		0
46-127-0002	3	0973	Not in a city	Union	31307 473rd Ave	2010	074	4	28.0	26.0	20.0	8665	99	2.92		0

Note: The \* indicates that the mean does not satisfy summary criteria.