# **Annual Report**

## North Dakota Ambient Monitoring Network Plan 2012



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## 1.0 INTRODUCTION

The North Dakota Department of Health, Division of Air Quality, has the primary responsibility of protecting the health and welfare of North Dakotans from the detrimental effects of air pollution. Toward that end, the Division of Air Quality ensures the ambient air quality in North Dakota is maintained in accordance with the levels established by the state and federal Ambient Air Quality Standards (AAQS) and the Prevention of Significant Deterioration of Air Quality (PSD) Rules. To carry out this responsibility, the Division of Air Quality operates and maintains a network of ambient air quality monitors and requires three major industrial pollution sources to conduct source-specific ambient air quality monitoring. There are 16 ambient air quality monitoring sites currently operating in the State. However, this review addresses only the seven department-operated sites. The Theodore Roosevelt National Park – South Unit site at Painted Canyon is a National Park Service site. The department operates and maintains the sulfur dioxide, ozone and continuous fine particulate analyzers at the National Park Service's request. The remaining eight sites are department-required industry-supported sites

To evaluate the effectiveness of the state's air quality monitoring effort, the U.S. Environmental Protection Agency (EPA) requires the Division of Air Quality to conduct an annual review of the department's ambient air quality monitoring (AAQM) network. EPA's requirements, as set forth in 40 CFR 58.10, are to (1) determine if the system meets the monitoring objectives defined in 40 CFR 58, Appendix D, and (2) identify network modifications such as termination or relocation of unnecessary sites or establishment of new sites that are necessary.

## The 2005 Draft National Ambient Air Monitoring Strategy (NAAMS,

<u>www.epa.gov/ttn/amtic/monstratdoc.html</u>) established a new monitoring site classification system for the national AAQM network structure. There are two primary categories: National Core (NCore) and State, Local, and Tribal (SLT). Each state is required to have at least one NCore site. Fargo NW has been selected as North Dakota's required NCore site. Fargo NW is also a part of EPA's 54site Speciation Trends National Network. The NAAMS explains the purpose of these national networks and rationale for each gaseous and particulate measurement.

For the States and tribes, the State and Local Monitoring Systems (SLAMS), SPM, Prevention of Significant Deterioration (PSD) and Tribal Networks site designations still apply. The remaining six department-operated sites are designated as SLAMS sites.

The locations of sites in a monitoring program are established to meet certain objectives. The Oc. 17, 2006, Federal Register (40 CFR 58, Appendix D), defined six basic monitoring objectives. These objectives are as follows:

1. To determine the highest <u>pollutant concentrations</u> expected to occur in an area covered by the network.

2. To determine representative concentrations in areas of high population density.

*3. To determine the impact on ambient pollution levels by a <u>significant source</u> or class categories.* 

4. To determine the <u>general/background</u> concentration levels.

5. To determine the impact on air quality by regional transport.

6. To determine <u>welfare-related</u> impacts (such as visibility impacts and vegetation effects).

The link between basic monitoring objectives and the physical location of a particular monitoring site involves the concept of spatial scale of representativeness. This spatial scale is determined by the physical dimensions of the air parcel nearest a monitoring site throughout which actual pollutant concentrations are reasonably similar. The goal in locating sites is to match the spatial scale represented by the sample of monitored air with a spatial scale most appropriate for the monitoring objective. Spatial scales of representativeness, as specified by EPA, are described as follows:

Microscale - dimensions ranging from several meters up to about 100 meters.

Middle Scale – areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 km.

Neighborhood Scale – city areas of relatively uniform land use with dimensions of 0.5 to 4.0 km.

Urban Scale – overall, city-wide dimensions on the order of 4 to 50 km. (Usually requires more than one site for definition.)

Regional Scale – rural areas of reasonably homogeneous geography covering from 50 km to hundreds of km.

The relationships between monitoring objectives and spatial scales of representativeness, as specified by EPA, are as follows:

Monitoring Objective	Appropriate Siting Scales
Highest Concentration	Micro, middle, neighborhood, (sometimes urban or regional
-	for secondarily formed pollutants)
Population Oriented	Neighborhood, urban
Source Impact	Micro, middle, neighborhood
General/Background	Urban, regional
Regional Transport	Urban, regional
Welfare-related Impacts	Urban, regional

Recommended scales of representativeness appropriate to the criteria pollutants monitored in North Dakota are shown below:

Criteria Pollutant	Spatial Scales
Inhalable Particulate	micro, middle, neighborhood, urban, regional
Sulfur Dioxide	middle, neighborhood, urban, regional
Ozone	middle, neighborhood, urban, regional
Nitrogen Dioxide	middle, neighborhood, urban

Using this physical basis to locate sites allows for an objective approach, ensures compatibility among sites, and provides a common basis for data interpretation and application. The annual review process involves reviewing each site and associated monitors to evaluate their monitoring objectives and spatial scales to ensure each site and monitor still meets the intended purpose. Sites and monitors that no longer satisfy the intended purpose are either terminated or modified accordingly. Further details on network design can be found in 40 CFR 58, Appendix D.

#### 1.2 General Monitoring Needs

As can be gathered from the prior discussion, each air pollutant has certain characteristics that must be considered when establishing a monitoring site. These characteristics may result from (1) variations in the number and types of sources and emissions in question; (2) reactivity of a particular pollutant with other constituents in the air; (3) local site influences such as terrain and land use; and (4) climatology. The Department's AAQM network is designed to monitor air quality data for five basic conditions: (1) background monitoring; (2) population exposure; (3) significant source or class category; (4) long range transport; and (5) regional haze.

There are a total of 16 ambient air quality monitoring sites operating in the state: eight are source-specific industry sites and one site, Painted Canyon in Theodore Roosevelt National Park, is a part of the National Park Service's (NPS) network. The department, at the NPS's request, provides sulfur dioxide and ozone analyzers and a manual fine particulate ( $PM_{2.5}$ ) sampler. The NPS also provides a continuous  $PM_{2.5}$  analyzer, which the department operates

and maintains. The remaining seven sites fall into two categories: 40 CFR 58 required sites (3) and supplemental sites (4). The primary function of the department's three required sites (see Table 1) are to satisfy five monitoring objectives. Beulah is a significant source and populationoriented site because of the three major sources in the vicinity of Beulah. Also, the site is between the city and downwind of two major sources. Fargo NW is population orientated because Fargo is a major population center with five major sources in the Fargo, ND-Moorhead, MN, area. The data from this site is used as input to dispersion models to evaluate permits-to-construct and permits-to-operate for projects located in or near population centers in the eastern part of the state. And, TRNP-NU is the background/long-range transport/welfare-related site. The remaining four sites are used to support modeling activities (model calibration and/or validation) and supplement data collected at the required sites. For the national PM<sub>2.5</sub> program, the department is required to operate three "non-Core required" sites (Fargo, Bismarck and Beulah).

Background, welfare-related and long-range transport sites are chosen to determine concentrations of air contaminants in areas remote from urban sources and generally are sited using the regional spatial scale. This is true for  $NO_2$  despite the fact that the regional spatial scale is not normally used for  $NO_2$  monitoring. Once a specific location is selected for a site, the site is established in accordance with the specific sitting criteria specified in 40 CFR 58, Appendices A, C, D and E.

## 1.3 Monitoring Objectives

The department's monitoring objective is to track those pollutants that are judged to have the potential for violating either state or federal Ambient Air Quality Standards. To accomplish this objective, the department operates SLAMS sites at selected locations around the state. Table 1 lists basic site information: Appendix A contains a full description for each site, site photographs, and a site map taken from Google Earth<sup>TM</sup> mapping service. Figure 1 shows the approximate site locations.

With the visibility regulations in 40 CFR 51.300, 40 CFR 51.308 (regional haze rules) and 40 CFR 51, Appendix Y (Best Available Retrofit Technology, BART) coming into effect, the department is beginning to evaluate monitoring requirements and changes needed to support the visibility regulations.

## Table 1AAQM Network Description

Site Name AQS Site #	Parameter Monitored <sup>1</sup>	Monitoring Objective <sup>2</sup>				
1 Beulah North 380570004	SO <sub>2</sub> , NO <sub>2</sub> , O <sub>3</sub> , NH <sub>3</sub> , MET cont. PM <sub>2.5</sub> , cont. PM <sub>10</sub> Manual PM <sub>2.5</sub>	Population Exposure & Significant Source				
2 Bismarck Residential 380150003	SO <sub>2</sub> , NO <sub>2</sub> , O <sub>3</sub> , MET cont. PM <sub>2.5</sub> , cont. PM <sub>10</sub> Manual PM <sub>2.5</sub>	Population Exposure				
3 Dunn Center 380250003	SO <sub>2</sub> <sup>4</sup> , NO <sub>2</sub> , O <sub>3</sub> , MET cont. PM <sub>2.5</sub> , cont. PM <sub>10</sub>	General Background				
4 Fargo NW 380171004	SO <sub>2</sub> , NO <sub>2</sub> , O <sub>3</sub> , CO, NO <sub>y</sub> , MET cont. PM <sub>2.5</sub> , cont. PM <sub>10</sub> Manual PM <sub>2.5</sub> PM <sub>fine</sub> Speciation	Population Exposure Population Exposure Population Exposure Population Exposure				
5 Hannover 380650002	SO <sub>2</sub> , NO <sub>2</sub> , O <sub>3</sub> , MET cont. PM <sub>2.5</sub> , cont. PM <sub>10</sub>	Source Impact				
6 Lostwood NWR 380130004	$SO_2^4$ , $NO_2$ , $O_3$ , $NH_3$ , MET, cont. $PM_{2.5}$ , cont. $PM_{10}$ $PM_{fine}$ Speciation (IMPROVE)	General Background & Significant Source				
7 TRNP - NU 380530002	SO <sub>2</sub> <sup>4</sup> , NO <sub>2</sub> , O <sub>3</sub> , MET cont. PM <sub>2.5</sub> , cont. PM <sub>10</sub>	General Background, Long range Transport, & Welfare-related				
<ol> <li>MET refers to meteorological and indicates wind speed and wind direction monitoring equipment.</li> <li>Not applicable to MET.</li> <li>This analyzer will serve a dual role of population exposure and general background.</li> </ol>						





### 2.0 Ambient Air Monitoring Network Coverage

The State of North Dakota is in attainment for all ambient standards for criteria pollutants, including  $PM_{2.5}$  and 8-hour ozone. The seven department-operated ambient monitoring sites are positioned to satisfy five monitoring objectives and collect data to compare to the State and federal ambient air quality standards and support dispersion modeling activities relating to, first, visibility/regional haze, and, second, source permit evaluation.

## 2.1 Sulfur Dioxide

Energy development in the west and west-central portions of North Dakota has produced a number of sources of sulfur dioxide (SO<sub>2</sub>). These sources include coal-fired steam-powered electrical generating facilities, a coal gasification plant, natural gas processing plants, an oil refinery, and flaring at oil/gas well sites. As a result, SO<sub>2</sub> is one of the Department's primary interests in regard to visibility: first, to aid in establishing the visibility baseline, then to track visibility improvement over time.

#### 2.1.1 Point Sources

The major  $SO_2$  point sources (>100 Tons Per Year or TPY) based on 2011 emissions are listed in Table 2. Figure 2 shows the approximate locations of these facilities (the numbers correspond to the site and source tables). Figure 2A shows the total annual  $SO_2$  emissions from point sources and three sub-categories for 1984 through 2011.

#### 2.1.2 Other Sources

The western part of the state has a number of potential  $SO_2$  sources associated with the development of oil and gas. These sources include individual oil/gas wells, oil storage facilities, and compressor stations. Emissions from these sources may lead to two problems. First, these sources may directly emit significant amounts of hydrogen sulfide (H<sub>2</sub>S) to the ambient air (see Section 2.7). Second, flaring the H<sub>2</sub>S from these sources may create significant concentrations of SO<sub>2</sub> in the ambient air. The primary counties for these sources in western North Dakota are outlined in green on Figure 2. Figure 2A shows the contribution of an "Other Point Sources" category that consists of Dakota Gasification Company (DGC), oil refineries, natural gas processing plants, and agricultural processing plants.

## Table 2 Major SO<sub>2</sub> Sources (>100 TPY)

#	Company Name	SOURCE	Facility ID
1	Basin Electric Power Cooperative	Leland Olds Station	3805700001
2	Great River Energy	Coal Creek Station	3805500017
3	Basin Electric Power Cooperative	Antelope Valley Station	3805700011
4	Otter Tail Power Company	Coyote Station	3805700012
5	Minnkota Power Cooperative, Inc.	Milton R. Young Station	3806500001
6	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
7	Montana Dakota Utilities Company	RM Heskett Station	3805900001
8	Great River Energy	Stanton Station	3805700004
9	Hess Corporation	Tioga Gas Plant	3810500004
10	University of North Dakota	UND Heating Plant	3803500003
11	American Crystal Sugar Company	Hillsboro Plant	3809700019
12	North Dakota State University	NDSU Heating Plant	3801700005
13	Tesoro Refining and Marketing Company	Mandan Refinery	3805900003
14	American Crystal Sugar Company	Drayton Plant	3806700003
15	Petro-Hunt, LLC	Little Knife Gas Plant	3800700002
16	ADM Corn Processing	Walhalla Ethanol Plant	3806700004
17	Minn-Dak Farmers Cooperative	Wahpeton Plant	3807700026
18	Cargill Corn Milling	Wahpeton Facility	3807700110



#### Major 502 Sources Major Oil/Gas Producing Counties

Class 1 Areas O Monitoring Sites





Figure 2A Annual Sulfur Dioxide Emissions

### 2.1.3 Monitoring Network

The  $SO_2$  monitoring sites are shown on Figure 2. There were no significant changes made to the  $SO_2$  monitoring network in 2011. There are no significant changes planned for 2013.

As can be seen in Figure 2, the monitoring sites are concentrated in the vicinity of the oil and gas development in the west and the coal-fired steam electrical generating plants in the west-central part of the state. Tables 3 and 3A show the 2011 annual  $SO_2$  data summaries; Tables 4 and 4A show the 5-minute data summaries. There were no exceedances of either state or federal  $SO_2$  standards.

#### 2.1.4 Network Analysis

Ten major  $SO_2$  sources are within 45 miles of both the Beulah and Hannover sites. This makes these two sites very important in tracking the impact of these sources on the ambient air. Also, Lostwood NWR is within 45 miles of four major sources: two natural gas processing plants and two power plants. The two natural gas processing plants are the

Lignite Gas Plant and Tioga Gas Plant. The two power plants, Shand Power Station and Boundary Dam Power Station, are located near Estevan, Saskatchewan, approximately 40 miles to the northwest.

One would expect that as the large sources in Oliver and Mercer counties came on line beginning in 1980, a noticeable change would be seen on the ambient air quality. This has not been the case. There have been possible short-term influences, but no significant long-term impact by these sources combined has been demonstrated in the data. Figures 3, 4 and 5 present the following for the Department-operated sites: (1) 1-hour maximums; (2) 3-hour maximums; and (3) 24-hour maximums. Because the industry sites are sited specifically for maximum expected concentrations (primarily as predicted by dispersion models and secondarily in a downwind direction), the industry sites are not reviewed for particular long-term trends.

To calculate valid statistics, at least 75 percent of the data for each averaging period must be valid. The result of the 75 percent requirement is that each 1-hour average must have at least 45 valid minutes of data. The 3-hour average must have three valid values. The 24-hour average must have at least 18 valid hourly averages. And, the annual average must have 6,570 hours of data.

## COMPARISON OF AIR QUALITY DATA WITH THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : SULFUR DIOXIDE (ppb)

LOCATION	YEAR	NUM OBS	1 1ST	- HOUR 2ND	M A 99 <sup>TH</sup> % 1HR	X I 3 - 1 1ST	M A HOUR 2ND	24 1ST	- HOUR 2ND	ARITH MEAN	3yr Avg	1HR #>273	24HR #>99
Beulah - North	2011	8662	28	25	52	17.6	17.6	5.7	5.0	1.02	34		
Bismarck Residential	2011	8623	47	28	22	25.6	21.3	8.2	7.7	0.86	31		
Hannover	2011	8684	128	118	52	96.6	63.3	16.4	12.0	0.75	51		

\* The air quality standards are: STATE Standards -1) 75 ppb Three year average of the annual 99<sup>th</sup> percentile (4<sup>th</sup> highest) of the daily maximum 1-hour average concentration in a year. 2) 500 ppb highest 3-hour average concentration not to be exceeded more than once per year.

FEDERAL Standards -1) 75 ppb Three year average of the annual 99<sup>th</sup> percentile (4<sup>th</sup> highest) of the daily maximum 1-hour average concentration in a year. 2) 500 ppb highest 3-hour average concentration not to be exceeded more than once per year. 3) 140 ppb highest 24-hour concentration not to be exceeded more than once per year. 4) 30 ppb annual arithmetic mean.

## TABLE 3A

#### COMPARISON OF AIR QUALITY DATA WITH THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

#### POLLUTANT : TRACE LEVEL SULFUR DIOXIDE (ppb)

LOCATION	YEAR	NUM OBS	1 1ST	- HOUR 2ND	М 99 <sup>тн</sup> % 1HR	A X 3 - 1ST	I M HOUR 2ND	A 24 1ST	- HOUR 2ND	ARITH MEAN	3yr Avg	1HR #>273	24HR #>99
Dunn Center	2011	6927 ***	30.9	11.0	10.0	5.7	5.6	2.2	1.8	0.27	13		
Fargo NW	2011	8134	9.1	5.6	5.0	5.8	4.8	2.4	2.3	0.29	5		
Lostwood NWR	2011	8607	47.4	34.6	30.0	30.9	25.3	7.8	17.8	0.79	43		
TRNP - NU	2011	8695	130.3 **	17.5	9.0	53.7	13.5	7.6	5.5	0.55	10		

\* The air quality standards are: STATE Standards -1) 75 ppb Three year average of the annual 99<sup>th</sup> percentile (4<sup>th</sup> highest) of the daily maximum 1-hour average concentration in a year. 2) 500 ppb highest 3-hour average concentration not to be exceeded more than once per year.

FEDERAL Standards -1) 75 ppb Three year average of the annual 99<sup>th</sup> percentile (4<sup>th</sup> highest) of the daily maximum 1-hour average concentration in a year. 2) 500 ppb highest 3-hour average concentration not to be exceeded more than once per year. 3) 140 ppb highest 24-hour concentration not to be exceeded more than once per year. 4) 30 ppb annual arithmetic mean.

\*\*\* Less than 80% of the possible samples (data) were collected.

\*\* Qualified Prescribed Burn

#### COMPARISON OF AIR QUALITY DATA WITH THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : SO2 5-Minut							
LOCATION	YEAR	NUM OBS	1ST		2ND	3RD	# HOURS >600
Beulah - North	2011	8559	114		68	66	
Bismarck Residential	2011	8623	71		61	58	
Hannover	2011	8684	290		283	191	
* No Standard is currently in e	ffect	I		1		ı	I

TABLE 4A

#### COMPARISON OF AIR QUALITY DATA WITH THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Tr	cace Level SO2 5-Minute Averages (ppb)			5 -	ΜΤΝΠΤΕ	махтма	
LOCATION	YEAR	NUM OBS	1ST		2ND	3RD	# HOURS >600
Dunn Center	2011	6927 ***	40.6		23.9	15.5	
Fargo NW	2011	8134	12.1		10.5	9.5	
Lostwood NWR	2011	8607	118.1		84.5	72.3	
TRNP - NU	2011	8694	298.6		67.7 **	20.3	

\* No Standard is currently in effect:

\*\*\* Less than 80% of the possible samples (data) were collected. \*\* Qualified prescribed burn

Beginning in 1980, major events are traceable. In 1980, the oil industry was expanding. In 1981, Otter Tail Power's Coyote Power Station began operation. In 1982 the oil industry in western North Dakota hit its peak activity. Dunn Center and TRNP - NU show the influence from the oil field activity as the oil fields expanded and flared the gas. As pipelines were built and wells were tied into the pipelines, the amount of hydrogen sulfide gas flared decreased, reducing the amount of sulfur dioxide emitted. Once the wells were tied into pipelines, the predominant influence at these two sites has been long-range transport from major point sources.

Dunn Center and TRNP – NU were indicators of the "oil patch" activity and tracked the activity very well. Since TRNP - NU is more centrally located in the "oil patch," it is the stronger indicator. Dunn Center, which is on the eastern edge of the oil development area, demonstrates influences from both the "oil patch" and the coal conversion facilities to the east.

1983, 1984 and 1985 were startup years for Basin Electric's Antelope Valley Unit #1, the synthetic natural gas plant (aka, Dakota Gasification Company, DGC), and Antelope Valley Unit #2, respectively. At Hannover, 1985 and 1986 reflected these startups (1984 had only three months of data and shut down Dec. 31, 1986). Hannover was started up again Jan. 1, 1988; and the Beulah - North site began operation in 1999 and has tracked the Hannover data.







Figure 4 SO<sub>2</sub> Maximum 3-Hour Concentrations



Figure 5 SO<sub>2</sub> Maximum 24-Hour Concentrations

## 2.2 Oxides of Nitrogen

"Oxides of Nitrogen"  $(NO_x)$  is the term used to represent nitric oxide (NO) plus nitrogen dioxide  $(NO_2)$ . NO<sub>2</sub> is formed when NO is oxidized in the ambient air. There is no ambient air quality standard for NO.

## 2.2.1 Point Sources

The major  $NO_x$  stationary point sources (>100 TPY) are listed in Table 5, along with their emissions as calculated from the most recent emission inventories reported to the department. Figure 6 shows the approximate locations of these facilities (the numbers correspond to the site and source tables). The larger  $NO_x$  point sources in North Dakota are associated with coal-fired steam-powered electrical generating plants in the west-central portion of the state and large internal combustion compressor engines in the natural gas fields in the western part of the state. Figure 6A shows the contribution of point sources to the total  $NO_x$  emissions. The "Point Sources" category consists of utility boilers (power plant boilers) and oil and gas wells.

## 2.2.2 Area Sources

Another source of  $NO_X$  is automobile emissions. North Dakota has no significant urbanized areas with regard to oxides of nitrogen; the entire population of the state is less than 1,000,000 people. However, currently operating NO analyzers cannot be terminated without EPA Region 8 administrator permission. Figure 6A shows the contribution of "Other Point Sources" and "Utility Boilers." The "Other Point Sources" category consists of DGC, oil refineries, natural gas processing plants and agricultural processing plants.

## 2.2.3 Monitoring Network

The Department currently operates seven  $NO/NO_2/NO_x$  analyzers. Table 6 shows the 2011  $NO_2$  data summaries. The measured  $NO_2$  values are quite low. From Figure 6 it can be seen that  $NO/NO_2/NO_x$  analyzers, except for Dunn Center and TRNP - NU, are well placed with respect to the major  $NO_x$  sources: TRNP - NU is defined as a background and long-range transport/welfare-related site.

## TABLE 5 Major NO<sub>x</sub> Sources (> 100 TPY)

#	COMPANY	SOURCE	Facility ID
1	Ottertail Power Company	Coyote Station	3805700012
2	Minnkota Power Cooperative, Inc.	Milton R. Young Station	3806500001
3	Basin Electric Power Cooperative	Antelope Valley Station	3805700011
4	Great River Energy	Coal Creek Station	3805500017
5	Basin Electric Power Cooperative	Leland Olds Station	3805700001
6	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
7	Great River Energy	Stanton Station	3805700004
8	Montana Dakota Utilities Company	RM Heskett Station	3805900001
9	Hess Corporation	Tioga Gas Plant	3810500004
10	American Crystal Sugar Company	Hillsboro Plant	3809700019
11	Tesoro Refining and Marketing Company	Mandan Refinery	3805900003
12	American Crystal Sugar Company	Drayton Plant	3806700003
13	Minn-Dak Farmers Cooperative	Wahpeton Plant	3807700026
14	University of North Dakota	UND Heating Plant	3803500003
15	ONEOK Rockies Midstream, L.L.C	Fort Buford Compressor Station	3805300028
16	Red Trail Energy, L.L.C.	Richardton Ethanol Plant	3808900058
17	North Dakota State University	NDSU Heating Plant	3801700005
18	Cavalier AFS	Cavalier AFS Power Plant	3806700005
19	Alliance Pipeline, L.P.	Wimbledon Compressor Station	3800300013
20	Alliance Pipeline, L.P.	Towner Compressor Station	3804900006
21	Northern Border Pipeline Company	Compressor Station #8	3805100001
22	Northern Border Pipeline Company	Compressor Station #6	3805900007



Major NOX Sources
 Monitoring Sites



Figure 6

Major Oxides of Nitrogen Sources



Figure 6A Annual Oxides of Nitrogen Emissions

#### COMPARISON OF AIR QUALITY DATA WITH THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : NITROGEN DIOXIDE (ppb)

LOCATION	YEAR	NUM OBS	1 - 1ST	i a x hour 2nd	I M A 98TH PCTL	ARITH MEAN	3yr Avg
Beulah - North	2011	8354	36	30	22	2.30	25
Bismarck Residential	2011	8213	53	48	37	4.85	38
Dunn Center	2011	6912 ***	12	10	10	1.38	11
Fargo NW	2011	8085	55	45	40	4.45	42
Hannover	2011	8292	21	18	13	1.29	17
Lostwood NWR	2011	8597	22	20	14	1.78	17
TRNP - NU	2011	8042	229	18	10	1.12	9

\*The air quality standards are:

STATE Standards -1) 100 ppb Three year average of the annual 98<sup>th</sup> percentile (8<sup>th</sup> highest) of the daily maximum 1-hour average concentration in a year. 2) 53 ppb annual arithmetic mean.

FEDERAL Standards 1) 100 ppb Three year average of the annual 98<sup>th</sup> percentile (8<sup>th</sup> Highest) of the daily maximum 1-hour average concentration in a year.
2) 53 ppb annual arithmetic mean.

\*\*\* Less than 80% of the possible samples (data) were collected. \*\* Qualified prescribed burn

## 2.2.4 Network Analysis

Nine of the 10 largest NO<sub>X</sub> sources in the state are within 45 miles of the Beulah and Hannover monitoring sites. Figure 7 shows the annual average concentrations for the department-operated sites for 1980 - 2011.

There were no significant changes made to the NO<sub>x</sub> network in 2011. There are no changes planned for 2012 or 2013.



Figure 7 NO<sub>2</sub> Annual Average Concentrations

### 2.3 Ozone

Unlike most other pollutants, ozone  $(O_3)$  is not emitted directly into the atmosphere but results from a complex photochemical reaction between volatile organic compounds (VOC), oxides of nitrogen (NO<sub>x</sub>), and solar radiation. Both VOC and NO<sub>x</sub> are emitted directly into the atmosphere. Since solar radiation is a major factor in O<sub>3</sub> production, O<sub>3</sub> concentrations are known to peak in summer months. 40 CFR 58 defines the O<sub>3</sub> monitoring season for North Dakota as May 1 through September 30.

## 2.3.1 Point Sources

The major stationary point sources (> 100 TPY) of VOC as calculated from the most recent emission inventories reported to the department are listed in Table 7. Figure 8 shows the approximate locations of these facilities.

## 2.3.2 Area Sources

Point sources contribute only part of the total VOC and  $NO_x$  emissions. The remaining emissions can be attributed to oilfield-related activities and mobile sources in urban areas. The EPA has specified design criteria for selecting locations for  $O_3$  as any urbanized area having a population of 50,000 to less than 350,000. North Dakota has three urbanized areas (Bismarck; Fargo, ND-Moorhead, MN; and Grand Forks) populated enough to qualify for population-oriented monitoring. However, to require monitoring, the 4<sup>th</sup> highest 8-hour average concentration must be at least 68 parts per billion.

## 2.3.3 Monitoring Network

The department currently has eight continuous ozone analyzers in operation. The department has set up an Ozone monitoring station in Williston. The site contains an ozone monitor as well as a meteorological equipment set consisting of wind speed, wind direction, ambient temperature, and particulate monitors. This site is to ascertain the impacts of oil development on the ozone levels in the state as they pertain to the national ambient air quality standards. See Figure 8 for locations. Table 8 presents the 2011 8-hour data summaries.

## Major VOC Sources (> 100 TPY)

#	Company	Source	Facility ID
1	Tesoro Refining and Marketing Company	Mandan Refinery	3805900003
2	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
3	Minnkota Power Cooperative, Inc.	Milton R. Young Station	3806500001
4	ADM Processing	Velva Facility	3804900005
5	Northern Sun (Division of ADM)	Enderlin Facility	3807300001
6	Great River Energy	Coal Creek Station	3805500017
7	Basin Electric Power Cooperative	Leland Olds Station	3805700001
8	American Crystal Sugar Company	Hillsboro Plant	3809700019
9	Trinity Containers, L.L.C.	Trinity Containers, L.L.C.	3801700122
10	Minn-Dak Farmers Cooperative	Wahpeton Plant	3807700026
11	Cargill Corn Milling	Wahpeton Facility	3807700110
12	Tharaldson Ethanol Plant I, LLC	Tharaldson Ethanol Plant I, LLC	3801700134



Mojor VOC Sources
 Ozone Monitoring Sites

📕 Closs 1 Areos



Major VOC Sources

## COMPARISON OF AIR QUALITY DATA WITH THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Ozone	(ppb)			м	N V	Ŧ	мл					
LOCATION	YEAR	VAL DAYS	1 - 1ST	HOUR 2ND	A A 1ST	1	8 2ND	- HOUR 3RD	4TH	3yr Avg	1HR #>120	8HR #>75
Beulah North	2011	153	66	64	62		62	59	59	58		
Bismarck Residential	2011	147	63	63	62		60	58	56	57		
Dunn Center	2011	152	60	60	58		57	54	54	55		
Fargo NW	2011	129	66	64	61		60	58	57	59		
Hannover	2011	140	78	65	62		62	60	58	58		
Lostwood NWR	2011	149	68	65	65		62	61	60	60		
TRNP - NU	2011	144	327 **	65	62		62	60	59	58		

\* The air quality standards for ozone are:

STATE - 75ppb Three year average of the annual  $4^{\rm th}$  highest daily maximum 8-hour concentrations.

FEDERAL Standards - 75 ppb Three year average of the annual  $4^{th}$  highest daily maximum 8-hour concentrations.

\*\* Qualified prescribed burn

#### 2.3.4 Network Analysis

Only three of the eight monitoring sites are in an area not significantly influenced by VOC sources (see Figure 8). Beulah and Hannover are within 45 miles of five of the 12 major VOC sources in the state. Lostwood NWR and TRNP - NU are located in Class I areas surrounded by oil fields. Bismarck Residential and Fargo NW are located in population centers and influenced by city traffic. Dunn Center is located in a rural area surrounded by crop land. With this diversity of site locations and influences, one would expect to see a diversity of ozone concentrations. On the contrary, Figure 9 shows a significant similarity among the 4<sup>th</sup> maximum 8-hour annual concentrations. Since 1980, only four 8-hour averages have been higher than 70 ppb. Another, even stronger, indication of a uniform ozone distribution is the 8-hour concentrations: for all sites, the difference among the 4<sup>th</sup> highest average is 6 ppb (see Table 8).



#### 2.4 Inhalable Particulates

The inhalable particulate standards are designed to protect against those particulates that can be inhaled deep into the lungs and cause respiratory problems. The major designation for particulates is PM. Within this designation there are two subgroups:  $PM_{10}$  and  $PM_{2.5}$ . The  $PM_{10}$  particulates have an aerodynamic diameter less than or equal to a nominal 10 microns and are designated as  $PM_{10}$ . The  $PM_{2.5}$  particulates have an aerodynamic diameter less than or equal to a nominal 10 microns or equal to a nominal 2.5 microns. The EPA has defined a new PM subgroup of particles called "coarse fraction," or  $PM_{coarse}$ . This subgroup is made up of  $PM_{10} - PM_{2.5}$ . Specific health effects have been identified for both the  $PM_{coarse}$  and  $PM_{2.5}$  groups.

#### 2.4.1 Sources

The major  $PM_{10}$  point sources (>100 TPY) are listed in Table 9. Figure 10 shows the approximate locations of these facilities (the numbers correspond to the site and source tables). Most of these sources are large coal-fired facilities, and the  $PM_{10}$  particles are part of the boiler stack emissions; however, some of the emissions are the result of processing operations. Not included in this table are sources of fugitive dust such as coal mines, gravel pits, agricultural fields and unpaved roads. Figure 10A shows the contribution of point sources to the total  $PM_{10}$  emissions. The "Utility Boilers" category consists of power plant boilers. The "Other Point Sources" category consists of DGC, oil refineries, natural gas processing plants and agricultural processing plants.

#### 2.4.2 Monitoring Network

The Department operated seven continuous  $PM_{10}$  analyzers, three manual  $PM_{2.5}$  samplers, seven FEM continuous  $PM_{2.5}$  analyzers, and one speciation sampler. Table 10 shows the manual FRM and continuous FEM  $PM_{2.5}$  data summaries. Table 11 shows the continuous  $PM_{10}$  particulate data summary.

## $\begin{array}{l} \text{Major PM}_{10} \text{ Sources} \\ (> 100 \text{ TPY}) \end{array}$

#	COMPANY	SOURCE	Facility ID
1	Great River Energy	Coal Creek Station	3805500017
2	Basin Electric Power Cooperative	Leland Olds Station	3805700001
3	American Crystal Sugar Company	Hillsboro Plant	3809700019
4	American Crystal Sugar Company	Drayton Plant	3806700003
5	Montana Dakota Utilities Company	RM Heskett Station	3805900001
6	Great River Energy	Stanton Station	3805700004
7	Basin Electric Power Cooperative	Antelope Valley Station	3805700011
8	Minnkota Power Cooperative, Inc.	Milton R. Young Station	3806500001
9	Otter Tail Power Company	Coyote Station	3805700012
10	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
11	Red Trail Energy, L.L.C.	Richardton Ethanol Plant	3808900058
12	Tesoro Refining and Marketing Company	Mandan Refinery	3805900003
🗆 Ma	jor PM10 Sources	Class 1 Area	5

Major PM10 Sources
 O PM Monitoring Sites

14FE813 09.54



Major PM<sub>10</sub> Sources

## NORTH DAKOTA POINT SOURCE FILTERABLE PM EMISSIONS



Figure 10A Annual PM Emissions

TABLE 10
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COMPARISON OF AIR QUALITY DATA WITH THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

<code>POLLUTANT</code> : FRM and FEM <code>PM\_{2.5</code> <code>Particulates</code> ( $\mu g/m^3)$ 

LOCATION	YEAR	VAL DAYS	MIN	M A 2 1ST	X I 4 - HOUH 2ND	M A 3RD	24-HR 98th%	24-HR 3yr Avg	WTD MEAN	Annual 3yr Avg	#>35	AM>15
	0011			11.0	10.0	10 0	10.0					
Beulan - North	2011	59		11.0	10.9	10.8	10.9	(NA)	5.08	(NA)		
Beulah - North (BAMM)	2011	353		21.6	18.3	18.1	15.3	15.0	6.88	6.3		
Bismarck Residential	2011	116		12.3	12.2	12.2	12.2	(NA)	5.67	(NA)		
Bismarck Residential (BAMM)	2011	291		22.5	22.5	19.2	15.0	16.0	6.80	6.9		
Dunn Center (BAMM)	2011	96 ***		17.1	13.9	13.8	13.9	14.0	6.39	6.4		
Fargo NW	2011	110		23.5	21.6	21.3	21.3	(NA)	7.73	(NA)		
Fargo NW (BAMM)	2011	337		22.5	20.2	18.9	18.0	21.0	7.11	8.1		
Hannover (BAMM)	2011	43 ***		16.8	9.1	8.9	16.8	17.0	3.91	3.9		
Lostwood NWR (BAMM)	2011	354		2.04	19.5	19.5	13.7	15.0	7.38	7.7		
TRNP - NU (BAMM)	2011	345		29.3	23.1	18.6	17.0	18.0	8.80	8.7		

\* The ambient air quality standards are: FEDERAL Standards -1) 24-hour: 3-year average of 98th percentiles not to exceed 35 µg/m<sup>3</sup>. 2) Annual: 3-year average not to exceed 15 µg/m<sup>3</sup>. \*\*\* Less than 80% of the possible samples (data) were collected.

### Table 11

COMPARISON OF AIR QUALITY DATA WITH THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable Continuous  $PM_{10}$  (µg/m<sup>3</sup>)

			М	A X I	M A		
		NUM		24 -	HOUR		24HR
LOCATION	YEAR	OBS	1ST	2ND	3RD	4TH	MEAN #>150 AM>50
Beulah - North	2011	8550	53.0	46.0	43.0	37.0	10.7
Bismarck Residential	2011	8545	74.0	62.0	55.0	48.0	14.1
Dunn Center	2011	6811	96.0	74.0	61.0	57.0	13.9
Fargo NW	2011	8020	98.0	89.0	85.0	81.0	17.7
Hannover	2011	963 ***	14.0	14.0	13.0	11.0	7.4
Lostwood NWR	2011	8567	63.0	52.0	48.0	45.0	11.0
TRNP - NU	2011	8490	35.0	30.0	25.0	25.0	7.9

\* The STATE and FEDERAL air quality standards are: 1) 150 µg/m<sup>3</sup> maximum averaged over a 24-hour period with no more than one expected exceedance per year. \*\*\* Less than 80% of the possible samples (data) were collected.

#### 2.4.3 PM<sub>10</sub> Network Analysis

 $PM_{10}$  and smaller particles are of concern mainly because of their health effects. The primary purpose for the continuous PM<sub>10</sub> analyzers is to be used with the continuous PM<sub>2.5</sub> analyzers to determine the PM<sub>coarse</sub> fraction. The data also is compared to both the data and federal ambient air quality standards.

#### 2.4.4 PM2.5 Network

The manual PM<sub>2.5</sub> network currently has three sites. Bismarck, Fargo and Beulah are non-CORE required sites. Bismarck and Fargo operate on a 1-in-3 day schedule, while Beulah operates on a 1-in-6 day schedule. FEM Continuous PM<sub>2.5</sub> analyzers have been installed at all sites in the network.

#### 2.4.5 Speciation Network

One speciation sampler is installed as a National Trends Network sampler in Fargo. The data collected by this sampler is added to the AQS database by RTI.

## 2.5 Carbon Monoxide

Many large urban areas in the United States have problems attaining the NAAQS for carbon monoxide (CO) where the primary source of CO is automobiles. North Dakota does not have sufficient population with the corresponding traffic congestion and geographical/meteorological conditions to create significant CO emission problems. However, there are several stationary sources in the state that emit more than 100 TPY of CO.

## 2.5.1 Sources

The major stationary CO sources (>100 TPY) are listed in Table 12. Figure 11 shows the approximate locations of these facilities (the numbers correspond to the site and source tables). Most of these sources are the same sources that are the major emitters of  $SO_2$  and  $NO_x$ . However, the corresponding CO levels from these sources are considerably lower.

## 2.5.2 Monitoring Network

Carbon monoxide monitoring in North Dakota was terminated March 31, 1994, after operating five years. The conclusion drawn from the data was that North Dakota did not have a CO problem. A summary report of the data collected at the West Acres Shopping Mall was drafted for the Fargo-Moorhead Council of Governments for use in its traffic planning program. The department operates a Trace Level CO analyzer at the Fargo NW site in order to comply with the NCore requirements.

## TABLE 12 Major CO Sources (> 100 TPY)

#	COMPANY	SOURCE	Facility ID
1	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
2	Great River Energy	Coal Creek Station	3805500017
3	American Crystal Sugar Company	Hillsboro Plant	3809700019
4	Montana Dakota Utilities Company	RM Heskett Station	3805900001
5	Basin Electric Power Cooperative	Antelope Valley Station	3805700011
6	Minnkota Power Cooperative, Inc.	Milton R. Young Station	3806500020
7	Otter Tail Power Company	Coyote Station	3805700012
8	Basin Electric Power Cooperative	Leland Olds Station	3805700001
9	Tesoro Refining and Marketing Company	Mandan Refinery	3805900003
10	Minn-Dak Farmers Cooperative	Wahpeton Plant	3807700026
11	American Crystal Sugar Company	Drayton Plant	3806700003
12	ONEOK Rockies Midstream, L.L.C.	Fort Buford Compressor Station	3805300028
13	Cargill, Inc.	Cargill Oilseeds Processing	3801700066
14	Cargill Corn Milling	Wahpeton Facility	3807700110
15	Great River Energy	Stanton Station	3805700004
16	Hess Corporation	Tioga Gas Plant	3810500004
17	University of North Dakota	UND Heating Plant	3803500003



□ Major CO Sources
 ○ CO Monitoring Site

E Class 1 Areas



Major CO Sources

	NONOVIDE (DDB)	COMPARISON OF AIR QUALITY DATA WITH THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *								
LOCATION	YEAR	NUM OBS	1 1ST	M A X - HOUR 2ND	I M 8 - 1ST	A HOUR 2ND	1HR #>35000	8HR #>9000		
Fargo NW	2011	8137	682.0	674.0	400.0	400.0				

\* The STATE and FEDERAL air quality standards are:
1) The maximum allowable 1-hour concentration is 35000 ppb not to be exceeded more than once per year.
2) The maximum allowable 8-hour concentration is 9000 ppb not to be exceeded more than once per year.

## 2.6 Lead

Through prior sampling efforts, the department has determined that the state has low lead concentrations and no significant lead sources. This determination, coupled with the federal requirement for a NAMS network only in urbanized areas, resulted in terminating the lead monitoring program effective Dec. 31, 1983. Along with the low monitored concentrations, lead has been completely removed from gasoline since lead monitoring began in 1979.

#### 2.7 Hydrogen Sulfide

Although no Federal Ambient Air Quality Standard exists for hydrogen sulfide ( $H_2S$ ), the state of North Dakota has developed  $H_2S$  standards.

#### 2.7.1 Sources

 $H_2S$  emissions of concern stems almost totally from the oil and gas operations in the western part of the state. Flares and treater stacks associated with oil/gas wells, oil storage tanks, compressor stations, pipeline risers, and natural gas processing plants are potential  $H_2S$  emission sources.

#### 2.7.2 Monitoring Network

Currently there are no state or industry  $H_2S$  monitoring sites.

#### 2.8 Air Toxics

Currently there are no state or federal air toxics monitoring sites.

2.8.1 Sources

The major air toxics sources are listed in Table 15 and Figure 12 shows the approximate locations of these facilities (the numbers correspond to the source table).

### 2.8.2 Monitoring Network

Currently there are no state or industry air toxics monitoring sites. The historic raw data and associated summaries are available in EPA's Air Quality System.
# Table 15 Major Air Toxics Sources (>100 TPY)

#	COMPANY	SOURCE	Facility ID
1	Dakota Gasification Company	Great Plains Synfuels Facility	3805700013
2	ADM Processing	Velva Facility	3804900005
3	Northern Sun (Division of ADM)	Enderlin Facility	3807300001
4	LM Wind Power Blades	Grand Forks Facility	3803500067



Major Air Toxics Sources
 Air Toxics Nanitoring Siles



Figure 12 N

Major Air Toxics Sources

#### 3.0 SUMMARY AND CONCLUSIONS

The North Dakota Ambient Air Quality Monitoring Network is designed to monitor those air pollutants that demonstrate the greatest potential for deteriorating the air quality of North Dakota. Due to a greater number of pollution-producing sources in the western part of the state (primarily associated with the energy producing industries) the greatest percentage of the network is located in the western part of the State.

#### 3.1 Sulfur Dioxide (SO<sub>2</sub>)

Neither the state nor federal standards were exceeded at any monitoring site. The maximum concentrations were as follows: 3-year average 1-hour 99<sup>th</sup> percentile – 70ppb; 3-hour – 104.6 ppb; 24-hour – 29.3 ppb; annual 1.56 ppb.

There is no  $SO_2$  5-minute standard currently in effect. The maximum 5-minute average was 358 ppb.

#### 3.2 Nitrogen Dioxide (NO<sub>2</sub>)

Neither the state nor federal standards were exceeded at any of the monitoring sites. The maximum concentrations were as follows: Three year average of the  $98^{th}$  percentile 1-hour average concentrations – 40 ppb; annual – 4.85 ppb.

#### 3.3 Ozone $(O_3)$

Neither the state nor federal standard was exceeded during the year. The maximum fourth-highest 8-hour concentration was 60 ppb.

### 3.4 Inhalable Particulates

Neither the state nor federal  $PM_{10}$  standards were exceeded during the year. The maximum concentration was: 24-hour  $-98.0 \ \mu g/m^3$ .

The federal PM<sub>2.5</sub> standards were not exceeded during the year. The maximum concentrations are as follows: 24-hour – 29.3  $\mu$ g/m<sup>3</sup>; annual – 8.7  $\mu$ g/m<sup>3</sup>.

3.5 Carbon Monoxide (CO)

Neither the state nor federal standards were exceeded at the monitoring site. The maximum concentrations are as follows: 1-hour – 682 ppb; 8-hour – 400 ppb.

3.6 Lead

No monitoring was conducted.

3.7 Hydrogen Sulfide

No monitoring was conducted.

3.8 Air Toxics

No monitoring was conducted.

Appendix A

AAQM Site Descriptions

This appendix is a condensation of Appendices B and C, combined with a site description and any information relating to specific analyzer or sampler. Please note that all sites meet the siting criteria specified in 40 CFR 58, Appendices A, C, D, and E. When selecting a site, five factors are considered: modeling results, landowner permission, power availability, year-round access to the site, and prevailing wind direction.

The sites addressed in this report are only the current active sites. A complete list of sites and all monitoring that has been conducted at each site that has ever reported data to EPA, you may go to <u>www.epa.gov/air/data/aqsdb.html</u>. The site is very easy to use and with a little experimenting, site and monitor selections can be made very specific. Also available at this site are air quality summary data and emissions data.

Another useful tool is Google Earth<sup>TM</sup>. (<u>http://free.download.earth.googlepages.com/</u>) With this tool, one can enter latitude and longitude to get either an expanded view or close-up view of each monitoring site.

For both of these tools, a high-speed Internet connection is highly recommended. They can be used with a dial-up connection, but it is not recommended.

Site: Beulah – North	<b>Station Type:</b> SLAMS (required)
AQS#: 38-057-0004	<b>MSA:</b> 0000
Address: 6024 Highway 200, Beula	ah
<b>Latitude:</b> +47.298611	Longitude: -101.766944

Site Description: This is one of three key sites in the department's ambient monitoring network to meet the six required monitoring objectives. When this site was established, it was decided to enhance the site to include ammonia, solar radiation and delta temperature to support air quality dispersion modeling. This site is one of the required PM<sub>2.5</sub> monitoring sites for North Dakota

#### Sampling & Operating Monitoring **Spatial** Schedule Objective Scale **Analysis Method** Parameter Instrumental Pulsed Florescent Continuous **Population Exposure** Urban Sulfur Dioxide **Population Exposure** Nitrogen Dioxide Instrumental Chemiluminescence Continuous Urban Ozone Instrumental Ultra Violet Continuous **Population Exposure** Urban Instrumental Chemiluminescence General Background Regional Ammonia Continuous $PM_{2.5}$ 24-hour Gravimetric 1/6 **Population Exposure** Urban Continuous Population Exposure Urban $PM_{2.5}$ FEM PM<sub>2.5</sub> BAMM PM<sub>10</sub> TEOM Gravimetric 50° **Population Exposure** $PM_{10}$ Continuous Urban Celsius

#### **Gas/Particulate parameters:**

#### **Meteorological parameters:**

	Sampling &	Operating		Spatial
Parameter	Analysis Method	Schedule	Tower Height	Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Delta Temperature	Elec. or Mach Avg.	Continuous	10 - 2 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban
Solar Radiation	Pyranometer	Continuous	2 meters	Urban

# Site Pictures: Beulah North





East West

Looking Northeast

Looking Northwest



Site: Bismarck Residential	Station Type: SLAMS
AQS#: 38-015-0003	<b>MSA:</b> 1010
Address: 1810 N 16 <sup>th</sup> Street, Bismarck	
Latitude: +46.825425	<b>Longitude:</b> -100.768210

Site Description: This site is located in the second largest metropolitan area in the state. When two special purpose sites in Mandan were closed, this site was expanded from a particulates-only site to be a full site for gases, continuous particulates (inc. ambient pressure) and the basic meteorological parameters (wind speed, wind direction and temperature). Another key role this site plays is to field test new types of equipment and procedures isolated from the equipment used to report data to AQS.

#### **Gas/Particulate parameters:**

	Sampling &	Operating	Monitoring	Spatial
Parameter	Analysis Method	Schedule	Objective	Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	Population Exposure	Urban
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	Urban
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	Urban
PM <sub>2.5</sub>	24-hour Gravimetric	1/6	Population Exposure	Urban
PM <sub>2.5</sub>	FEM PM <sub>2.5</sub> BAMM	Continuous	Population Exposure	Urban
$PM_{10}$	PM <sub>10</sub> TEOM Gravimetric 50°	Continuous	Population Exposure	Urban
	Celsius			

#### Meteorological parameters:

	Sampling &	Operating		Spatial
Parameter	Analysis Method	Schedule	<b>Tower Height</b>	Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban

# Site Pictures: Bismarck Residential



North

East





South

Looking Southeast



Site:	Dunn Center	Station Type: SLAMS
AQS#:	38-025-0003	<b>MSA:</b> 0000
Addres	s: 9610 Seventh Street SW, Dunn C	Center
Latitud	le: +47.313200	<b>Longitude:</b> -102.527300

Site Description: This site is located about midway between the oil development all along the North Dakota – Montana border and the seven coal conversion facilities to the east. The importance lies in the ability to monitor the transport of sulfur dioxide, nitrogen dioxide, and  $PM_{2.5}$  between these two areas. Also, this is a key site used in dispersion model calibration and validation.

				-
	Sampling &	Operating	Monitoring	Spatial
Parameter	Analysis Method	Schedule	Objective	Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	General/Background	Urban
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	General/Background	Urban
Ozone	Instrumental Ultra Violet	Continuous	General/Background	Urban
PM <sub>2.5</sub>	PM <sub>2.5</sub> SCC W/ No Correction	Continuous	General/Background	Urban
	TEOM Gravimetric 40 deg. Celsius			
PM <sub>10</sub>	PM <sub>10</sub> TEOM Gravimetric 50° Celsius	Continuous	General/Background	Urban

### **Gas/Particulate parameters**

### **Meteorological parameters:**

	Sampling &	Operating		Spatial
Parameter	Analysis Method	Schedule	Tower Height	Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Delta Temperature	Elec. or Mach Avg.	Continuous	10 - 2 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban
Solar Radiation	Pyranometer	Continuous	2 meters	Urban

# Site Pictures: Dunn Center



North

West



East

South



Looking Northwest

Looking Northeast



 Site Name: Fargo NW
 Stat

 AQS#: 38-017-1004
 MSA

 Address: 4266 40<sup>th</sup> Avenue North, Fargo
 Latitude: +46.933754

Station Type: SLAMS (required) MSA: 2520

**Longitude:** -96.855350

Site Description: This site is one of EPA's 54 Speciation Trends Network sites, the state's required NCORE site, located in the largest metropolitan area in North Dakota. The data collected at this site is used in dispersion modeling for input, calibration and validation. An NCORE site is required to have trace level analyzers for sulfur dioxide, carbon monoxide, and NO<sub>Y</sub> (total reactive nitrogen) operational by January 1, 2011. The trace level analyzers are installed.

	Sampling &	Operating	Monitoring	Spatial
Parameter	Analysis Method	Schedule	Objective	Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	Population Exposure	Urban
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	Urban
Carbon Monoxide	Gas Filter Correlation	Continuous	Population Exposure	Urban
NO <sub>y</sub>	Instrumental Chemiluminescence	Continuous	Population Exposure	Urban
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	Urban
PM <sub>2.5</sub>	24-hour Gravimetric	1/3	Population Exposure	Urban
PM <sub>2.5</sub>	FEM PM <sub>2.5</sub> BAMM	Continuous	Population Exposure	Urban
PM <sub>10</sub>	PM <sub>10</sub> TEOM Gravimetric 50° Celsius	Continuous	Population Exposure	Urban
PM <sub>fine</sub> Speciation	METOne SASS 24-hour Gravimetric	1/3	Population Exposure	Urban

#### **Gas/Particulate parameters:**

### Meteorological parameters:

	Sampling &	Operating		Spatial
Parameter	Analysis Method	Schedule	Tower Height	Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Delta Temperature	Elec. or Mach Avg.	Continuous	10 - 2 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban
Relative Humidity	Hygroscopic Plastic Film	Continuous	10 meters	Urban
Solar Radiation	Pyranometer	Continuous	2 meters	Urban

# Site Pictures: Fargo NW



North

West



East

South



Looking Northeast

Looking West



Site Name: Hannover AQS#: 38-065-0002 Address: 1575 Highway 31, Stanton Latitude: +47.185833 Station Type: SLAMS MSA: 0000

**Longitude:** -101.428056

Site Description: This site is centrally located to the power plants in the Oliver-Mercer-McLean county area. The data collected here is used to supplement ambient data collected at Beulah – North and TRNP – NU.

### **Gas/Particulate parameters:**

	Sampling &	Operating	Monitoring	Spatial
Parameter	Analysis Method	Schedule	Objective	Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	Source Oriented	Urban
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Source Oriented	Urban
Ozone	Instrumental Ultra Violet	Continuous	Source Oriented	Urban
PM <sub>2.5</sub>	PM <sub>2.5</sub> SCC W/ No Correction	Continuous	Source Oriented	Urban
	TEOM Gravimetric 40 deg. Celsius			

### **Meteorological parameters:**

	Sampling &	Operating		Spatial
Parameter	Analysis Method	Schedule	<b>Tower Height</b>	Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban

# Site Pictures: Hannover







West



Looking Southwest

Looking Northeast



Site Name: Lostwood NWR	Station Type: SLAMS
<b>AQS#:</b> 38-013-0004	<b>MSA:</b> 0000
Address: 8315 Highway 8, Kenmare	
<b>Latitude:</b> +48.641930	Longitude: -102.401800

Site Description: This site is located in a PSD Class I area. Because this site is downwind of the two power plants near Estevan, SK, and located in the Souris River Airshed, this data is also usable by SaskEnvironment in a study they are conducting in the western region of the Souris Basin Airshed.

The site has an IMPROVE sampler operated by the US Fish and Wildlife Service. This data will be used with the other ambient data collected here to evaluate long-range transport of aerosols affecting regional haze/visibility.

#### **Gas/Particulate parameters:**

	Sampling &	Operating	Monitoring	Spatial
Parameter	Analysis Method	Schedule	Objective	Scale
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	Regional Transport	Regional
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Regional Transport	Regional
Ozone	Instrumental Ultra Violet	Continuous	Regional Transport	Regional
PM <sub>2.5</sub>	FEM PM <sub>2.5</sub> BAMM	Continuous	Regional Transport	Regional
$PM_{10}$	PM <sub>10</sub> TEOM Gravimetric 50° Celsius	Continuous	Regional Transport	Regional

### Meteorological parameters:

	Sampling &	Operating		Spatial
Parameter	Analysis Method	Schedule	Tower Height	Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Delta Temperature	Elec. or Mach Avg.	Continuous	10 - 2 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban
Solar Radiation	Pyranometer	Continuous	2 meters	Urban
Relative Humidity	Hygroscopic Plastic Film	Continuous	10 meters	Urban

## Site Pictures: Lostwood NWR



East

West



Looking Northwest

Looking North



Site Name: TRNP-NU	Station Type: SLAMS(required)
AQS#: 38-053-0002	<b>MSA:</b> 0000
Address: 229 Service Road, Watford City	
Latitude: +47.581200	Longitude: -103.299500

Site Description: This site is located in Theodore Roosevelt National Park – North Unit and is one of three key sites in the department's ambient monitoring network to meet the six required monitoring objectives. The data collected is used for model calibration/validation.

Sampling &		Operating	Monitoring	Spatial			
Parameter	Analysis Method	Schedule	Objective	Scale			
Sulfur Dioxide	Instrumental Pulsed Florescent	Continuous	General/Background	Regional			
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous General/Backgroun		Regional			
Ozone	Instrumental Ultra Violet	Continuous	General/Background	Regional			
PM <sub>2.5</sub>	PM <sub>2.5</sub> FEM PM <sub>2.5</sub> BAMM		General/Background	Regional			
			Regional Transport	_			
PM <sub>10</sub> PM <sub>10</sub> TEOM Gravimetric 50° Celsius		Continuous	General/Background	Regional			
			Regional Transport				

### **Gas/Particulate parameters:**

### **Meteorological parameters:**

Parameter	Sampling &	Operating	<b>Tower Height</b>	Spatial
	Analysis Method	Schedule		Scale
Wind Speed	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Wind Direction	Elec. or Mach Avg. Level 1	Continuous	10 meters	Urban
Ambient Temperature	Elec. or Mach Avg.	Continuous	10 meters	Urban
Ambient Pressure	Barometric Pressure Transducer	Continuous	6 meters	Urban
Relative Humidity	Hygroscopic Plastic Film	Continuous	10 meters	Urban

# Site Pictures: TRNP-NU



North

South



East

West



Looking Northwest

Looking Northeast



Appendix B

Detailed Site Descriptions

This appendix is a listing printed from the EPA's Air Quality System (AQS) database. Please note that if the latitude and longitude are used in Google Earth<sup>TM</sup>, the display generated may not exactly match the display in Appendix A. This is a problem with Google Earth<sup>TM</sup>, not the coordinates in AQS.

Site ID: 38-013-0004	Site Name: LOSTWOOD NWR	Local ID:			
Street Address: 8315 HIGHWAY 8, KENMARE		City: Not in a city			
State: North Dakota	Zip Code: 58721	County: Burke			
Location Description: MONITORING POINT		Location Setting: RURAL			
Coll. Method: GPS CODE (PSEUDO RANGE) DI	FFERENTIAL	Land Use: AGRICULTURAL			
Date Established: 19990101	Date Terminated:	Last Updated: 20060814			
Regional Eval. Date:	HQ Eval. Date:	AQCR : NORTH DAKOTA			
MSA: Not in a MSA	CMSA: Not in a CMSA	Direct Met Site: Met. Site ID:			
Type Met Site: ON-SITE MET EQUIP	Dist to Met. Site(m):	Local Region:			
Urban Area: NOT IN AN URBAN AREA		EPA Region: DENVER			
City Population: 1	Dir. to CBD:	Dist. to City(km):			
Census Block:	Block Group:	Census Tract:			
Congressional District:		Class 1 Area: Lostwood National Wildlife Refuge			
Site Latitude: +48.641930	Site Longitude: -102.401800	Time Zone: CENTRAL			
UTM Zone: 13	UTM Northing: 5390691.44	UTM Easting: 691395.29			
Accuracy: .01	Datum: WGS84	Scale: 24000 Point/Line/Area: POINT			
Vertical Measure(m): 696.0		Vert Accuracy: .01			
Vert Datum NAVD88		Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL			

ACTIVE MONIT	OR TYPES		i	AGENCY ROLES		
Marrishan Barris	# of	Role	Agency Desc		Begin Date	End Date
Monitor Type	Monitors	SUPPORTING	North Dakota State Department Of Health		20031027	
SLAMS	5	-				
OTHER	12					
IMPROVE	59					

			TANGENT	ROADS		
Road		Traffic	Traffic			Compass
Number	Road Name	Count	Year	Traffic Volume Source	Road Type	Sector
1	90TH STREET NW	10	2002	DOT	LOCAL ST OR	N
2	ND HIGHWAY 8	100	2002	DOT	THRU ST OR HY	Е
3	NDHIGHWAY 8	100	2002	DOT	THRU ST OR HY	S
4	COUNTY ROAD 11	10	2002	DOT	LOCAL ST OR	W

Site ID: 38-015-0003	Site Name: BISMARCK RESIDENTIAL	Local ID:
Street Address: 1810 N 16TH STREET		City: Bismarck
State: North Dakota	Zip Code: 58501	County: Burleigh
Location Description: MONITORING POINT		Location Setting: SUBURBAN
Coll. Method: GPS CODE (PSEUDO RANGE) DI	FFERENTIAL	Land Use: RESIDENTIAL
Date Established: 19950501	Date Terminated:	Last Updated: 20060814
Regional Eval. Date:	HQ Eval. Date:	AQCR : NORTH DAKOTA
MSA: Bismarck,ND	CMSA:	Direct Met Site: S Met. Site ID:
Type Met Site: NWS	Dist to Met. Site(m): 3200	Local Region:
Urban Area: BISMARCK, ND		EPA Region: DENVER
City Population: 55532	Dir. to CBD: N	Dist. to City(km): 2
Census Block:	Block Group:	Census Tract:
Congressional District:		Class 1 Area:
Site Latitude: +46.825425	Site Longitude: -100.768210	Time Zone: CENTRAL
UTM Zone: 14	UTM Northing: 5187064	UTM Easting: 365130.78
Accuracy: .03	Datum: WGS84	Scale: 0 Point/Line/Area: POINT
Vertical Measure(m): 580.0		Vert Accuracy: .03
Vert Datum NAVD88		Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL

ACTIVE MONIT	FOR TYPES		А	GENCY ROLES		
Manitan mara	# of	Role	Agency Desc		Begin Date	End Date
Monitor Type	Monitors	SUPPORTING	North Dakota State Department Of Health		19950501	
SUPPLMNTL	134	1				
OTHER	18					
SLAMS	16					

			TANGENT	ROADS		
Road		Traffic	Traffic			Compass
Number	Road Name	Count	Year	Traffic Volume Source	Road Type	Sector
1	16TH AVE.	10650	1991		LOCAL ST OR	S
2	15TH ST	150	1994		LOCAL ST OR	W
3	17TH ST	100	1994		LOCAL ST OR	Е
4	SPALDING AVE.	20	1994		LOCAL ST OR	N
					υv	

Site ID: 38-017-1004	Site Name: FARGO NW	Local ID:
Street Address: 4266 40TH AVE NORTH		City: Fargo
State: North Dakota	Zip Code: 58102	County: Cass
Location Description: MONITORING POINT		Location Setting: SUBURBAN
Coll. Method: GPS CODE (PSEUDO RANGE) DI	FFERENTIAL	Land Use: AGRICULTURAL
Date Established: 19980513	Date Terminated:	Last Updated: 20060814
Regional Eval. Date:	HQ Eval. Date:	AQCR : METROPOLITAN FARGO-MOORHEAD
MSA: Fargo-Moorhead,ND-MN	CMSA:	Direct Met Site: Met. Site ID:
Type Met Site: ON-SITE MET EQUIP	Dist to Met. Site(m):	Local Region:
Urban Area: FARGO-MOORHEAD, ND-MN		EPA Region: DENVER
City Population: 90599	Dir. to CBD: N	Dist. to City(km): 4
Census Block:	Block Group:	Census Tract:
Congressional District: 1		Class 1 Area:
Site Latitude: +46.933754	Site Longitude: - 96.855350	Time Zone: CENTRAL
UTM Zone: 14	UTM Northing: 5199816.62	UTM Easting: 663252.17
Accuracy: .03	Datum: WGS84	Scale: 0 Point/Line/Area: POINT
Vertical Measure(m): 275.0		Vert Accuracy: .03
Vert Datum NAVD88		Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL

ACTIVE MONITOR TYPES			AGENCY ROLES				
Monitor Time	# of Monitors	Role	Agency Desc	Begin Date End Date			
Monitor Type	Monitors	SUPPORTING	North Dakota State Department Of Health	19980513			
TRENDS SPECIATION	67						
OTHER	23	Air Toxics					
SLAMS	б						

			TANGENT	ROADS		
Road		Traffic	Traffic			Compass
Number	Road Name	Count	Year	Traffic Volume Source	Road Type	Sector
1	19TH AVE N.	550	1989		THRU ST OR HY	S
2	INTERSTATE 94	8790	1989		ARTERIAL	Е
3	COUNTY 20	975	1989		THRU ST OR HY	Ν

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Site ID: 38-025-0003	Site Name: DUNN CENTER	Local ID:
Street Address: 9610 SEVENTH STREET SW		City: Not in a city
State: North Dakota	Zip Code: 58626	County: Dunn
Location Description: MONITORING POINT		Location Setting: RURAL
Coll. Method: GPS CARRIER PHASE STATIC R	ELATIVE POSITION	Land Use: AGRICULTURAL
Date Established: 19750701	Date Terminated:	Last Updated: 20060814
Regional Eval. Date:	HQ Eval. Date:	AQCR : NORTH DAKOTA
MSA: Not in a MSA	CMSA: Not in a CMSA	Direct Met Site: Met. Site ID:
Type Met Site: ON-SITE MET EQUIP	Dist to Met. Site(m):	Local Region:
Urban Area: NOT IN AN URBAN AREA		EPA Region: DENVER
City Population: 1	Dir. to CBD:	Dist. to City(km):
Census Block:	Block Group:	Census Tract:
Congressional District: 1		Class 1 Area:
Site Latitude: +47.313200	Site Longitude: -102.527300	Time Zone: MOUNTAIN
UTM Zone: 13	UTM Northing: 5242716.42	UTM Easting: 686888.26
Accuracy: .03	Datum: WGS84	Scale: 0 Point/Line/Area: POINT
Vertical Measure(m): 683.0		Vert Accuracy: .03
Vert Datum NAVD88		Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL

SITE COMMENTS

ACTIVE MONIT	OR TYPES		AGENCY ROL	LES
Monitor Time	# of Monitors	Role	Agency Desc	Begin Date End Date
Monitor Type Monitors		SUPPORTING	North Dakota State Department Of Health	19750701
INDEX SITE	1			
OTHER	10			
SLAMS	7			

Road		Traffic	TANGENI Traffic	ROADS		Compass
Number	Road Name	Count	Year	Traffic Volume Source	Road Type	Sector
1	SEVENTH STREET SW	10	2004	DOT	LOCAL ST OR	N

May. 18, 2007

Site Name: TRNP-NU	Local ID:
CITY	City: Not in a city
Zip Code: 58854	County: McKenzie
	Location Setting: RURAL
ELATIVE POSITION	Land Use: AGRICULTURAL
Date Terminated:	Last Updated: 20060814
HQ Eval. Date:	AQCR : NORTH DAKOTA
CMSA: Not in a CMSA	Direct Met Site: Met. Site ID:
Dist to Met. Site(m):	Local Region:
	EPA Region: DENVER
Dir. to CBD:	Dist. to City(km):
Block Group:	Census Tract:
	Class 1 Area: T. Roosevelt Park (North)
Site Longitude: -103.299500	Time Zone: MOUNTAIN
UTM Northing: 5270936.38	UTM Easting: 627875.21
Datum: NAD83	Scale: 0 Point/Line/Area: POINT
	Vert Accuracy: 0
	Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL
	Site Name: TRNP-NU CITY Zip Code: 58854 ELATIVE POSITION Date Terminated: HQ Eval. Date: CMSA: Not in a CMSA Dist to Met. Site(m): Dir. to CBD: Block Group: Site Longitude: -103.299500 UTM Northing: 5270936.38 Datum: NAD83

SITE COMMENTS

LOCATED IN THE THOEDORE ROOSEVELT NATIONAL PARK APPROXIMATELY 10 KM INSIDE THE PARK ENTRANCE.

ACTIVE MONITOR	R TYPES			AGENCY ROLES		
Mawitan There	# of	Role	Agency Desc		Begin Date	End Date
Monitor Type	Monitors	SUPPORTING	North Dakota State Department Of Health		19781201	
SLAMS	б	-				
SUPPLMNTL SPECIAT	67					
OTHER	9					

Site ID: 38-057-0004	Site Name: BEULAH NORTH	Local ID:
Street Address: 6024 HIGHWAY 200		City: Beulah
State: North Dakota	Zip Code: 58571	County: Mercer
Location Description: MONITORING POINT		Location Setting: RURAL
Coll. Method: GPS CODE (PSEUDO RANGE) DI	FFERENTIAL	Land Use: AGRICULTURAL
Date Established: 19981213	Date Terminated:	Last Updated: 20031212
Regional Eval. Date:	HQ Eval. Date:	AQCR : NORTH DAKOTA
MSA: Not in a MSA	CMSA: Not in a CMSA	Direct Met Site: Met. Site ID:
Type Met Site: ON-SITE MET EQUIP	Dist to Met. Site(m):	Local Region:
Urban Area: NOT IN AN URBAN AREA		EPA Region: DENVER
City Population: 3152	Dir. to CBD:	Dist. to City(km):
Census Block:	Block Group:	Census Tract:
Congressional District:		Class 1 Area:
Site Latitude: +47.298611	Site Longitude: -101.766944	Time Zone: MOUNTAIN
UTM Zone: 14	UTM Northing: 5241843	UTM Easting: 290816
Accuracy: .03	Datum: WGS84	Scale: 0 Point/Line/Area: POINT
Vertical Measure(m): 630.0		Vert Accuracy: .03
Vert Datum NAVD88		Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL

ACTIVE MONIT	OR TYPES		А	AGENCY ROLES		
Monitor Trmo	# of Manitawa	Role	Agency Desc		Begin Date	End Date
Monitor Type	Monitors	SUPPORTING	North Dakota State Department Of Health		19981213	
SLAMS	10	-				
OTHER	78 Aiı	r Toxics				

			TANGENT	ROADS		
Road		Traffic	Traffic			Compass
Number	Road Name	Count	Year	Traffic Volume Source	Road Type	Sector
1	HIGHWAY 200	1000	1998		THRU ST OR HY	N
2	COUNTY ROAD	100	1998		LOCAL ST OR	W
3	CITY STREET	250	1998		THRU ST OR HY	S

May. 18, 2007

LOCAL ST OR

uv

Е

Site ID: 38-065-0002	Site Name: HANNOVER	Local ID:				
Street Address: 1575 HIGHWAY 31		City: Not in a city				
State: North Dakota	Zip Code:	County: Oliver				
Location Description: MONITORING POINT		Location Setting: RURAL				
Coll. Method: GPS CODE (PSEUDO RANGE) DI	FFERENTIAL	Land Use: AGRICULTURAL				
Date Established: 19841004	Date Terminated:	Last Updated: 20050304				
Regional Eval. Date:	HQ Eval. Date:	AQCR : NORTH DAKOTA				
MSA: Not in a MSA	CMSA: Not in a CMSA	Direct Met Site: Met. Site ID:				
Type Met Site: ON-SITE MET EQUIP	Dist to Met. Site(m):	Local Region:				
Urban Area: NOT IN AN URBAN AREA		EPA Region: DENVER				
City Population: 1	Dir. to CBD: S	Dist. to City(km): 7				
Census Block:	Block Group:	Census Tract:				
Congressional District: 1		Class 1 Area:				
Site Latitude: +47.185833	Site Longitude: -101.428056	Time Zone: MOUNTAIN				
UTM Zone: 14	UTM Northing: 5228457	UTM Easting: 316045				
Accuracy: .01	Datum: WGS84	Scale: 0 Point/Line/Area: POINT				
Vertical Measure(m): 697.0		Vert Accuracy: .01				
Vert Datum NAVD88		Vert Method: GPS CODE (PSEUDO RANGE) DIFFERENTIAL				

SITE COMMENTS

ACTIVE	MONITOR TYPES		AGENCY ROLES					
Monitor Type	# of e Monitors	Role	Agency Desc	partment (	f Health	Begin Dat 19841004	te End	Date
OTHER	б		Norem Banoca Scace Be			19011001		
SLAMS	5							
Road Number	Road Name		Traffic Count	TANGENT Traffic Year	T ROADS Traffic Volume Source		Road Type	Compass Sector

	Road Number	Road Name	Count	Year	Traffic Volume Source
L	1	STATE HIGHWAY 31	350	2000	DOT

Appendix C

Detailed Monitor Descriptions
This appendix is a listing printed from the AQS database for only the gaseous parameters for each site.

May. 18, 2007

	North Dakota
Monitor ID: 38-057-0004-42602-1	Parameter Measured: Nitrogen Dioxide
Date of Latest Collection: 20070331	Last Updated: 20070430
Owner: North Dakota	City: Beulah
Street Address: 6024 HIGHWAY 200	
Site Name: BEULAH NORTH	MSA: Not in a MSA
County: Mercer	UAR: NOT IN AN URBAN AREA
Project Type: POPULATION-ORIENTED SURVEILLANCE	Dominant Source: AREA
Meas. Scale: URBAN SCALE	Location Setting: RURAL
Probe Location: TOP OF BUILDING	Horizontal Distance (m):
Probe Height (m): 4.0 Surrogate	e?: Vertical Distance (m):
Sample Residence Time:	Unrestricted Air FLow?: Y
	MONITOR COMMENT

\*

DATES OF OPERATION				AGENC	Y ROLES							
Begin Date End Date	Agency Role	Agency Name						Begi	.n Date 1	End Da	te	
19990114	ANALYZING	North Dakota	State I	Department	Of Heal	th		1999	0114			
	REPORTING	North Dakota	State D	epartment	Of Heal	th		1999	0114			
	COLLECTING	North Dakota	State D	epartment	Of Heal	th		1999	0114			
		MONITOR	TYPE I	NFORMATION								
Monitor Type	Begin Date	End Dat	ce	Action	n Type			Act	ion Reaso	on		
SLAMS	19990114											
		REGULA	TION IN	FORMATION								
Regulation							Me	et?	Date Met			
Quality Assurance Criter	ria Met						Y		19990101			
Reference Method Used							Y		19990101			
Siting Criteria Met							Y		19990101			
		TANGENT	ROAD I	NFORMATION		Traff		Traff				
Street Name			Type R	load		Count		Yr	Dist.	to Ro	bad	(m)
HIGHWAY 200			THRU S	ST OR HY		1000		1998	32			
COUNTY ROAD			LOCAL	ST OR HY		100		1998	1000			
CITY STREET			THRU S	ST OR HY		250		1998	3200			
		MONIT	FORING	OBJECTIVES								
Monitor Objective Type	UAR Name		М	SA Name				CMSA	Name			
POPULATION EXPOSURE	NOT IN AN U	RBAN AREA										

		North	Dakota			
Monitor ID: 38-057-0004-	-42604-1		Parameter Me	asured:	Ammonia	
Date of Latest Collection	n: 20070331		Last Updated	: 2	0070430	
Owner: North Dakota			City: Beulah			
Street Address: 6024 HIG	SHWAY 200					
Site Name: BEULAH NORTH			MSA: Not in a	a MSA		
County: Mercer			UAR: NOT IN A	AN URBAN AR	EA	
Project Type: POPULATION	N-ORIENTED SURVE	EILLANCE	Dominant Sour	ce: AREA		
Meas. Scale: REGIONAL SC	CALE		Location Sett	ing: RURA	L	
Probe Location: TOP OF	BUILDING		Horizontal Di	stance (m):	:	
Probe Height (m): 4.0		Surrogate?:	Vertical Dist	ance (m):		
Sample Residence Time:			Unrestricted	Air FLow?:	Y	
DATES OF OPERATION			AGENCY RO	LES		
Begin Date End Date	Agency Role	Agency Name			Beg	in Date End Date
20001103	ANALYZING	North Dakota Stat	e Department Of H	Health	200	01103
	COLLECTING	North Dakota Stat	e Department Of H	Health	200	01103
	REPORTING 1	North Dakota Stat	e Department Of H	Health	200	01103
		MONITOR TYP	E INFORMATION			
Monitor Type	Begin Date	End Date	Action Typ	pe	Ac	tion Reason
OTHER	20001114					
SLAMS	20001103	20001113				
		REGULATION	INFORMATION			
Regulation					Met?	Date Met
Quality Assurance Criter	ria Met				Y	20001103
Reference Method Used					Y	20001101
Siting Criteria Met					Y	20001101
		TANGENT ROA	D INFORMATION	Traff	Traff	
Street Name		Tyr	e Road	Count	Yr	Dist. to Road (m)
HIGHWAY 200		THE	RU ST OR HY	1000	1998	32
COUNTY ROAD		LOC	CAL ST OR HY	100	1998	1000
CITY STREET		THE	RU ST OR HY	250	1998	3200
		MONITORI	NG OBJECTIVES			
Monitor Objective Type	UAR Name		MSA Name		CMSA	Name
GENERAL/BACKGROUND	NOT IN AN URI	BAN AREA				

		North Da	akota					
Monitor ID: 38-015-0003-8	88101-1		Parameter Measured:	PM-Fi	ine			
Date of Latest Collection:	: 20070331		Last Updated: 20070507					
Owner: North Dakota			City: Bismarck					
Street Address: 1810 N 16	TH STREET							
Site Name: BISMARCK RESID	ENTIAL		MSA: Bismarck,ND					
County: Burleigh			UAR: BISMARCK, ND					
Project Type: POPULATION-	-ORIENTED SURV	/EILLANCE	Dominant Source: POIN	Г				
Meas. Scale: URBAN SCALE			Location Setting: SUB	JRBAN				
Probe Location: GROUND	LEVEL SUPPORT	1	Horizontal Distance (m)	:				
Probe Height (m): 3.0		Surrogate?:	Vertical Distance (m):					
Sample Residence Time:			Unrestricted Air FLow?:	Y				
DATES OF OPERATION			AGENCY ROLES					
Begin Date End Date	Agency Role	Agency Name			Begin Date End Date			
19990101	ANALYZING	Inter-Mountain Labo	ratory Sheridan, WY		19990101			
	COLLECTING	North Dakota State 3	Department Of Health		19990101			
	REPORTING	North Dakota State	Department Of Health		19990101			
		MONITOR TYPE	INFORMATION					
Monitor Type	Begin Date	End Date	Action Type		Action Reason			
SLAMS	19990101							
		REGULATION IN	NFORMATION					
Regulation				Met?	Date Met			
Quality Assurance Criteri	ia Met			Y	19990101			
Reference Method Used				Y	19990101			
Siting Criteria Met				Y	19990101			
COLLOCATION 3	INFORMATION							
Begin Date End Date	Dist.(m	) Primary?						
20060125		Y						
		ΜΟΝΤΤΟΡΙΝΟ	OBJECTIVES					
Monitor Objective Type	IIAR Name	MUNTIORING	ODUBCITVED	~	MGA Name			
	DAR NAME	יו ר	IDA MAIIIC	C	LIDA Malle			
FOFULATION EAPOBULE	DISMARCK, MI							

May. 18, 2007

		North Da	akota			
Monitor ID: 38-053-0002-	88101-1		Parameter Measured:	PM-F	ine	
Date of Latest Collection	: 20061231		Last Updated:	2007022	6	
Owner: North Dakota			City: Not in a city			
Street Address: 229 SERVE	ICE RD., WATFOR	D CITY				
Site Name: TRNP-NU			MSA: Not in a MSA			
County: McKenzie			UAR: NOT IN AN URBAN A	AREA		
Project Type: BACKGROUND	SURVEILLANCE		Dominant Source: AREA	ł		
Meas. Scale: REGIONAL SC.	ALE		Location Setting: RUB	RAL		
Probe Location: GROUND	LEVEL SUPPORT		Horizontal Distance (m	):		
Probe Height (m): 2.0		Surrogate?:	Vertical Distance (m):			
Sample Residence Time:			Unrestricted Air FLow?	: ү		
DATES OF OPERATION			AGENCY ROLES			
Begin Date End Date	Agency Role A	Agency Name			Begin Date	End Date
20020101 20061231	ANALYZING	Inter-Mountain Labo	ratory Sheridan, WY		20020101	
	COLLECTING N	North Dakota State	Department Of Health		20020101	20061231
	REPORTING N	North Dakota State	Department Of Health		20020101	
		MONITOR TYPE	INFORMATION			
Monitor Type	Begin Date	End Date	Action Type		Action Rea	son
SLAMS	20020101	20061231				
		REGULATION I	NFORMATION			
Regulation				Met?	Date Me	et
Quality Assurance Criter	ia Met			Y	2002010	01

MONITORING OBJECTIVES

MSA Name

CMSA Name

20020101 20020101

Y

Y

REGIONAL TRANSPORT NOT IN AN URBAN AREA GENERAL/BACKGROUND NOT IN AN URBAN AREA

UAR Name

Reference Method Used

Monitor Objective Type

Siting Criteria Met

	North	n Dakota	
Monitor ID: 38-053-0002-	88501-3	Parameter Measured: <b>PM-Fine</b>	3
Date of Latest Collection	: 20070331	Last Updated: 20070430	
Owner: North Dakota		City: Not in a city	
Street Address: 229 SERV	ICE RD., WATFORD CITY		
Site Name: TRNP-NU		MSA: Not in a MSA	
County: McKenzie		UAR: NOT IN AN URBAN AREA	
Project Type: BACKGROUND	SURVEILLANCE	Dominant Source: POINT	
Meas. Scale: REGIONAL SC	ALE	Location Setting: RURAL	
Probe Location: TOP OF	BUILDING	Horizontal Distance (m): 0.0	
Probe Height (m): 4.0	Surrogate?:	Vertical Distance (m): 1.0	
Sample Residence Time:		Unrestricted Air FLow?: Y	
DATES OF OPERATION		AGENCY ROLES	
Begin Date End Date	Agency Role Agency Name	Ве	gin Date End Date
20021001	COLLECTING North Dakota Sta	te Department Of Health 20	021001
	REPORTING North Dakota Sta	te Department Of Health 20	021001
	MONITOR TYP	PE INFORMATION	
Monitor Type	Begin Date End Date	Action Type A	ction Reason
SLAMS	20021001		
	MONITORI	ING OBJECTIVES	
Monitor Objective Type	MONITORI UAR Name	ING OBJECTIVES MSA Name CMS	A Name
Monitor Objective Type GENERAL/BACKGROUND	MONITORI UAR Name NOT IN AN URBAN AREA	ING OBJECTIVES MSA Name CMS	A Name

May. 18, 2007

	North Dakota
Monitor ID: 38-057-0004-88101-1	Parameter Measured: <b>PM-Fine</b>
Date of Latest Collection: 20070331	Last Updated: 20070507
Owner: North Dakota	City: Beulah
Street Address: 6024 HIGHWAY 200	
Site Name: BEULAH NORTH	MSA: Not in a MSA
County: Mercer	UAR: NOT IN AN URBAN AREA
Project Type: SOURCE-ORIENTED AMBIENT SURVEILLANCE	E Dominant Source: AREA
Meas. Scale: URBAN SCALE	Location Setting: RURAL
Probe Location: GROUND LEVEL SUPPORT	Horizontal Distance (m):
Probe Height (m): 3.0 Surrogate?	: Vertical Distance (m):
Sample Residence Time:	Unrestricted Air FLow?: Y

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MONITOR COMMENT

DATES OF C	PERATION				AGENCY ROLE	S									
Begin Date	End Date	Agency Role	Agency Name					Begi	n Date	End D	ate				
19990101		ANALYZING	ANALYZING Inter-Mountain Laboratory Sheridan, WY								19990101				
		COLLECTING North Dakota State Department Of Health					19990101								
		REPORTING 1	North Dakota	State Depar	tment Of Hea	alth		1999	0101						
			MONITO	R TYPE INFOR	MATION										
Monitor Type		Begin Date	End Da	ate	Action Type			Act	ion Reas	on					
SLAMS		19990101													
			REGUL	ATION INFORM	ATION										
Regulation							Met	:?	Date Met	5					
Quality Assu	rance Crite	eria Met					Y		19990101	L					
Reference Me	thod Used						Y		19990101	L					
Siting Crite	ria Met						Y		19990101	L					
			TANGEN	T ROAD INFOR	MATION	Traff		Traff							
Street Name				Type Road		Count		Yr	Dist.	to R	oad	(m)			
HIGHWAY 200				THRU ST OF	R HY	1000		1998	32						
COUNTY ROAD				LOCAL ST (	DR HY	100		1998	1000						
CITY STREET				THRU ST OF	R HY	250		1998	3200						
	COLLOCATION	INFORMATION													
Begin Date	End Date	Dist.(m)	Primary?												
20000101	20030714		Y												
			MON	ITORING OBJE	CTIVES										
Monitor Obje	ctive Type	UAR Name		MSA N	ame			CMSA	Name						

POPULATION EXPOSURE NOT IN AN URBAN AREA

May. 18, 2007

	North I	Dakota	
Monitor ID: 38-013-0004-44201-1		Parameter Measured:	Ozone
Date of Latest Collection: 20070331		Last Updated: 2	0070430
Owner: North Dakota		City: Not in a city	
Street Address: 8315 HIGHWAY 8, KENMARE			
Site Name: LOSTWOOD NWR		MSA: Not in a MSA	
County: Burke		UAR: NOT IN AN URBAN AR	EA
Project Type: BACKGROUND SURVEILLANCE		Dominant Source: POINT	
Meas. Scale: REGIONAL SCALE		Location Setting: RURA	L
Probe Location: TOP OF BUILDING		Horizontal Distance (m):	0.0
Probe Height (m): 4.0 S	Surrogate?:	Vertical Distance (m):	1.0
Sample Residence Time:		Unrestricted Air FLow?:	Y

20031028

SLAMS

Monitor Type	Begin Date	End Date	Action Type	Action Reason
		MONITOR TYPE	INFORMATION	
	REPORTING No	orth Dakota State	Department Of Health	20031028
20031028	COLLECTING No	orth Dakota State	Department Of Health	20031028
Begin Date End Date	Agency Role Ag	gency Name		Begin Date End Date
DATES OF OPERATION			AGENCY ROLES	

		REGULAT	CION INFORMATION						
Regulation					Me	t?	Date Met		
Quality Assurance Criteria	a Met				Y		20031028		
Reference Method Used					Y		20031028		
Siting Criteria Met					Y		20031028		
	Г	TANGENT	ROAD INFORMATION	Traff		Traff			
Street Name			Type Road	Count		Yr	Dist. t	o Road	(m)
90TH STREET NW			LOCAL ST OR HY	10		2002	8290		
ND HIGHWAY 8			THRU ST OR HY	100		2002	1120		
NDHIGHWAY 8			THRU ST OR HY	100		2002	840		
COUNTY ROAD 11			LOCAL ST OR HY	10		2002	13800		
		MONIT	ORING OBJECTIVES						
Monitor Objective Type	UAR Name		MSA Name			CMSA	Name		
REGIONAL TRANSPORT	NOT IN AN URBAN ARE	ΞA							

May. 18, 2007

	North Da	akota	
Monitor ID: 38-025-0003-42602-1		Parameter Measured:	Nitrogen Dioxide
Date of Latest Collection: 20070331		Last Updated:	20070430
Owner: North Dakota		City: Not in a city	
Street Address: 9610 SEVENTH STREET SW			
Site Name: DUNN CENTER		MSA: Not in a MSA	
County: Dunn		UAR: NOT IN AN URBAN	AREA
Project Type: BACKGROUND SURVEILLANCE		Dominant Source: ARE	A
Meas. Scale: REGIONAL SCALE		Location Setting: RU	RAL
Probe Location: TOP OF BUILDING		Horizontal Distance (m	1):
Probe Height (m): 4.0 S	Surrogate?:	Vertical Distance (m):	
Sample Residence Time:		Unrestricted Air FLow?	:

MONITOR COMMENT

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DATES OF	OPERATION			AGENCY ROLES		
Begin Date	End Date	Agency Role	Agency Name		В	egin Date End Date
19791001	19890331	ANALYZING	North Dakota State	Department Of Healt	h 1	9791001
19981214		COLLECTING	North Dakota State	Department Of Healt	h 1	9791001
		REPORTING	North Dakota State	Department Of Healt	h 1	9791001
			MONITOR TYPE	INFORMATION		
Monitor Type	e	Begin Date	End Date	Action Type		Action Reason
OTHER		19791001	19791231			
SLAMS		19800101				
			REGULATION	INFORMATION		
Regulation					Met?	Date Met
Quality Ass	urance Criteri	a Met			Y	19800101
Reference M	ethod Used				Y	19800101
Siting Crite	eria Met				Y	19800101
			MONITORIN	G OBJECTIVES		
Monitor Obj	ective Type	UAR Name		MSA Name	CM	ISA Name
GENERAL/BAC	KGROUND	NOT IN AN U	RBAN AREA			

		Nor	th Dakota				
Monitor ID: 38-017-1004-	44201-1		Parameter Me	easured:	Ozone		
Date of Latest Collection	: 20070331		Last Updated	1: 200	070430		
Owner: North Dakota			City: Fargo				
Street Address: 4266 40Th	H AVE NORTH						
Site Name: FARGO NW			MSA: Fargo-M	oorhead,ND-M	N		
County: Cass			UAR: FARGO-M	OORHEAD, ND-I	MN		
Project Type: POPULATION	-ORIENTED SUR	VEILLANCE	Dominant Sour	cce: AREA			
Meas. Scale: URBAN SCALE			Location Sett	ing: SUBUR	BAN		
Probe Location: TOP OF	BUILDING		Horizontal Di	istance (m):			
Probe Height (m): 4.0		Surrogate?: Vertical Distance (m):					
Sample Residence Time:			Unrestricted	Air FLow?:	Y		
DATES OF OPERATION			AGENCY RC	DLES			
Begin Date End Date	Agency Role	Agency Name			Begi	in Date	End Date
19980527	ANALYZING	North Dakota S	tate Department Of	Health	1998	80527	
	REPORTING	North Dakota S	tate Department Of	Health	1998	80527	
	COLLECTING	North Dakota S	tate Department Of	Health	1998	30527	
		MONITOR 7	TYPE INFORMATION				
Monitor Type	Begin Date	End Date	Action Ty	rpe	Act	tion Reas	on
SLAMS	19980527						
		REGULATI	ON INFORMATION				
Regulation					Met?	Date Met	-
Quality Assurance Criter	ia Met				Y	19980501	L
Reference Method Used					Y	19980501	L
Siting Criteria Met					Y	19980501	L
		TANGENT F	ROAD INFORMATION	Traff	Traff		
Street Name			Type Road	Count	Yr	Dist.	to Road (m)
19TH AVE N.			THRU ST OR HY	550	1989	1600	
INTERSTATE 94		i	ARTERIAL	8790	1989	350	
COUNTY 20			THRU ST OR HY	975	1989	30	
		MONITO	RING OBJECTIVES				
Monitor Objective Type	UAR Name		MSA Name		CMSA	Name	
MAX PRECURSOR EMISSIONS IMPACT			Fargo-Moorhead	,ND-MN			
POPULATION EXPOSURE	FARGO-MOORH	EAD, ND-MN					

		North	Dakota			
Monitor ID: 38-015-0003-	44201-1		Parameter Measured:	Ozone		
Date of Latest Collection	: 20070331		Last Updated: 2	20070430		
Owner: North Dakota			City: Bismarck			
Street Address: 1810 N 16	5TH STREET					
Site Name: BISMARCK RESID	ENTIAL		MSA: Bismarck,ND			
County: Burleigh			UAR: BISMARCK, ND			
Project Type: POPULATION-ORIENTED SURVEILLANCE			Dominant Source: AREA			
Meas. Scale: URBAN SCALE			Location Setting: SUB	JRBAN		
Probe Location: TOP OF	BUILDING		Horizontal Distance (m)	: 0.0		
Probe Height (m): 4.0	S	urrogate?:	Vertical Distance (m):	1.0		
Sample Residence Time:			Unrestricted Air FLow?:			
DATES OF OPERATION			AGENCY ROLES			
Begin Date End Date	Agency Role Ag	ency Name		Beg	gin Date End Date	
20051003	COLLECTING No	rth Dakota State	Department Of Health	20	051003	
	REPORTING No	rth Dakota State	Department Of Health	20	051003	
		MONITOR TYPE	INFORMATION			
Monitor Type	Begin Date	End Date	Action Type	Ad	ction Reason	
SLAMS	20051003					
		REGULATION	INFORMATION			
Regulation				Met?	Date Met	
Quality Assurance Criter:	ia Met			Y	20051003	
Reference Method Used				Y	20051003	
				v	20051003	
Siting Criteria Met				T		
Siting Criteria Met		MONITORIN	G OBJECTIVES	Ĩ		
Siting Criteria Met Monitor Objective Type	UAR Name	MONITORIN	G OBJECTIVES MSA Name	I CMSJ	A Name	

May. 18, 2007

	North Dakota	
Monitor ID: 38-057-0004-42401-1	Parameter Measured: Sulfur	Dioxide
Date of Latest Collection: 20070331	Last Updated: 20070430	
Owner: North Dakota	City: Beulah	
Street Address: 6024 HIGHWAY 200		
Site Name: BEULAH NORTH	MSA: Not in a MSA	
County: Mercer	UAR: NOT IN AN URBAN AREA	
Project Type: POPULATION-ORIENTED SURVEILLANCE	Dominant Source: AREA	
Meas. Scale: URBAN SCALE	Location Setting: RURAL	
Probe Location: TOP OF BUILDING	Horizontal Distance (m):	
Probe Height (m): 4.0 Surroga	e?: Vertical Distance (m):	
Sample Residence Time:	Unrestricted Air FLow?: Y	
	MONITOR COMMENT	

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DATES OF OPERATION			A	GENCY ROLES							
Begin Date End Date	Agency Role	Agency Name					Begi	n Date	End	Date	
19990114	ANALYZING	North Dakota	State Departs	ment Of Hea	lth		1999	0114			
	COLLECTING	North Dakota	State Depart	ment Of Hea	lth		19990114				
	REPORTING	North Dakota	State Depart	ment Of Hea	lth		1999	0114			
		MONITOR	TYPE INFORMA	ATION							
Monitor Type	Begin Date	End Dat	te A	ction Type			Act	ion Reas	on		
SLAMS	19990114										
		REGULA	TION INFORMAT	ION							
Regulation						Met	?	Date Me	t		
Quality Assurance Criter	ria Met					Y		1999010	1		
Reference Method Used						Y		1999010	1		
Siting Criteria Met						Y		1999010	1		
		TANGENT	ROAD INFORMA	ATION	Traff		Traff				
Street Name			Type Road		Count		Yr	Dist	. to	Road	(m)
HIGHWAY 200			THRU ST OR H	ΗY	1000		1998	32			
COUNTY ROAD			LOCAL ST OR	НҮ	100		1998	1000			
CITY STREET			THRU ST OR H	ΗY	250		1998	3200			
		MONIT	TORING OBJECT	IVES							
Monitor Objective Type	UAR Name		MSA Nam	ie			CMSA	Name			
POPULATION EXPOSURE	NOT IN AN U	RBAN AREA									

May. 18, 2007

	North Dakota							
Monitor ID: 38-057-0004-44201-1	Parameter Measured: Ozone							
Date of Latest Collection: 20070331	Last Updated: 20070430							
Owner: North Dakota	City: Beulah							
Street Address: 6024 HIGHWAY 200	Street Address: 6024 HIGHWAY 200							
Site Name: BEULAH NORTH	MSA: Not in a MSA							
County: Mercer	UAR: NOT IN AN URBAN AREA							
Project Type: POPULATION-ORIENTED SURVEILLANCE	Dominant Source: AREA							
Meas. Scale: URBAN SCALE	Location Setting: RURAL							
Probe Location: TOP OF BUILDING	Horizontal Distance (m):							
Probe Height (m): 4.0 Surrogate?	: Vertical Distance (m):							
Sample Residence Time:	Unrestricted Air FLow?: Y							

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MONITOR COMMENT

DATES OF OPERATION			AGENCY RO	LES				
Begin Date End Date	Agency Role	Agency Name			Beg	in Date	End Date	9
19990114	ANALYZING	North Dakota State	Department Of D	Health	199	90114		
	COLLECTING	North Dakota State	Department Of D	Health	1999	90114		
	REPORTING	North Dakota State	Department Of 1	Health	1999	90114		
		MONITOR TYPE	INFORMATION					
Monitor Type	Begin Date	End Date	Action Ty	ре	Act	tion Reas	on	
SLAMS	19990114							
		REGULATION ]	INFORMATION					
Regulation					Met?	Date Met	t	
Quality Assurance Criter	ria Met				Y	1999010:	1	
Reference Method Used					Y	1999010:	1	
Siting Criteria Met					Y	19990103	1	
		TANGENT ROAD	INFORMATION	Traff	Traff			
Street Name		Туре	Road	Count	Yr	Dist.	. to Roa	d (m)
HIGHWAY 200		THRU	ST OR HY	1000	1998	32		
COUNTY ROAD		LOCA	L ST OR HY	100	1998	1000		
CITY STREET		THRU	ST OR HY	250	1998	3200		
		MONITORING	G OBJECTIVES					
Monitor Objective Type	UAR Name		MSA Name		CMSA	Name		
POPULATION EXPOSURE	NOT IN AN U	RBAN AREA						

		North Da	akota		
Monitor ID: 38-065-0002-	42602-1		Parameter Measured:	Nitro	gen Dioxide
Date of Latest Collection	1: 20070331		Last Updated:	20070430	
Owner: North Dakota			City: Not in a city		
Street Address: 1575 HIG	HWAY 31				
Site Name: HANNOVER			MSA: Not in a MSA		
County: Oliver			UAR: NOT IN AN URBAN	AREA	
Project Type: BACKGROUNI	SURVEILLANCE		Dominant Source: ARE	A	
Meas. Scale: URBAN SCALE	1		Location Setting: RU	RAL	
Probe Location: TOP OF	BUILDING		Horizontal Distance (m	ı):	
Probe Height (m): 3.0		Surrogate?:	Vertical Distance (m):		
Sample Residence Time:			Unrestricted Air FLow?	: Ү	
DATES OF OPERATION			AGENCY ROLES		
Begin Date End Date	Agency Role	Agency Name		I	Begin Date End Date
19880323	ANALYZING	North Dakota State	Department Of Health	1	19880323
	COLLECTING	North Dakota State	Department Of Health	1	19880323
	REPORTING	North Dakota State	Department Of Health	1	19880323
		MONITOR TYPE	INFORMATION		
Monitor Type	Begin Date	End Date	Action Type		Action Reason
SLAMS	19880323				
		REGULATION II	NFORMATION		
Regulation				Met?	Date Met
Quality Assurance Criter	ia Met			Y	19880301
Reference Method Used				Y	19880301
Siting Criteria Met				Y	19880301
		MONITORING	OBJECTIVES		
Monitor Objective Type	UAR Name	I	MSA Name	CI	MSA Name
SOURCE ORIENTED	NOT IN AN UF	RBAN AREA			

May. 18, 2007

	North Da	akota	
Monitor ID: 38-025-0003-88501-3		Parameter Measured: PM	-Fine
Date of Latest Collection: 20070331		Last Updated: 20070	430
Owner: North Dakota		City: Not in a city	
Street Address: 9610 SEVENTH STREET SW			
Site Name: DUNN CENTER		MSA: Not in a MSA	
County: Dunn		UAR: NOT IN AN URBAN AREA	
Project Type: BACKGROUND SURVEILLANCE		Dominant Source: AREA	
Meas. Scale: REGIONAL SCALE		Location Setting: RURAL	
Probe Location: TOP OF BUILDING		Horizontal Distance (m):	0.0
Probe Height (m): 4.0	Surrogate?:	Vertical Distance (m):	1.0
Sample Residence Time:		Unrestricted Air FLow?: Y	

MONITOR COMMENT

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DATES OF OPERATION			AGENCY ROLES					
Begin Date End Date	Agency Role	Agency Name		Begin Date End Date				
20040908	ANALYZING	North Dakota Stat	e Department Of Health	20040908				
	COLLECTING	North Dakota Stat	e Department Of Health	20040908				
	REPORTING	North Dakota Stat	e Department Of Health	20040908				
MONITOR TYPE INFORMATION								
Monitor Type	Begin Date	End Date	Action Type	Action Reason				
INDEX SITE	20040908							
OTHER	20040908							
SLAMS	20040908							
		MONITORI	NG OBJECTIVES					
Monitor Objective Type	UAR Name		MSA Name	CMSA Name				
GENERAL/BACKGROUND	NOT IN AN UR	RBAN AREA						

May. 18, 2007

North Dakota Monitor ID: 38-053-0002-44201-1 Parameter Measured: Ozone Last Updated: 20070430 Date of Latest Collection: 20070331 Owner: North Dakota City: Not in a city Street Address: 229 SERVICE RD., WATFORD CITY Site Name: TRNP-NU MSA: Not in a MSA County: McKenzie UAR: NOT IN AN URBAN AREA Project Type: BACKGROUND SURVEILLANCE Dominant Source: AREA Meas. Scale: REGIONAL SCALE Location Setting: RURAL Probe Location: TOP OF BUILDING Horizontal Distance (m): Probe Height (m): 4.0 Surrogate?: Vertical Distance (m): Sample Residence Time: Unrestricted Air FLow?: Y

MONITOR COMMENT

SITE RESTARTED ON AUG 8, 2001

DATES OF OPERATION			AGENCY ROLES		
Begin Date End Date	Agency Role Age	ncy Name		Ве	gin Date End Date
19821105 19980630	ANALYZING Nor	th Dakota State Dep	partment Of Health	19	821105
20010801	REPORTING Nor	th Dakota State Dep	partment Of Health	19	821105
	COLLECTING Nor	th Dakota State Dep	partment Of Health	19	821105
		MONITOR TYPE INF	FORMATION		
Monitor Type	Begin Date	Begin Date End Date Action Type			ction Reason
SLAMS	19821105				
		REGULATION INFO	DRMATION		
Regulation				Met?	Date Met
Quality Assurance Criter	ria Met			Y	19821101
Reference Method Used				Y	19821101
Siting Criteria Met				Y	19821101
		MONITORING OF	BJECTIVES		
Monitor Objective Type	UAR Name	MSA	A Name	CMS	A Name
GENERAL/BACKGROUND	NOT IN AN URBAN	AREA			

		North	Dakota					
Monitor ID: 38-017-1004-	42401-1		Parameter Mea	asured: S	Sulfur Di	oxide		
Date of Latest Collection	20070331		Last Updated	2007	70430			
Owner: North Dakota			City: Fargo					
Street Address: 4266 40T	H AVE NORTH							
Site Name: FARGO NW			MSA: Fargo-Mc	orhead,ND-MN				
County: Cass			UAR: FARGO-MC	ORHEAD, ND-M	N			
Project Type: POPULATION	-ORIENTED SUR	VEILLANCE	Dominant Sour	ce: POINT				
Meas. Scale: URBAN SCALE			Location Sett:	ing: SUBURB	AN			
Probe Location: TOP OF	BUILDING		Horizontal Dis	stance (m):				
Probe Height (m): 3.0		Surrogate?:	Vertical Dista	ance (m):				
Sample Residence Time:			Unrestricted A	Air FLow?:	Y			
DATES OF OPERATION			AGENCY ROI	JES				
Begin Date End Date	Agency Role	Agency Name			Begi	n Date	End Date	
19980527	ANALYZING	North Dakota Stat	e Department Of H	ealth	1998	0527		
	COLLECTING	North Dakota Stat	e Department Of H	ealth	1998	0527		
	REPORTING	North Dakota Stat	e Department Of H	ealth	1998	0527		
		MONITOR TYP	E INFORMATION					
Monitor Type	Begin Date	End Date	Action Typ	pe	Act	ion Reas	on	
SLAMS	19980527							
		REGULATION	INFORMATION					
Regulation				Μ	let?	Date Met	-	
Quality Assurance Criter	ia Met			Y	Z	19980501	L	
Reference Method Used				Y	Z	19980501	L	
Siting Criteria Met				У	ζ	19980501	L	
		TANGENT ROA	D INFORMATION	Traff	Traff			
Street Name		מעד	e Road	Count	Yr	Dist.	to Road	( m
19TH AVE N.		THR	U ST OR HY	550	1989	1600	oo nouu	(
INTERSTATE 94		ART	ERIAL	8790	1989	350		
COUNTY 20		THR	U ST OR HY	975	1989	30		
		MONITORII	NG OBJECTIVES					
Monitor Objective Type	UAR Name		MSA Name		CMSA 1	Name		
MAX PRECURSOR EMISSIONS			Fargo-Moorhead, I	ND-MN				
POPULATION EXPOSURE	FARGO-MOORH	EAD, ND-MN						

		No	rth Dakota				
Monitor ID: 38-017-1004-	42602-1		Parameter Mea	sured: N	itrogen	Dioxide	
Date of Latest Collection	1: 20070331		Last Updated	2007	0430		
Owner: North Dakota			City: Fargo				
Street Address: 4266 40T	H AVE NORTH						
Site Name: FARGO NW			MSA: Fargo-Mo	orhead,ND-MN			
County: Cass			UAR: FARGO-MC	ORHEAD, ND-MN	1		
Project Type: POPULATION	-ORIENTED SUR	VEILLANCE	Dominant Sourc	ce: MOBILE			
Meas. Scale: URBAN SCALE	1		Location Sett:	ng: SUBURBA	AN .		
Probe Location: TOP OF	BUILDING		Horizontal Dis	stance (m):			
Probe Height (m): 4.0		Surrogate?:	Vertical Dista	ance (m):			
Sample Residence Time:			Unrestricted A	Air FLow?:	Y		
DATES OF OPERATION			AGENCY ROI	ES			
Begin Date End Date	Agency Role	Agency Name			Begin	n Date I	End Date
19980527	ANALYZING	North Dakota S	tate Department Of H	ealth	1998	0527	
	COLLECTING	North Dakota S	tate Department Of H	ealth	1998	0527	
	REPORTING	North Dakota S	tate Department Of H	ealth	1998	0527	
		MONITOR	TYPE INFORMATION				
Monitor Type	Begin Date	End Date	e Action Typ	e	Act	ion Reaso	on
SLAMS	19980527						
		REGULAT	ION INFORMATION				
Regulation				М	et?	Date Met	
Quality Assurance Criter	ia Met			Y		19980501	
Reference Method Used				Y		19980501	
Siting Criteria Met				Y		19980501	
		Ͳ៱៶៲ឩ៝៝៝៝៝៷៶៲	ρολι τητορμάττοη	Traff	Traff		
Street Name		TANGENT	Type Road	Count	Yr	Diet	to Road (r
10TH AVE N			TYPE ROAD	550	1989	1600	to Road (I
IJIN AVE N.			ADTEDIAL	9790	1000	250	
COUNTY 20			TUDII CT OD UV	975	1000	20	
COULT 20		MONTT	ADDING OBJECTIVES	515	1909	50	
Monitor Objective Type	UAR Name	MONTI	MGA Name		CMGA	Namo	
MAX DEFCIDECE ENTERIONE	UAIX MAIIIE		Fargo-Moorbood 1	ND-MN	CMGA I		
IMPACT			rargo-moorfiead,				
POPULATION EXPOSURE	FARGO-MOORH	EAD, ND-MN					

	North D	akota	
Monitor ID: 38-015-0003-8	38501-3	Parameter Measured:	PM-Fine
Date of Latest Collection:	20070331	Last Updated: 20	070430
Owner: North Dakota		City: Bismarck	
Street Address: 1810 N 16	TH STREET		
Site Name: BISMARCK RESIDE	ENTIAL	MSA: Bismarck,ND	
County: Burleigh		UAR: BISMARCK, ND	
Project Type: POPULATION-	ORIENTED SURVEILLANCE	Dominant Source: AREA	
Meas. Scale: URBAN SCALE		Location Setting: SUBUR	BAN
Probe Location: TOP OF	BUILDING	Horizontal Distance (m):	0.0
Probe Height (m): 4.0	Surrogate?:	Vertical Distance (m):	1.0
Sample Residence Time:		Unrestricted Air FLow?:	У
DATES OF OPERATION		AGENCY ROLES	
Begin Date End Date	Agency Role Agency Name		Begin Date End Date
20051005	COLLECTING North Dakota State	Department Of Health	20051005
	REPORTING North Dakota State	Department Of Health	20051005
	REPORTING North Dakota State MONITOR TYPE	Department Of Health INFORMATION	20051005
Monitor Type	REPORTING North Dakota State MONITOR TYPE Begin Date End Date	Department Of Health INFORMATION Action Type	20051005 Action Reason
Monitor Type SLAMS	REPORTING North Dakota State MONITOR TYPE Begin Date End Date 20051005	Department Of Health INFORMATION Action Type	20051005 Action Reason
Monitor Type SLAMS	REPORTING North Dakota State MONITOR TYPE Begin Date End Date 20051005 REGULATION I	Department Of Health INFORMATION Action Type NFORMATION	20051005 Action Reason
Monitor Type SLAMS Regulation	REPORTING North Dakota State MONITOR TYPE Begin Date End Date 20051005 REGULATION I	Department Of Health INFORMATION Action Type NFORMATION	20051005 Action Reason Met? Date Met
Monitor Type SLAMS Regulation Quality Assurance Criteri	REPORTING North Dakota State MONITOR TYPE Begin Date End Date 20051005 REGULATION I	Department Of Health INFORMATION Action Type NFORMATION	20051005 Action Reason Met? Date Met Y 20051005
Monitor Type SLAMS Regulation Quality Assurance Criteri Reference Method Used	REPORTING North Dakota State MONITOR TYPE Begin Date End Date 20051005 REGULATION I	Department Of Health INFORMATION Action Type NFORMATION	20051005 Action Reason Met? Date Met Y 20051005 Y 20051005
Monitor Type SLAMS Regulation Quality Assurance Criteri Reference Method Used Siting Criteria Met	REPORTING North Dakota State MONITOR TYPE Begin Date End Date 20051005 REGULATION I	Department Of Health INFORMATION Action Type NFORMATION	20051005 Action Reason Met? Date Met Y 20051005 Y 20051005 Y 20051005
Monitor Type SLAMS Regulation Quality Assurance Criteri Reference Method Used Siting Criteria Met	REPORTING North Dakota State MONITOR TYPE Begin Date End Date 20051005 REGULATION II	Department Of Health INFORMATION Action Type NFORMATION OBJECTIVES	20051005 Action Reason Met? Date Met Y 20051005 Y 20051005 Y 20051005
Monitor Type SLAMS Regulation Quality Assurance Criteri Reference Method Used Siting Criteria Met Monitor Objective Type	REPORTING North Dakota State MONITOR TYPE Begin Date End Date 20051005 REGULATION I a Met MONITORING	Department Of Health INFORMATION Action Type NFORMATION OBJECTIVES MSA Name	20051005 Action Reason Met? Date Met Y 20051005 Y 20051005 Y 20051005 Y 20051005

		North Da	akota		
Monitor ID: 38-017-1004-8	88101-1		Parameter Measured:	PM-F	ine
Date of Latest Collection	: 20070331		Last Updated: 2	007050	7
Owner: North Dakota			City: Fargo		
Street Address: 4266 40TH	I AVE NORTH				
Site Name: FARGO NW			MSA: Fargo-Moorhead,ND-	MN	
County: Cass			UAR: FARGO-MOORHEAD, ND	-MN	
Project Type: POPULATION-	-ORIENTED SURVEILLA	NCE	Dominant Source: POINT		
Meas. Scale: URBAN SCALE			Location Setting: SUBU	RBAN	
Probe Location: GROUND	LEVEL SUPPORT		Horizontal Distance (m):	:	
Probe Height (m): 2.0	Surr	ogate?:	Vertical Distance (m):		
Sample Residence Time:			Unrestricted Air FLow?:	Y	
DATES OF OPERATION			AGENCY ROLES		
Begin Date End Date	Agency Role Agenc	y Name			Begin Date End Date
19990101	ANALYZING Inter	-Mountain Labo:	ratory Sheridan, WY		19990101
	COLLECTING North	Dakota State I	Department Of Health		19990101
	REPORTING North	Dakota State I	Department Of Health		19990101
		MONITOR TYPE	INFORMATION		
Monitor Type	Begin Date	End Date	Action Type		Action Reason
SLAMS	19990101				
		REGULATION IN	IFORMATION		
Regulation				Met?	Date Met
Quality Assurance Criter	ia Met			Y	19990101
Reference Method Used				Y	19990101
Siting Criteria Met				Y	19990101
COLLOCATION	INFORMATION				
Begin Date End Date	Dist.(m) Prim	mary?			
20000101 20011230		У			
		MONITORING	OBJECTIVES		
Monitor Objective Type	UAR Name	Ν	ISA Name	(	CMSA Name
POPULATION EXPOSURE	FARGO-MOORHEAD, N	D-MN			
SOURCE ORIENTED	FARGO-MOORHEAD, N	D-MN			

		North Da	akota		
Monitor ID: 38-053-0002-	42602-1		Parameter Measured:	Nitr	ogen Dioxide
Date of Latest Collection	1: 20070331		Last Updated: 2	007043	0
Owner: North Dakota			City: Not in a city		
Street Address: 229 SERV	ICE RD., WATFOR	D CITY			
Site Name: TRNP-NU			MSA: Not in a MSA		
County: McKenzie			UAR: NOT IN AN URBAN AF	REA	
Project Type: BACKGROUND	SURVEILLANCE		Dominant Source: AREA		
Meas. Scale: REGIONAL SC	ALE		Location Setting: RURA	λL	
Probe Location: TOP OF	BUILDING		Horizontal Distance (m)	:	
Probe Height (m): 4.0		Surrogate?:	Vertical Distance (m):		
Sample Residence Time:			Unrestricted Air FLow?:	Y	
DATES OF OPERATION			AGENCY ROLES		
Begin Date End Date	Agency Role	Agency Name			Begin Date End Date
20010801	ANALYZING 1	North Dakota State 1	Department Of Health		20010801
	COLLECTING 1	North Dakota State 1	Department Of Health		20010801
	REPORTING 1	North Dakota State 1	Department Of Health		20010801
		MONITOR TYPE	INFORMATION		
Monitor Type	Begin Date	End Date	Action Type		Action Reason
SLAMS	20010801				
		REGULATION IN	NFORMATION		
Regulation				Met?	Date Met
Quality Assurance Criter	ia Met			Y	20010801
Reference Method Used				Y	20010801
Siting Criteria Met				Y	20010801
		MONITORING	OBJECTIVES		
Monitor Objective Type	UAR Name	Ν	MSA Name	(	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URE	BAN AREA			

May. 18, 2007

	Nortl	n Dakota	
Monitor ID: 38-013-0004-42401-1		Parameter Measured:	Sulfur Dioxide
Date of Latest Collection: 2007	0331	Last Updated:	20070430
Owner: North Dakota		City: Not in a city	
Street Address: 8315 HIGHWAY 8, 1	KENMARE		
Site Name: LOSTWOOD NWR		MSA: Not in a MSA	
County: Burke		UAR: NOT IN AN URBAN A	REA
Project Type: BACKGROUND SURVEIL	LANCE	Dominant Source: AREA	A
Meas. Scale: REGIONAL SCALE		Location Setting: RUR	PAL
Probe Location: TOP OF BUILDING	G	Horizontal Distance (m	): 0.0
Probe Height (m): 4.0	Surrogate?:	Vertical Distance (m):	1.0
Sample Residence Time:		Unrestricted Air FLow?	: Ү
DATES OF OPERATION		AGENCY ROLES	
Regin Date End Date Agency	Pole Agency Name		Regin Date En

Begin Date End Date	Agency Role	Agency Name		Begin Date End Date
20031028	REPORTING	North Dakota State Depart	ment Of Health	20031028
	COLLECTING	North Dakota State Depart	ment Of Health	20031028
		MONITOR TYPE INFORM	ATION	
Monitor Type	Begin Date	End Date A	Action Type	Action Reason

20031028

SLAMS

		REGULAT	TION INFORMATION						
Regulation					Me	t?	Date Met		
Quality Assurance Criteria	a Met				Y		20031028		
Reference Method Used					Y		20031028		
Siting Criteria Met					Y		20031028		
		TANGENT	ROAD INFORMATION	Traff		Traff			
Street Name			Type Road	Count		Yr	Dist. t	o Road	( m )
90TH STREET NW			LOCAL ST OR HY	10		2002	8290		
ND HIGHWAY 8			THRU ST OR HY	100		2002	1120		
NDHIGHWAY 8			THRU ST OR HY	100		2002	840		
COUNTY ROAD 11			LOCAL ST OR HY	10		2002	13800		
		MONIT	FORING OBJECTIVES						
Monitor Objective Type	UAR Name		MSA Name			CMSA	Name		
REGIONAL TRANSPORT	NOT IN AN URBAN A	REA							

		North I	Dakota		
Monitor ID: 38-015-0003-4	12401-1		Parameter Measured:	Sulfur D	vioxide
Date of Latest Collection:	20070331		Last Updated: 2	20070430	
Owner: North Dakota			City: Bismarck		
Street Address: 1810 N 16	TH STREET				
Site Name: BISMARCK RESIDE	ENTIAL		MSA: Bismarck,ND		
County: Burleigh			UAR: BISMARCK, ND		
Project Type: POPULATION-	ORIENTED SURVEI	LANCE	Dominant Source: POIN	Г	
Meas. Scale: URBAN SCALE			Location Setting: SUBU	JRBAN	
Probe Location: TOP OF	BUILDING		Horizontal Distance (m)	: 0.0	
Probe Height (m): 4.0	Si	urrogate?:	Vertical Distance (m):	1.0	
Sample Residence Time:			Unrestricted Air FLow?:		
DATES OF OPERATION			AGENCY ROLES		
Begin Date End Date	Agency Role Ag	ency Name		Beg	in Date End Date
20051003	COLLECTING No:	rth Dakota State	Department Of Health	200	51003
	REPORTING No:	rth Dakota State	Department Of Health	200	51003
		MONITOR TYPE	INFORMATION		
Monitor Type	Begin Date	End Date	Action Type	Act	tion Reason
SLAMS	20051003				
		REGULATION I	NFORMATION		
Regulation				Met?	Date Met
Quality Assurance Criteri	.a Met			Y	20051003
Reference Method Used				Y	20051003
Siting Criteria Met				Y	20051003
-		MONTTOPING	OBJECTIVES		
Manitan Obiostina E		MONTIONING		Ch(Ch)	News
MONILOR ODJECTIVE Type	UAR NAME		MSA NAME	CMSA	Name
POPULATION EXPOSURE	BISMARCK, ND				

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		North I	akota	
Monitor ID: 38-025-0003-8	31102-3		Parameter Measured:	PM10
Date of Latest Collection:	20070331		Last Updated:	20070430
Owner: North Dakota			City: Not in a city	
Street Address: 9610 SEVE	NTH STREET SW	ſ		
Site Name: DUNN CENTER			MSA: Not in a MSA	
County: Dunn			UAR: NOT IN AN URBAN A	AREA
Project Type: BACKGROUND	SURVEILLANCE		Dominant Source: ARE	Α
Meas. Scale: REGIONAL SCA	ALE		Location Setting: RU	RAL
Probe Location: TOP OF	BUILDING		Horizontal Distance (m	):
Probe Height (m): 4.0		Surrogate?:	Vertical Distance (m):	1.0
Sample Residence Time:			Unrestricted Air FLow?	: Ү
DATES OF OPERATION			AGENCY ROLES	
Begin Date End Date	Agency Role	Agency Name		Begin Date End Date
20040908	ANALYZING	North Dakota State	Department Of Health	20040908
	REPORTING	North Dakota State	Department Of Health	20040908
	COLLECTING	North Dakota State	Department Of Health	20040908
		MONITOR TYPE	INFORMATION	
Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20040908			
		MONITORING	OBJECTIVES	
Monitor Objective Type	UAR Name		MSA Name	CMSA Name

GENERAL/BACKGROUND NOT IN AN URBAN AREA

	North Da	akota	
Monitor ID: 38-015-0003-8	38101-2	Parameter Measured: PM-	Fine
Date of Latest Collection:	: 20070331	Last Updated: 200705	507
Owner: North Dakota		City: Bismarck	
Street Address: 1810 N 16	TH STREET		
Site Name: BISMARCK RESID	ENTIAL	MSA: Bismarck,ND	
County: Burleigh		UAR: BISMARCK, ND	
Project Type: POPULATION-	ORIENTED SURVEILLANCE	Dominant Source: POINT	
Meas. Scale: URBAN SCALE		Location Setting: SUBURBAN	
Probe Location: GROUND	LEVEL SUPPORT	Horizontal Distance (m):	
Probe Height (m): 3.0	Surrogate?:	Vertical Distance (m):	
Sample Residence Time:		Unrestricted Air FLow?: Y	
DATES OF OPERATION		AGENCY ROLES	
Begin Date End Date	Agency Role Agency Name		Begin Date End Date
20060125	ANALYZING Inter-Mountain Labo	ratory Sheridan, WY	20060125
	COLLECTING North Dakota State	Department Of Health	20060125
	REPORTING North Dakota State	Department Of Health	20060125
	MONITOR TYPE	INFORMATION	
Monitor Type	Begin Date End Date	Action Type	Action Reason
SLAMS	20060125		
COLLOCATION :	INFORMATION		
Begin Date End Date	Dist.(m) Primary?		
20060125	2 N		
	MONTTORING	OBJECTIVES	
Monitor Objective Type	IIAR Name	MSA Name	CMSA Name
DODIII.ATTON FYDOSIDE	BISMARCK ND		CHOM Walle
IOLOLATION EXPOSORE	DIDIMICA, ND		

		North I	Dakota			_
Monitor ID: 38-057-0004-	88501-3		Paramete	er Measured:	PM-Fine	
Date of Latest Collection	: 20070331		Last Upd	dated:	20070430	
Owner: North Dakota			City: Beu	ılah		
Street Address: 6024 HIG	HWAY 200					
Site Name: BEULAH NORTH			MSA: Not	in a MSA		
County: Mercer			UAR: NOT	IN AN URBAN A	AREA	
Project Type: SOURCE-ORI	ENTED AMBIENT	SURVEILLANCE	Dominant	Source: AREA	ł	
Meas. Scale: URBAN SCALE			Location	Setting: RUF	RAL	
Probe Location: TOP OF	BUILDING		Horizonta	al Distance (m	): 0.0	
Probe Height (m): 4.0		Surrogate?:	Vertical	Distance (m):	1.0	
Sample Residence Time:			Unrestrio	cted Air FLow?	: Ү	
DATES OF OPERATION			AGENC	CY ROLES		
Begin Date End Date	Agency Role	Agency Name			Begi	in Date End Date
20001011	ANALYZING	North Dakota State	Department	. Of Health	200	01011
	COLLECTING	North Dakota State	Department	. Of Health	200	01011
	REPORTING	North Dakota State	Department	. Of Health	200	01011
		MONITOR TYPE	INFORMATIO	N		
Monitor Type	Begin Date	End Date	Actic	on Type	Act	tion Reason
SLAMS	20001011					
		REGULATION 1	NFORMATION			
Regulation					Met?	Date Met
Quality Assurance Criter	ia Met				Y	20001011
Reference Method Used					Y	20001001
Siting Criteria Met					Y	20001001
			τηέορματιο		F Troff	
Stroot Namo		TANGENT ROAD	INFORMATION Boad	Count	t Ifall S Yr	Dist to Road (m)
HICHWAY 200		туре	RUAU CT OD UV	1000	1008	22
COUNTY POAD		LOCAL		100	1998	1000
CITY STREET				250	1998	3200
CIII SIREEI		DOLLUTANT AD	EN TNEODMAT	250 NOT	1000	5200
		Communi	tv	Spatial	Schedule	Applicable
Pollutant Area Name Wo	orst Site Type	Monitoring	Zone 2	Average Ind	Exemption	NAAQS Ind
ND UNCLASSIFIED NOT SPECIFIED						
		MONITORING	OBJECTIVE:	S		
Monitor Objective Type	UAR Name		MSA Name		CMSA	Name
POPULATION EXPOSURE	NOT IN AN U	RBAN AREA				

		North I	Dakota	
Monitor ID: 38-065-0002-4	44201-1		Parameter Measured:	Ozone
Date of Latest Collection	: 20070331		Last Updated: 20	0070430
Owner: North Dakota			City: Not in a city	
Street Address: 1575 HIGF	IWAY 31			
Site Name: HANNOVER			MSA: Not in a MSA	
County: Oliver			UAR: NOT IN AN URBAN ARI	EA
Project Type: BACKGROUND	SURVEILLANCE		Dominant Source: AREA	
Meas. Scale: URBAN SCALE			Location Setting: RURA	L
Probe Location: TOP OF	BUILDING		Horizontal Distance (m):	
Probe Height (m): 3.0		Surrogate?:	Vertical Distance (m):	
Sample Residence Time:			Unrestricted Air FLow?:	Y
DATES OF OPERATION			AGENCY ROLES	
Begin Date End Date	Agency Role	Agency Name		Begin Date End Date
19880323	ANALYZING	North Dakota State	Department Of Health	19880323
	COLLECTING	North Dakota State	- Department Of Health	19880323
	REPORTING	North Dakota State	- Department Of Health	19880323
		MONITOR TYPE	INFORMATION	
Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	19880323			
		REGULATION I	NFORMATION	
Regulation				Met? Date Met
Quality Assurance Criter:	la Met			Y 19880301
Reference Method Used				Y 19880301
Siting Criteria Met				Y 19880301
		MONITORING	OBJECTIVES	
Monitor Objective Type	UAR Name		MSA Name	CMSA Name
SOURCE ORIENTED	NOT IN AN UR	RAN AREA		

North Dakota							
Monitor ID: 38-065-0002-8	38501-3		Parameter Measured:	PM-Fine			
Date of Latest Collection	20070331		Last Updated:	20070430			
Owner: North Dakota			City: Not in a city				
Street Address: 1575 HIGH	IWAY 31						
Site Name: HANNOVER			MSA: Not in a MSA				
County: Oliver			UAR: NOT IN AN URBAN A	AREA			
Project Type: BACKGROUND	SURVEILLANCE		Dominant Source: POIN	T			
Meas. Scale: URBAN SCALE			Location Setting: RUF	RAL			
Probe Location: TOP OF	BUILDING		Horizontal Distance (m	): 0.0			
Probe Height (m): 4.0		Surrogate?:	Vertical Distance (m):	2.0			
Sample Residence Time:			Unrestricted Air FLow?	: Ү			
DATES OF OPERATION			AGENCY ROLES				
Begin Date End Date	Agency Role	Agency Name		Begin Date End Date			
20020917	ANALYZING	North Dakota State D	epartment Of Health	20020917			
	REPORTING	North Dakota State D	epartment Of Health	20020917			
		MONITOR TYPE I	NFORMATION				
Monitor Type	Begin Date	End Date	Action Type	Action Reason			
SLAMS	20020917						
		MONITORING	OBJECTIVES				
Monitor Objective Type	UAR Name	М	SA Name	CMSA Name			
SOURCE ORIENTED	NOT IN AN UR	BAN AREA					

North Dakota							
Monitor ID: 38-013-0004-4	12602-1		Parameter Measured:	Nitrog	en Dioxide		
Date of Latest Collection:	20070331		Last Updated:	20070430			
Owner: North Dakota			City: Not in a city				
Street Address: 8315 HIGH	WAY 8, KENMAR	E					
Site Name: LOSTWOOD NWR			MSA: Not in a MSA				
County: Burke			UAR: NOT IN AN URBAN	AREA			
Project Type: BACKGROUND	GROUND SURVEILLANCE Dominant Source: AREA						
Meas. Scale: REGIONAL SCA	eas. Scale: REGIONAL SCALE Location Setting: RURAL						
Probe Location: TOP OF	BUILDING		Horizontal Distance (m	n): 0.0			
Probe Height (m): 4.0		Surrogate?:	Vertical Distance (m)	1.0			
Sample Residence Time:			Unrestricted Air FLow?	?: Ү			
DATES OF OPERATION			AGENCY ROLES				
Begin Date End Date	Agency Role	Agency Name		В	egin Date	End Date	
20031028	COLLECTING	North Dakota State	Department Of Health	2	0031028		
	REPORTING	North Dakota State	Department Of Health	2	0031028		
		MONITOR TYPE	INFORMATION				

Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20031028			
		REGULATION INFORM	ATION	

Regulation					Me	t?	Date Met	
Quality Assurance Criter	ia Met				Y		20031028	
Reference Method Used					Y		20031028	
Siting Criteria Met					Y		20031028	
		TANGENT	ROAD INFORMATION	Traff		Traff		
Street Name			Type Road	Count		Yr	Dist. to R	oad (m)
90TH STREET NW			LOCAL ST OR HY	10		2002	8290	
ND HIGHWAY 8			THRU ST OR HY	100		2002	1120	
NDHIGHWAY 8			THRU ST OR HY	100		2002	840	
COUNTY ROAD 11			LOCAL ST OR HY	10		2002	13800	
		MONI	TORING OBJECTIVES					
Monitor Objective Type	UAR Name		MSA Name			CMSA	Name	
REGIONAL TRANSPORT	NOT IN AN URBAN	AREA						

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	North Dakota
Monitor ID: 38-053-0002-42401-1	Parameter Measured: Sulfur Dioxide
Date of Latest Collection: 20070331	Last Updated: 20070430
Owner: North Dakota	City: Not in a city
Street Address: 229 SERVICE RD., WATFORD CITY	
Site Name: TRNP-NU	MSA: Not in a MSA
County: McKenzie	UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE	Dominant Source: AREA
Meas. Scale: REGIONAL SCALE	Location Setting: RURAL
Probe Location: TOP OF BUILDING	Horizontal Distance (m):
Probe Height (m): 4.0 Surrogate?	: Vertical Distance (m):
Sample Residence Time:	Unrestricted Air FLow?: Y

MONITOR COMMENT

SITE RESTARTED AUG 8, 2001

DATES OF OPERATION			AGENCY ROLES					
Begin Date End Date	Agency Role	Agency Name		Ве	gin Date	End Date		
19800101 19980630	ANALYZING	North Dakota State	Department Of Health	19	800101	19980630		
20010801	COLLECTING	North Dakota State	Department Of Health	19	800101	19980630		
	REPORTING	North Dakota State	Department Of Health	19	800101			
	ANALYZING	North Dakota State	Department Of Health	20	010801			
	COLLECTING	North Dakota State	Department Of Health	20	010801			
MONITOR TYPE INFORMATION								
Monitor Type	Begin Date	End Date	Action Type	A	ction Reas	on		
SLAMS	19800101							
		REGULATION :	INFORMATION					
Regulation				Met?	Date Me	t		
Quality Assurance Criter:	ia Met			Y	1980010	1		
Reference Method Used				Y	1980010	1		
Siting Criteria Met				Y	1980010	1		
MONITORING OBJECTIVES								
Monitor Objective Type	UAR Name		MSA Name	CMS	A Name			
GENERAL/BACKGROUND	NOT IN AN U	RBAN AREA						

May. 18, 2007

	North Dakota
Monitor ID: 38-025-0003-44201-1	Parameter Measured: Ozone
Date of Latest Collection: 20070331	Last Updated: 20070430
Owner: North Dakota	City: Not in a city
Street Address: 9610 SEVENTH STREET SW	
Site Name: DUNN CENTER	MSA: Not in a MSA
County: Dunn	UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE	Dominant Source: AREA
Meas. Scale: REGIONAL SCALE	Location Setting: RURAL
Probe Location: TOP OF BUILDING	Horizontal Distance (m):
Probe Height (m): 4.0 Surrog	gate?: Vertical Distance (m):
Sample Residence Time:	Unrestricted Air FLow?: Y

MONITOR COMMENT

\*

DATES OF C	OPERATION			AGE	NCY ROLES			
Begin Date	End Date	Agency Role	Agency Name				Begin Date	End Date
19791001	19890430	COLLECTING	North Dakota S	State Departme	nt Of Healt	h	19791001	
19981214		REPORTING	North Dakota S	State Departme	nt Of Healt	h	19791001	
		ANALYZING	North Dakota S	State Departme	nt Of Healt	h	19791001	
			MONITOR	TYPE INFORMATI	ION			
Monitor Type	2	Begin Date	End Dat	e Act	ion Type		Action Rea	son
OTHER		19791001	1979123	1				
SLAMS		19800101						
			REGULAI	ION INFORMATIC	DN			
Regulation						Met?	Date Me	et
Quality Assu	rance Criteri	.a Met				Y	1980010	)1
Reference Me	thod Used					Y	1980010	)1
Siting Crite	eria Met					Y	1980010	)1
			MONIT	ORING OBJECTIV	'ES			
Monitor Obje	ective Type	UAR Name		MSA Name		(	CMSA Name	
GENERAL/BACK	GROUND	NOT IN AN U	RBAN AREA					

		North D	akota	
Monitor ID: 38-057-0004-8	31102-3		Parameter Measured: PM	110
Date of Latest Collection	20070331		Last Updated: 20070	0430
Owner: North Dakota			City: Beulah	
Street Address: 6024 HIGH	IWAY 200			
Site Name: BEULAH NORTH			MSA: Not in a MSA	
County: Mercer			UAR: NOT IN AN URBAN AREA	
Project Type: BACKGROUND	SURVEILLANCE		Dominant Source: AREA	
Meas. Scale: URBAN SCALE			Location Setting: RURAL	
Probe Location: TOP OF	BUILDING		Horizontal Distance (m):	0.0
Probe Height (m): 4.0		Surrogate?:	Vertical Distance (m):	1.0
Sample Residence Time:			Unrestricted Air FLow?: Y	7
DATES OF OPERATION			AGENCY ROLES	
Begin Date End Date	Agency Role	Agency Name		Begin Date End Date
20060717	REPORTING	North Dakota State	Department Of Health	20060717
	ANALYZING	North Dakota State	Department Of Health	20060717
	COLLECTING	North Dakota State	Department Of Health	20060717
		MONITOR TYPE	INFORMATION	
Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20060717			
COLLOCATION	INFORMATION			
Begin Date End Date	Dist.(m	) Primary?		
20060717		Y		
		MONITORING	OBJECTIVES	
Monitor Objective Type	UAR Name		MSA Name	CMSA Name
POPULATION EXPOSURE	NOT IN AN UR	BAN AREA		

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	North Dakota
Monitor ID: 38-025-0003-42401-1	Parameter Measured: Sulfur Dioxide
Date of Latest Collection: 20070331	Last Updated: 20070430
Owner: North Dakota	City: Not in a city
Street Address: 9610 SEVENTH STREET SW	
Site Name: DUNN CENTER	MSA: Not in a MSA
County: Dunn	UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE	Dominant Source: AREA
Meas. Scale: REGIONAL SCALE	Location Setting: RURAL
Probe Location: TOP OF BUILDING	Horizontal Distance (m):
Probe Height (m): 4.0 Surrogate	<pre>?: Vertical Distance (m):</pre>
Sample Residence Time:	Unrestricted Air FLow?:

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MONITOR COMMENT

DATES OF OPERATION			AGENCY ROLES		
Begin Date End Date	Agency Role	Agency Name		Ве	gin Date End Date
19791001	COLLECTING	North Dakota State	Department Of Health	19	791001
	REPORTING	North Dakota State	Department Of Health	19	791001
	ANALYZING	North Dakota State	Department Of Health	19	791001
		MONITOR TYPE	INFORMATION		
Monitor Type	Begin Date	End Date	Action Type	A	ction Reason
OTHER	19791001	19791231			
SLAMS	19800101				
		REGULATION ]	NFORMATION		
Regulation				Met?	Date Met
Quality Assurance Criteri	a Met			Y	19800101
Reference Method Used				Y	19800101
Siting Criteria Met				Y	19800101
		MONITORING	OBJECTIVES		
Monitor Objective Type	UAR Name		MSA Name	CMS	A Name
GENERAL/BACKGROUND	NOT IN AN U	RBAN AREA			

		North Da	akota			
Monitor ID: 38-065-0002-4	42401-1		Parameter Measured:	Sulfu	ur Dioxide	
Date of Latest Collection	20070331		Last Updated: 2	0070430	0	
Owner: North Dakota			City: Not in a city			
Street Address: 1575 HIGH	IWAY 31					
Site Name: HANNOVER			MSA: Not in a MSA			
County: Oliver			UAR: NOT IN AN URBAN AR	EA		
Project Type: BACKGROUND	SURVEILLANCE		Dominant Source: AREA			
Meas. Scale: URBAN SCALE			Location Setting: RURA	L		
Probe Location: TOP OF	BUILDING		Horizontal Distance (m)	:		
Probe Height (m): 3.0		Surrogate?:	Vertical Distance (m):			
Sample Residence Time:			Unrestricted Air FLow?:	Y		
DATES OF OPERATION			AGENCY ROLES			
Begin Date End Date	Agency Role	Agency Name			Begin Date	End Date
19880323	ANALYZING	North Dakota State I	Department Of Health		19880323	
	COLLECTING	North Dakota State I	Department Of Health		19880323	
	REPORTING	North Dakota State I	Department Of Health		19880323	
		MONITOR TYPE I	INFORMATION			
Monitor Type	Begin Date	End Date	Action Type		Action Reas	son
SLAMS	19880323					
		REGULATION IN	IFORMATION			
Regulation				Met?	Date Me	t
Quality Assurance Criteri	la Met			Y	1988030	1
Reference Method Used				Y	1988030	1
Siting Criteria Met				Y	1988030	1
		MONITORING	OBJECTIVES			
Monitor Objective Type	UAR Name	Μ	ISA Name	C	MSA Name	
SOURCE ORIENTED	NOT IN AN U	RBAN AREA				

	North Da	akota	
Monitor ID: 38-013-0004-81102-3		Parameter Measured:	PM10
Date of Latest Collection: 20070331		Last Updated:	20070430
Owner: North Dakota		City: Not in a city	
Street Address: 8315 HIGHWAY 8, KENMARE			
Site Name: LOSTWOOD NWR		MSA: Not in a MSA	
County: Burke		UAR: NOT IN AN URBAN	AREA
Project Type: BACKGROUND SURVEILLANCE		Dominant Source: POI	NT
Meas. Scale: REGIONAL SCALE		Location Setting: RU	RAL
Probe Location: TOP OF BUILDING		Horizontal Distance (m	n): 0.0
Probe Height (m): 4.0 Su:	rrogate?:	Vertical Distance (m):	1.0
Sample Residence Time:		Unrestricted Air FLow?	у: Х
DATES OF OPERATION		AGENCY ROLES	

Begin Date End Date	Agency Role	Agency Name			Begi	n Date End Date			
20031028	ANALYZING	North Dakota Stat	te Department Of H	Health	2003	31028			
	REPORTING	North Dakota Stat	te Department Of H	Health	2003	31028			
	COLLECTING	North Dakota Stat	te Department Of H	Health	2003	31028			
		MONITOR TYP	PE INFORMATION						
Monitor Type	Begin Date	End Date	Action Typ	pe	Action Reason				
SLAMS	20031028								
		REGULATION	I INFORMATION						
Regulation					Met?	Date Met			
Quality Assurance Criter	ria Met				Y	20031028			
Reference Method Used					Y	20031028			
Siting Criteria Met					Y	20031028			
Short Term Satisfied					Y	20031028			
		TANGENT ROP	AD INFORMATION	Traff	Traff				
Street Name		Тур	pe Road	Count	Yr	Dist. to Road (m			
90TH STREET NW		LOO	CAL ST OR HY	10	2002	8290			
ND HIGHWAY 8		THI	RU ST OR HY	100	2002	1120			
NDHIGHWAY 8		THI	RU ST OR HY	100	2002	840			
COUNTY ROAD 11		LOO	CAL ST OR HY	10	2002	13800			
		MONITORI	NG OBJECTIVES						
Monitor Objective Type	UAR Name		MSA Name		CMSA	Name			
REGIONAL TRANSPORT	NOT IN AN U	RBAN AREA							

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Date

			1	North I	Dakota						
Monitor ID: 38-013-0004-	88501-3				Para	ameter	Measure	ed:	PM-E	Fine	
Date of Latest Collection	: 20070331				Last	z Updat	ed:	2	007043	30	
Owner: North Dakota					City	:Not i	n a cit	сy			
Street Address: 8315 HIGH	IWAY 8, KENMAR	E									
Site Name: LOSTWOOD NWR					MSA:	Not i	n a MSA	ł			
County: Burke					UAR:	NOT I	N AN UF	RBAN AF	REA		
Project Type: BACKGROUND	SURVEILLANCE				Domir	nant So	ource:	POINT	ſ		
Meas. Scale: REGIONAL SCA	ALE				Locat	tion Se	etting:	RURA	L		
Probe Location: TOP OF	BUILDING				Horiz	zontal	Distan	ce (m)	: 0.	.0	
Probe Height (m): 4.0		Surro	gate?:		Vert	ical Di	istance	(m):	1.	.0	
Sample Residence Time:					Unres	stricte	ed Air 1	FLow?:	Y		
DATES OF OPERATION					I	AGENCY	ROLES				
Begin Date End Date	Agency Role	Agency	/ Name							Begin Date	End
20031028	ANALYZING	North	Dakota	State	Depart	ment O	f Healt	h		20031028	
	REPORTING	North	Dakota	State	Depart	ment O	f Healt	h		20031028	
	COLLECTING	North	Dakota	State	Depart	ment O	f Healt	h		20031028	
			MONITOR	R TYPE	INFORM	ATION					
Monitor Type	Begin Date		End Da	te	P	Action	Туре			Action Rea	ason
SLAMS	20031028										

REGULATION	INFORMATION
ICEOODET TON	TIME ORGENT TOW

Regulation					Me	t?	Date	Met			
Quality Assurance Criteri	a Met				Y		20031	028			
Reference Method Used					Y		20031	028			
Siting Criteria Met					Y		20031	028			
	TZ	ANGENT	ROAD INFORMATION	Traff		Traff					
Street Name			Type Road	Count		Yr	Di	st.	to	Road	(m)
90TH STREET NW			LOCAL ST OR HY	10		2002	82	90			
ND HIGHWAY 8			THRU ST OR HY	100		2002	11	20			
NDHIGHWAY 8			THRU ST OR HY	100		2002	84	)			
COUNTY ROAD 11			LOCAL ST OR HY	10		2002	13	300			
MONITORING OBJECTIVES											
Monitor Objective Type	UAR Name	MSA Name				CMSA	Name				
REGIONAL TRANSPORT	NOT IN AN URBAN AREA	A									
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							May. 10,
		North D	akota				
Monitor ID: 38-017-100	4-88501-3		Parame	ter Measured	1:	PM-Fine	
Date of Latest Collecti	on: 20070331		Last U	pdated:	20	070430	
Owner: North Dakota			City: Fa	argo			
Street Address: 4266 4	OTH AVE NORTH						
Site Name: FARGO NW			MSA: Fa	argo-Moorhea	d,ND-M	IN	
County: Cass			UAR: FA	ARGO-MOORHEA	D, ND-	MN	
Project Type: POPULATI	ON-ORIENTED SURVEILL	ANCE	Dominan	t Source:	POINT		
Meas. Scale: URBAN SCA	LE		Locatio	n Setting:	SUBUF	RBAN	
Probe Location: TOP	OF BUILDING		Horizon	tal Distance	e (m):	0.0	
Probe Height (m): 4.0 Surrogate?:			Vertica	l Distance (	(m):	1.0	
Sample Residence Time:			Unrestr	icted Air FI	low?:	Y	
DATES OF OPERATION			AGE	NCY ROLES			
Begin Date End Date	Agency Role Agen	cy Name				Begi	n Date End Date
20000608	ANALYZING Nort	h Dakota State	Departmer	nt Of Health		2000	0608
	COLLECTING Nort	h Dakota State	Departmer	nt Of Health		2000	0608
	REPORTING Nort	h Dakota State	Departmer	nt Of Health		2000	0608
		MONITOR TYPE	INFORMATI	ON			
Monitor Type	Begin Date	End Date	Act	ion Type		Act	ion Reason
SLAMS	20000608						
		REGULATION I	NFORMATIC	N			
Regulation						Met?	Date Met
Quality Assurance Crit	eria Met					Y	20000608
Reference Method Used						Y	20000601
Siting Criteria Met						Y	20000601
		TANGENT ROAD	TNFORMATT	ON T	raff	Traff	
Street Name		Type	Road	C	lount	Yr	Dist to Road (m)
19TH AVE N		THRU	ST OR HY	55	50	1989	1600
INTERSTATE 94		ARTER	TAL	87	790	1989	350
COUNTY 20		THRU	ST OR HY	97	25 25	1989	30
		POLLUTANT ARE	CA INFORMA	ATION	5	1909	50
		Communit	tv	Spatial		Schedule	Applicable
Pollutant Area Name	Worst Site Type	Monitoring	Zone	Average Inc	<b>1</b> 1	Exemption	NAAQS Ind
ND UNCLASSIFIED NOT SPECIFIED	Classified as having the highest						
	PM-10 concentration and is expected to monitor at recommended						
	sampling frequency.						
		MONTTORING	OBJECTIV	ES			
Monitor Objective Type	UAR Name		MSA Name			CMSA	Name
POPULATION EXPOSURE	FARGO-MOORHEAD.	ND-MN					
SOURCE ORIENTED	FARGO-MOORHEAD,	ND-MN					

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	North Da	akota				
81102-3		Parameter Measu	ured: PM	10		
Date of Latest Collection: 20070331			Last Updated: 20070430			
		City: Fargo				
H AVE NORTH						
		MSA: Fargo-Moor	rhead,ND-MN			
		UAR: FARGO-MOOR	RHEAD, ND-MN			
-ORIENTED SURVEILLA	ANCE	Dominant Source	: POINT			
		Location Setting	g: SUBURBAN	1		
BUILDING		Horizontal Dista	ance (m):			
Probe Height (m): 4.0 Surrogate?:			ce (m):	1.0		
		Unrestricted Air	r FLow?: Y			
		AGENCY ROLES	5			
Agency Role Agend	cy Name			Begin Da	te End Date	
ANALYZING North	n Dakota State	Department Of Hea	lth	20040628		
COLLECTING North	n Dakota State	Department Of Hea	lth	20040628		
REPORTING North	n Dakota State	Department Of Hea	lth	20040628		
	MONITOR TYPE	INFORMATION				
Begin Date	End Date	Action Type		Action 1	Reason	
20040628						
	REGULATION IN	IFORMATION				
			Me	t? Date	e Met	
ia Met			Y	2004	10628	
			Y	2004	10628	
			Y	2004	10628	
	POLLUTANT ARE	A INFORMATION				
	Communit	y Spatia Zone Average	al Sch Ind Exer	edule mption	Applicable NAAOS Ind	
orst Site Type	nonreorring	lone nveruge	ind inc	mperon		
Lassified as aving the highest 4-10 concentration ad is expected to ponitor at ecommended ampling frequency.						
	81102-3 : 20070331 H AVE NORTH -ORIENTED SURVEILLA BUILDING Agency Role Agend ANALYZING North COLLECTING North REPORTING North REPORTING North Begin Date 20040628 ia Met Dest Site Type assified as wing the highest 1-10 concentration ad is expected to onitor at ecommended ampling frequency.	North Da 81102-3 : 20070331 H AVE NORTH -ORIENTED SURVEILLANCE BUILDING Surrogate?: Agency Role Agency Name ANALYZING North Dakota State : COLLECTING North Dakota State : REPORTING North Dakota State : MONITOR TYPE : Begin Date End Date 20040628 REGULATION IN ia Met POLLUTANT ARE Communit Monitoring assified as wing the highest -10 concentration of is expected to onitor at ecommended ampling frequency.	North Dakota  81102-3  20070331 Last Updated: City: Fargo H AVE NORTH HAVE NORTH HAVE NORTH SUILDING ORIENTED SURVEILLANCE DOMINANT SOURCE LOCATION SOURCE BUILDING Surrogate?: Vertical Distant Unrestricted Ai AGENCY ROLES Agency Role Agency Name ANALYZING North Dakota State Department Of Hea COLLECTING North Dakota State Department Of Hea COLLECTING North Dakota State Department Of Hea COLLECTING North Dakota State Department Of Hea REPORTING North Dakota State Department Of Hea REPORTING North Dakota State Department Of Hea REPORTING North Dakota State Department Of Hea COLLECTING North Dakota State Department Of Hea REPORTING	North Dakota 81102-3 20070331 Last Updated: 20070 City: Fargo H AVE NORTH AVE NORTH ORIENTED SURVEILLANCE ORIENTED SURVEILLANCE DOMINANT SOurce: POINT Location Setting: SUBURBAN BUILDING BUILDING Unrestricted Air FLow?: Y AGENCY ROLES Agency Nole Agency Name ANALYZING North Dakota State Department Of Health COLLECTING North Dakota State Department Of Health REPORTING North Dakota State Departm	North Dakota 81102-3 92 Parameter Measured: PM1 20070331 Last Updated: 20070430 City: Fargo H AVE NORTH HAVE NORTH HAVE NORTH SURVEILLANCE Dominant Source: POINT Location Setting: SUBURBAN HORIZONTAL Dominant Source: POINT Location Setting: SUBURBAN BUILDINS HORIZONTAL Distance (m): 1.0 Unrestricted Air FLow?: Y AGENCY ROLES Agency Role Agency Name AGENCY ROLES Agency Role Agency Name AGENCY ROLES Agency Role Agency Name Begin Dakota State Department Of Health 20040628 COLLECTING North Dakota State Department Of Health 20040628 REPORTING North Dakota State Department Of Health 20040628 REGULATION INFORMATION Regulation INFORMATION Regulation INFORMATION POLLUTANT AREA INFORMATION POLLUTANT AREA INFORMATION POLLUTANT AREA INFORMATION POLLUTANT AREA INFORMATION Agency Spatial Schedule Exemption Add is expected to onitor at secommended mpling frequency.	

# MONITORING OBJECTIVES

Monitor Objective Type	UAR Name	MSA Name	CMSA Name
POPULATION EXPOSURE	FARGO-MOORHEAD, ND-MN		

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	North Dakota
Monitor ID: 38-053-0002-81102-3	Parameter Measured: PM10
Date of Latest Collection: 20070331	Last Updated: 20070430
Owner: North Dakota	City: Not in a city
Street Address: 229 SERVICE RD., WATFORD CITY	
Site Name: TRNP-NU	MSA: Not in a MSA
County: McKenzie	UAR: NOT IN AN URBAN AREA
Project Type: BACKGROUND SURVEILLANCE	Dominant Source: POINT
Meas. Scale: REGIONAL SCALE	Location Setting: RURAL
Probe Location: TOP OF BUILDING	Horizontal Distance (m):
Probe Height (m): 4.0 Surrogate	e?: Vertical Distance (m): 1.0
Sample Residence Time:	Unrestricted Air FLow?: Y
DATES OF OPERATION	AGENCY ROLES

Begin Date End Date	Agency Role	Agency Name		Begin Date End Date
20040616	COLLECTING	North Dakota State	Department Of Health	20040616
	REPORTING	North Dakota State	Department Of Health	20040616
		MONITOR TYPE	INFORMATION	
Monitor Type	Begin Date	End Date	Action Type	Action Reason
SLAMS	20040616			

		REGULATION INFORMAT	ION		
Regulation				Met?	Date Met
Quality Assurance Cri	teria Met			Y	20040616
Reference Method Used	l			Y	20040616
Siting Criteria Met				Y	20040616
		POLLUTANT AREA INFOR	RMATION		
Pollutant Area Name	Worst Site Type	Community Monitoring Zone	Spatial Average Ind	Schedule Exemption	Applicable NAAQS Ind
ND UNCLASSIFIED NOT SPECIFIED	Classified as having the highest PM-10 concentration				

MONITORING OBJ	ECTIVES
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Monitor Objective Type	UAR Name	MSA Name	CMSA Name
GENERAL/BACKGROUND	NOT IN AN URBAN AREA		
REGIONAL TRANSPORT	NOT IN AN URBAN AREA		

and is expected to

sampling frequency.

monitor at recommended

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		North I	Dakota		_	
Monitor ID: 38-015-000	3-81102-3		Parameter Measured:	PM10		
Date of Latest Collecti	on: 20070331		Last Updated: 20070430			
Owner: North Dakota			City: Bismarck			
Street Address: 1810 N	16TH STREET					
Site Name: BISMARCK RES	SIDENTIAL		MSA: Bismarck,ND			
County: Burleigh			UAR: BISMARCK, ND			
Project Type: POPULATI	ON-ORIENTED SURVEILLA	ANCE	Dominant Source: A	REA		
Meas. Scale: URBAN SCA	LE		Location Setting:	SUBURBAN		
Probe Location: TOP	OF BUILDING		Horizontal Distance	(m): 0.0		
Probe Height (m): 4.0 Surrogate?:		Vertical Distance (m	n): 1.0			
Sample Residence Time:			Unrestricted Air FLo	w?: Y		
DATES OF OPERATION			AGENCY ROLES			
Begin Date End Date	Agency Role Agend	cy Name		Beg	gin Date End Date	
20051001	REPORTING North	n Dakota State	Department Of Health	200	051001	
	COLLECTING North	n Dakota State	Department Of Health	200	051001	
		MONITOR TYPE	INFORMATION			
Monitor Type	Begin Date	End Date	Action Type	Ac	tion Reason	
SLAMS	20051001					
		REGULATION ]	INFORMATION			
Regulation				Met?	Date Met	
Quality Assurance Crit	eria Met			Y	20051001	
Reference Method Used				Y	20051001	
Siting Criteria Met				Y	20051001	
-		POLLUTANT AR	EA INFORMATION			
		Communi	ty Spatial	Schedule	Applicable	
Pollutant Area Name	Worst Site Type	Monitoring	Zone Average Ind	Exemption	n NAAQS Ind	
ND UNCLASSIFIED NOT SPECIFIED	Classified as having the highest PM-10 concentration and is expected to monitor at recommended sampling frequency.					
		MONITORING	G OBJECTIVES			
Monitor Objective Type	UAR Name		MSA Name	CMSA	A Name	
POPULATION EXPOSURE	BISMARCK, ND					

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		North	Dakota		
Monitor ID: 38-015-0003-	42602-1		Parameter Measured:	Nitroge	en Dioxide
Date of Latest Collection	: 20070331		Last Updated: 2	20070430	
Owner: North Dakota			City: Bismarck		
Street Address: 1810 N 16	5TH STREET				
Site Name: BISMARCK RESID	ENTIAL		MSA: Bismarck,ND		
County: Burleigh			UAR: BISMARCK, ND		
Project Type: POPULATION	-ORIENTED SURVE	ILLANCE	Dominant Source: MOBI	LE	
Meas. Scale: URBAN SCALE			Location Setting: SUB	JRBAN	
Probe Location: TOP OF	BUILDING		Horizontal Distance (m)	: 0.0	
Probe Height (m): 4.0		Surrogate?:	Vertical Distance (m):	1.0	
Sample Residence Time:			Unrestricted Air FLow?:		
DATES OF OPERATION			AGENCY ROLES		
Begin Date End Date	Agency Role A	gency Name		Be	gin Date End Date
20051003	COLLECTING N	orth Dakota State	e Department Of Health	20	0051003
	REPORTING N	orth Dakota State	e Department Of Health	20	051003
		MONITOR TYPE	INFORMATION		
Monitor Type	Begin Date	End Date	Action Type	A	ction Reason
SLAMS	20051003				
		REGULATION	INFORMATION		
Regulation				Met?	Date Met
Quality Assurance Criter:	ia Met			Y	20051003
Quality Assurance Criter: Reference Method Used	ia Met			Y Y	20051003 20051003
Quality Assurance Criter: Reference Method Used Siting Criteria Met	ia Met			Y Y Y	20051003 20051003 20051003
Quality Assurance Criter: Reference Method Used Siting Criteria Met	ia Met	MONITORIN	G OBJECTIVES	Y Y Y	20051003 20051003 20051003
Quality Assurance Criter: Reference Method Used Siting Criteria Met Monitor Objective Type	ia Met UAR Name	MONITORIN	G OBJECTIVES MSA Name	Y Y Y CMS	20051003 20051003 20051003 GA Name

Appendix D

Public Comments