State/Industry Ambient Monitoring Network

Air Quality Report

3rd Quarter 2006

Prepared By:

Air Quality Monitoring Branch
Division of Air Quality
North Dakota Department of Health

December 2006

TABLE OF CONTENTS

Description	Page
DISCUSSION OF MONITORING RESULTS	1
Sulfur Dioxide (SO_2)	2
Sulfur Dioxide (SO_2) 5-Minute Average	2
Trace Level Sulfur Dioxide (SO_2)	2
Trace Level Sulfur Dioxide (SO_2) 5-Minute Average	2
Ozone (O_3)	3
Nitrogen Dioxide (NO_2)	3
Inhalable Continuous $PM_{2.5}$ Particulates	3
Inhalable $PM_{2.5}$ Particulates	4
Inhalable Continuous PM_{10} Particulates	4
AMBIENT AIR QUALITY DATA SUMMARIES	5
Sulfur Dioxide	6
Sulfur Dioxide 5-Minute Averages	8
Trace Level Sulfur Dioxide	9
Trace Level Sulfur Dioxide 5-Minute Averages	9
Ozone	10
Nitrogen Dioxide	11
Ammonia	12
Inhalable Continuous $PM_{2.5}$ Particulates	12
Inhalable $PM_{2.5}$ Particulates	13
Inhalable Continuous PM_{10} Particulates	14
EXCEEDANCE LISTINGS	15
By Site Date Hour	16
By Date Hour Site	16
DATA RECOVERY SUMMARIES/DATA VOID PERIODS	17
Abbreviations Used in the Data Summaries	18
Data Recovery Summaries	19

SECTION ONE

DISCUSSION OF

MONITORING RESULTS

Sulfur Dioxide (SO_2)

There were no exceedances of either the state or the federal standards during the quarter. The maximum 1-hour concentration was 55 ppb on August 28 at Bear Paw - MGP #5; the maximum 3-hour concentration was 30 ppb on August 3 at DGC #16; and, the maximum 24-hour concentration was 12 ppb on August 30 at DGC #16. The highest arithmetic mean was 2.4 ppb at Hess - Tioga #3. All sites achieved at least an 80% data recovery for the period operated.

Sulfur Dioxide (SO_2) 5-Minute Average

The maximum 5-minute concentration was 130 ppb on September 29 at Bear Paw - MGP #3. All sites achieved at least an 80% data recovery for the period operated.

Trace Level Sulfur Dioxide (SO_2)

There were no exceedances of either the state or the federal standards during the quarter. The maximum 1-hour concentration was 2.8 ppb on September 10 at Fargo NW; the maximum 3-hour concentration was 1.7 ppb on September 11 at Fargo NW; and, the maximum 24-hour concentration was 1.0 ppb on September 11 at Fargo NW. The highest arithmetic mean was 0.3 ppb at Fargo NW. The site achieved at least an 80% data recovery for the period operated.

Trace Level Sulfur Dioxide (SO_2) 5-Minute Average

The maximum 5-minute concentration was 6.7 ppb on August 4 at Fargo NW. The site achieved at least an 80% data recovery for the period operated.

Ozone (O_3)

There was no exceedance of the ozone standard during the quarter. The highest observed 1-hour concentration was 92 ppb on July 6 at Bismarck Residential. The highest 4th highest 8-hour concentration was 65 ppb on August 8 at TRNP - NU. All sites achieved at least an 80% data recovery for the period operated.

Nitrogen Dioxide (NO_2)

The highest observed 1-hour concentration was 43 ppb on July 22 at DGC #12. The maximum arithmetic mean concentration was 5.4 ppb at Bismarck Residential. All sites achieved at least an 80% data recovery for the period operated.

Ammonia (NH_3)

The highest 1-hour concentration was 71.1 ppb on September 30 at Beulah - North . The site achieved an 80% data recovery for the period.

The data is used as part of the ambient data input used by the newer dispersion models.

Inhalable Continuous $PM_{2.5}$ Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 24-hour concentration was 24.8 µg/m^3 on July 4 at Hannover. The highest arithmetic mean concentration was 8.4 µg/m^3 at TRNP - SU. All sites achieved at least an 80% data recovery for the period operated.

Inhalable $PM_{2.5}$ Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 24-hour average concentration was 24.5 µg/m^3 on July 1 at Bismarck Residential. The highest arithmetic mean was 8.6 µg/m^3 at Fargo NW. All sites achieved at least an 80% data recovery for the period.

Inhalable Continuous PM_{10} Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour concentration was 75.1 µg/m^3 on August 9 at Fargo NW. The highest arithmetic mean was 21.5 µg/m^3 at Fargo NW. All sites achieved an 80% data recovery for the period.

SECTION TWO

AMBIENT AIR QUALITY DATA

SUMMARIES

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

POLLUTANT : **Sulfur Dioxide** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MAXIMA 1-HOUR 1ST MM/DD:HH	1-HOUR 2ND MM/DD:HH	3-HOUR 1ST MM/DD:HH	3-HOUR 2ND MM/DD:HH	24-HOUR 1ST MM/DD	24-HOUR 2ND MM/DD	ARITH MEAN	1HR #>273	24HR #>99	% >MDV
Bear Paw - MGP #3	2006	JUL-SEP	2172	33 09/29:06	27 07/08:15	12 09/29:08	10 07/08:17	3 09/29	2 07/08	1.1			3.2
Bear Paw - MGP #5	2006	JUL-SEP	2189	55 08/28:11	21 07/06:04	19 08/28:11	9 07/06:05	3 08/28	2 07/06	1.1			3.8
Beulah - North	2006	JUL-SEP	2168	35 08/23:11	26 07/15:11	23 07/15:11	16 08/23:11	5 07/30	5 08/23	1.8			17.7
Bismarck Residential	2006	JUL-SEP	2181	12 07/01:11	12 07/23:11	10 07/01:08	9 07/01:11	4 07/01	3 07/08	1.3			13.7
DGC #12	2006	JUL-SEP	2196	29 08/23:12	28 08/16:07	16 08/23:14	16 09/30:11	5 08/23	5 07/30	1.7			16.8
DGC #14	2006	JUL-SEP	2192	26 07/05:08	25 08/20:10	15 09/12:11	14 09/24:11	5 09/14	5 07/30	1.7			14.2
DGC #16	2006	JUL-SEP	2194	39 07/26:12	37 08/30:02	30 08/03:11	24 08/30:02	12 08/30	7 08/03	2.1			21.0
DGC #17	2006	JUL-SEP	2197	36 07/17:23	34 07/02:08	26 07/17:23	22 08/04:11	6 08/23	5 08/03	1.7			14.6
Dunn Center	2006	JUL-SEP	2175	13 07/30:14	11 07/17:21	8 07/30:14	7 07/30:17	3 07/30	3 08/23	1.1			6.0
Hannover	2006	JUL-SEP	2187	52 09/02:11	36 09/02:12	22 09/02:14	21 07/24:14	8 08/21	7 09/19	2.1			21.2
Hess - Tioga #1	2006	JUL-SEP	2157	15 09/23:10	13 07/02:07	9 07/02:08	8 09/23:11	3 07/02	2 08/16	1.2			9.9
Hess - Tioga #3	2006	JUL-SEP	2048	47 08/31:08	39 07/16:17	27 07/19:11	26 08/31:08	10 07/19	8 09/18	2.4			21.0
Lostwood NWR	2006	JUL-SEP	2187	32 08/14:08	25 08/13:09	13 08/14:11	11 08/14:08	6 08/14	3 08/12	1.4			13.3
TRNP - NU	2006	JUL-SEP	2196	21 09/20:09	9 07/20:07	6 07/20:08	5 07/12:02	2 09/20	2 07/20	1.1			3.6

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

POLLUTANT : **Sulfur Dioxide** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MAXIMA 1 - HOUR 1ST MM/DD:HH	1 - HOUR 2ND MM/DD:HH	3 - HOUR 1ST MM/DD:HH	3 - HOUR 2ND MM/DD:HH	24 - HOUR 1ST MM/DD	24 - HOUR 2ND MM/DD	ARITH MEAN	1HR #>273	24HR #>99	% >MDV
TRNP - SU	2006	JUL-SEP	2198	9 07/28:13	6 07/28:14	7 07/28:14	4 09/08:02	2 07/28	2 09/08	1.0			1.7

The highest 1-hour concentration was 55 ppb at Bear Paw - MGP #5 on 08/28:11
The highest 3-hour concentration was 30 ppb at DGC #16 on 08/03:11
The highest 24-hour concentration was 12 ppb at DGC #16 on 08/30
The highest Arithmetic Mean was 2.4 ppb at Hess - Tioga #3

* The air quality standards are:
STATE Standards -
1) 273 ppb maximum 1-hour average concentration.
2) 99 ppb maximum 24-hour average concentration.
3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -
1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
3) 30 ppb annual arithmetic mean.

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

POLLUTANT : **Sulfur Dioxide 5-Minute Averages** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	5 - MINUTE MAXIMA 1ST	DATE MM/DD:HH	2ND	DATE MM/DD:HH	3RD	DATE MM/DD:HH	# HOURS >600	% >MDV
Bear Paw - MGP #3	2006	JUL-SEP	2172	130	09/29:12	108	07/08:15	101	09/29:06	0	6.1
Bear Paw - MGP #5	2006	JUL-SEP	2189	124	08/28:11	38	07/06:04	38	07/06:05	0	11.5
Beulah - North	2006	JUL-SEP	2168	70	08/23:11	60	07/24:08	57	08/02:08	0	27.1
Bismarck Residential	2006	JUL-SEP	2181	17	07/23:10	16	07/01:12	15	07/01:08	0	16.8
Dunn Center	2006	JUL-SEP	2175	15	07/30:14	14	07/17:21	14	07/30:15	0	11.4
Fargo NW	2006	JUL-SEP	2190	7	08/04:03	5	07/03:21	5	08/04:06	0	2.4
Hannover	2006	JUL-SEP	2188	96	09/02:12	93	09/02:11	70	07/02:08	0	31.8
Hess - Tioga #1	2006	JUL-SEP	2157	99	08/11:18	45	07/11:02	40	09/13:15	0	18.0
Hess - Tioga #3	2006	JUL-SEP	2048	129	07/21:13	129	08/13:15	127	07/19:10	0	43.6
Lostwood NWR	2006	JUL-SEP	2188	120	08/14:08	79	08/13:09	46	08/14:09	0	20.6
TRNP - NU	2006	JUL-SEP	2196	11	07/20:07	10	07/12:01	10	07/17:22	0	6.4
TRNP - SU	2006	JUL-SEP	2198	10	07/28:13	9	07/28:14	8	07/28:12	0	5.2

The highest 5-minute concentration was 130 ppb at Bear Paw - MGP #3 on 09/29:12

* No Standard is currently in effect

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

POLLUTANT : **Trace Level Sulfur Dioxide** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MAXIMA 1 - HOUR 1ST MM/DD:HH	1 - HOUR 2ND MM/DD:HH	3 - HOUR 1ST MM/DD:HH	3 - HOUR 2ND MM/DD:HH	24 - HOUR 1ST MM/DD	24 - HOUR 2ND MM/DD	ARITH MEAN	1HR #>273	24HR #>99	% >MDV
Fargo NW	2006	JUL-SEP	2190	2.8 09/10:08	2.4 09/10:03	1.7 09/11:08	1.6 09/21:08	1.0 09/11	0.8 09/23	0.3			76.3

The highest 1-hour concentration was 2.8 ppb at Fargo NW on 09/10:08
The highest 3-hour concentration was 1.7 ppb at Fargo NW on 09/11:08
The highest 24-hour concentration was 1.0 ppb at Fargo NW on 09/11
The highest arithmetic mean was .3 ppb at Fargo NW

* The air quality standards are:
STATE Standards -
1) 273 ppb maximum 1-hour average concentration.
2) 99 ppb maximum 24-hour average concentration.
3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -
1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
3) 30 ppb annual arithmetic mean.

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

POLLUTANT : **Trace Level Sulfur Dioxide 5-Minute Averages** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	5-MINUTE MAXIMA 1ST	DATE MM/DD:HH	2ND	DATE MM/DD:HH	3RD	DATE MM/DD:HH	# HOURS >600	% >MDV
Fargo NW	2006	APR-JUN	2190	6.7	08/04:03	4.8	08/04:06	4.7	09/10:10	0	89.0

The highest 5-minute concentration was 6.7 ppb at Fargo NW on 08/04:03

* No Standard is currently in effect:

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

POLLUTANT : **Ozone** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR 1ST MM/DD	2ND MM/DD	8 - HOUR 1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD	1HR #>120	8HR #>80
Beulah - North	2006	JUL-SEP	2165	76 08/04	76 07/18	72 08/04	67 07/18	62 08/03	60 07/05		
Bismarck Residential	2006	JUL-SEP	2020	92 07/06	72 07/27	67 07/06	66 07/27	63 08/04	61 07/26		
Dunn Center	2006	JUL-SEP	2182	71 08/04	66 08/16	66 08/04	64 08/16	61 08/11	59 07/06		
Fargo NW	2006	JUL-SEP	2193	71 07/15	68 07/07	66 07/07	65 07/15	59 07/27	59 07/16		
Hannover	2006	JUL-SEP	2189	84 08/24	75 07/18	66 08/04	65 07/18	62 07/27	60 08/03		
Lostwood NWR	2006	JUL-SEP	2188	72 08/11	70 07/16	68 08/11	64 08/04	60 08/15	59 07/16		
TRNP - NU	2006	JUL-SEP	2195	72 08/23	72 08/11	69 08/04	67 08/11	66 08/23	65 08/08		
TRNP - SU	2006	JUL-SEP	2198	73 08/16	71 08/23	71 08/16	66 08/19	65 08/11	65 08/15		

The highest 1-hour concentration was 92 ppb at Bismarck Residential on 07/06
The 4th highest 8-hour concentration was 65 ppb at TRNP - NU on 08/08

* The air quality standards for ozone are:
STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL - Fourth highest daily maximum 8-hour averages for a 3-year period not to exceed 80 ppb.

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

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

POLLUTANT : **Nitrogen Dioxide** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MAXIMA 1 - HOUR 1ST MM/DD:HH	MAXIMA 1 - HOUR 2ND MM/DD:HH	ARITH MEAN	% >MDV
Beulah - North	2006	JUL-SEP	2161	36 07/22:23	36 08/02:22	2.8	92.6
Bismarck Residential	2006	JUL-SEP	1956	23 08/25:21	23 09/04:04	5.4	100.0
DGC #12	2006	JUL-SEP	2187	43 07/22:23	31 08/02:22	2.8	92.5
DGC #17	2006	JUL-SEP	2154	33 09/19:18	28 08/02:01	2.2	79.6
Dunn Center	2006	JUL-SEP	2074	26 08/11:23	23 08/12:00	2.2	92.6
Fargo NW	2006	JUL-SEP	2187	32 09/20:19	28 09/11:19	4.5	100.0
Hannover	2006	JUL-SEP	2181	19 07/20:11	19 08/07:07	2.2	89.2
Lostwood NWR	2006	JUL-SEP	2183	13 07/24:04	13 07/24:05	1.2	65.6
TRNP - NU	2006	JUL-SEP	2190	14 07/20:22	14 08/11:22	1.3	83.0

The highest 1-hour concentration was 43 ppb at DGC #12 on 08/25:23
The highest arithmetic mean was 5.4 ppb at Bismarck Residential

* The air quality standards are:
STATE - 53 ppb maximum annual arithmetic mean.

FEDERAL - 53 ppb annual arithmetic mean.

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

POLLUTANT : **Ammonia** (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MAXIMA 1-HOUR 1ST MM/DD:HH	2ND MM/DD:HH	3RD MM/DD:HH	4TH MM/DD:HH	5TH MM/DD:HH	6TH MM/DD:HH
Beulah - North	2006	JUL-SEP	2146	71.1 09/30:10	67.4 09/17:21	67.2 09/17:20	58.8 07/18:19	53.9 09/17:22	50.8 07/15:11

* No standard is currently in effect.

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

POLLUTANT : **Inhalable Continuous $PM_{2.5}$ Particulates** ($\mu g/m^3$)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MAXIMA 1-HOUR 1ST MM/DD:HH	2ND MM/DD:HH	MAXIMA 24-HOUR 1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD	ARITH MEAN	24HR #>65	AM>15
Beulah - North	2006	APR-JUN	2161	69.1 06/27:09	62.8 06/27:08	54.2 06/27	19.1 06/28	18.3 06/29	18.2 06/26	7.5		
Bismarck Residential	2006	APR-JUN	2171	68.4 06/27:07	67.4 06/27:06	46.3 06/27	15.5 06/29	13.9 06/28	13.5 04/06	5.1		
Dunn Center	2006	APR-JUN	2159	57.5 06/27:18	54.0 06/27:19	38.8 06/27	15.7 06/29	15.3 06/28	11.3 06/26	4.3		
Fargo NW	2006	APR-JUN	2161	116.6 04/25:07	111.0 06/27:21	26.2 06/27	16.3 04/10	15.6 06/29	14.5 04/25	5.9		
Hannover	2006	APR-JUN	2157	65.9 06/27:06	65.8 06/27:09	53.4 06/27	19.0 06/28	17.9 06/29	16.2 06/26	7.5		
Lostwood NWR	2006	APR-JUN	2149	62.8 06/27:08	57.5 06/27:07	47.5 06/27	23.3 06/28	12.7 06/29	12.4 06/26	4.7		
TRNP - NU	2006	APR-JUN	2166	48.4 06/27:20	47.7 06/27:23	30.5 06/27	18.0 06/28	9.7 06/25	8.9 06/26	3.7		
TRNP - SU	2006	APR-JUN	2123	56.9 06/30:19	54.8 06/27:22	33.6 06/27	23.7 06/28	12.8 06/26	12.2 06/25	6.9		

The highest 24-hour concentration was 54.2 $\mu g/m^3$ at Beulah - North on 06/27
The highest arithmetic mean concentration was 7.5 $\mu g/m^3$ at Beulah - North and Hannover

* The ambient air quality standards are:
FEDERAL Standards -
1) 24-hour: 3-year average of 98th percentiles not to exceed 65 $\mu g/m^3$.
2) Annual: 3-year average not to exceed 15 $\mu g/m^3$.

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

POLLUTANT : **Inhalable $PM_{2.5}$ Particulates** ($\mu g/m^3$)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	MAXIMA 24-HOUR 1ST MM/DD	2ND MM/DD	3RD MM/DD	ARITH MEAN	#> 65	AM>15	% >MDV
Beulah - North	2006	JUL-SEP	14	1.5	18.9 07/04	13.2 09/14	8.9 08/27	7.4			92.9
Bismarck Residential	2006	JUL-SEP	31	1.5	24.5 07/01	21.3 07/04	11.5 08/15	8.1			96.8
Fargo NW	2006	JUL-SEP	31	1.7	18.9 07/04	18.8 07/01	18.5 08/12	8.6			96.8
TRNP - NU	2006	JUL-SEP	14	3.4	15.5 07/04	13.8 09/14	7.5 08/03	6.5			100.0
TRNP - SU	2006	JUL-SEP	15	2.4	17.8 07/04	13.3 09/14	9.7 07/28	7.3			100.0

The highest 24-hour concentration was 24.5 µg/m3 at Bismarck Residential on 07/01
The highest annual mean concentration was 8.6 µg/m3 at Fargo NW

* The ambient air quality standards are:
FEDERAL Standards -
1) 24-hour: 3-year average of 98th percentiles not to exceed 65 $\mu g/m^3$.
2) Annual: 3-year average not to exceed 15 $\mu g/m^3$.

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

POLLUTANT : **Inhalable Continuous PM_{10} Particulates** ($\mu g/m^3$)

				M A X I M A							
				1 – HOUR		24 – HOUR					
LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD	ARITH MEAN	24HR #>150	AM>50
Beulah - North	2006	JUL-SEP	1783	120.0 07/23:18	111.0 07/19:20	40.1 08/30	36.0 09/14	33.9 08/01	30.1 09/07	17.9		
Bismarck Residential	2006	JUL-SEP	2188	161.0 08/10:14	148.0 07/06:15	48.6 08/15	45.6 07/06	44.5 08/30	42.6 09/15	19.4		
Dunn Center	2006	JUL-SEP	2171	403.0 08/06:21	221.0 07/31:20	53.0 08/05	50.3 08/06	43.8 07/31	39.9 07/04	18.4		
Fargo NW	2006	JUL-SEP	2193	261.0 07/17:22	238.0 08/09:19	75.1 08/09	46.0 07/07	42.6 07/05	41.8 07/17	21.5		
Lostwood NWR	2006	JUL-SEP	2183	110.0 09/05:19	105.0 07/16:19	37.3 09/14	37.2 09/13	35.5 08/30	34.8 07/06	15.9		
TRNP - NU	2006	JUL-SEP	2191	113.0 08/11:18	93.0 08/31:03	37.1 09/14	29.5 09/13	27.6 07/18	25.8 09/07	14.8		

The highest 24-hour concentration was 75.1 µg/m3 at Fargo NW on 08/09
The highest arithmetic mean concentration was 21.5 µg/m3 at Fargo NW

* The STATE and FEDERAL air quality standards are:
1) 150 $\mu g/m^3$ maximum averaged over a 24-hour period with no more than one expected exceedance per year.
2) 50 $\mu g/m^3$ expected annual arithmetic mean.

SECTION THREE

EXCEEDANCE LISTINGS

By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and $PM_{2.5}$ and PM_{10} ($\mu g/m^3$)

The * Identifies the Exceedances

NONE

By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and $PM_{2.5}$ and PM_{10} ($\mu g/m^3$)

The * Identifies the Exceedances

NONE

SECTION FOUR

DATA RECOVERY SUMMARIES/DATA VOID PERIODS

Abbreviations Used in the Data Summaries

Parm = parameter
Poss = possible number of values
Val = actual number of values

Recvry = percent data recovery = $\frac{VAL}{Poss} * 100\%$

L_MDV = number of values less than the minimum detectable value

PL_MDV = percentage of values less than the minimum detectable value = $\frac{L\ MDV}{Val} * 100\%$

G_MDV = number of values <u>greater</u> than the minimum detectable value

PG_MDV = percentage of values <u>greater</u> than the minimum detectable value = $\frac{G\ MDV}{Val} * 100\%$

Mean = arithmetic mean of the values <u>greater</u> than the minimum detectable value

- Voids -

MALF = machine malfunction
COLL = collection error
BIRD = bird damage to filter
LAB = lab error
AUDT = audit
VTOTAL = total data voids

QA_CHK = zero/span/precision
PREC = precision
POWR = power failure
CALB = calibration
VIO = number of values exceeding the standard

P_VOID = percent data void = $\frac{VTOTAL}{Poss} * 100\%$

Data Recovery Summaries

SITE=Bear Paw - MGP #3

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2157	97.7	0	0.0	2157	100.0		32	0	18	0	1	51	2.3
SO2	2208	2172	98.4	2102	96.8	70	3.2	3.8	0	3	18	13	2	36	1.6
SO2_5	2208	2172	98.4	2040	93.9	132	6.1	6.5	0	3	18	13	2	36	1.6
WD	2208	2189	99.1	0	0.0	2189	100.0		0	0	18	0	1	19	0.9
WS	2208	2189	99.1	0	0.0	2189	100.0	6.8	0	0	18	0	1	19	0.9

SITE=Bear Paw - MGP #5

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2206	99.9	0	0.0	2206	100.0		0	0	1	0	1	2	0.1
SO2	2208	2189	99.1	2106	96.2	83	3.8	3.4	0	3	1	12	3	19	0.9
SO2_5	2208	2189	99.1	1937	88.5	252	11.5	3.8	0	3	1	12	3	19	0.9
WD	2208	2206	99.9	0	0.0	2206	100.0		0	0	1	0	1	2	0.1
WS	2208	2206	99.9	0	0.0	2206	100.0	9.8	0	0	1	0	1	2	0.1

SITE=Beulah - North

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2185	99.0	0	0.0	2185	100.0		0	0	20	0	0	23	1.0
CON PM10	1814	1782	98.2	32	1.8	1782	100.0	17.9	0	1	16	6	0	32	1.8
CON PM25	2208	2157	97.7	51	2.4	2154	99.9	8.1	0	0	20	7	0	51	2.3
DTEMP	2208	2185	99.0	0	0.0	2185	100.0		0	0	20	0	0	23	1.0
NH3	2208	2146	97.2	718	33.5	1428	66.5	3.6	0	0	20	39	0	62	2.8
NO	2208	2161	97.9	1590	73.6	571	26.4	2.4	0	0	20	24	0	47	2.1
NO2	2208	2161	97.9	160	7.4	2001	92.6	3.0	0	0	20	24	0	47	2.1
O3	2208	2165	98.1	0	0.0	2165	100.0	35.9	0	0	20	20	0	43	1.9
SO2	2208	2168	98.2	1785	82.3	383	17.7	5.7	0	0	20	17	0	40	1.8
SO2_5	2208	2168	98.2	1581	72.9	587	27.1	8.8	0	0	20	17	0	40	1.8
SR	2208	2185	99.0	0	0.0	2185	100.0		0	0	20	0	0	23	1.0
WD	2208	2185	99.0	0	0.0	2185	100.0		0	0	20	0	0	23	1.0
WS	2208	2185	99.0	0	0.0	2185	100.0	10.9	0	0	20	0	0	23	1.0

SITE=Bismarck Residential

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2208	100.0	0	0.0	2208	100.0		0	0	0	0	0	0	0.0
CON PM10	2208	2188	99.1	20	0.9	2188	100.0	19.4	0	2	0	7	0	20	0.9
CON PM25	2208	2188	99.1	20	0.9	2187	100.0	5.7	0	2	0	7	0	20	0.9
NO	2208	1956	88.6	457	23.4	1499	76.6	1.4	0	0	0	22	0	252	11.4
NO2	2208	1956	88.6	0	0.0	1956	100.0	5.4	0	0	0	22	0	252	11.4
O3	2203	2020	91.7	8	0.4	2012	99.6	32.6	0	2	0	13	0	183	8.3
SO2	2208	2181	98.8	1882	86.3	299	13.7	3.4	0	0	0	15	0	27	1.2
SO2_5	2208	2181	98.8	1815	83.2	366	16.8	4.3	0	0	0	15	0	27	1.2

Data Recovery

SITE=Bismarck Residential (continued)

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
WD	2208	2208	100.0	0	0.0	2208	100.0		0	0	0	0	0	0	0.0
WS	2208	2208	100.0	0	0.0	2208	100.0	9.4	0	0	0	0	0	0	0.0

SITE=DGC #12

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2206	99.9	0	0.0	2206	100.0		0	0	1	0	0	2	0.1
NO	2208	2187	99.0	1876	85.8	311	14.2	2.3	0	2	1	13	3	21	1.0
NO2	2208	2187	99.0	165	7.5	2022	92.5	3.0	0	2	1	13	3	21	1.0
SO2	2208	2196	99.5	1827	83.2	369	16.8	4.9	0	0	1	8	2	12	0.5
WD	2208	2206	99.9	0	0.0	2206	100.0		0	0	1	0	0	2	0.1
WS	2208	2206	99.9	0	0.0	2206	100.0	9.8	0	0	1	0	0	2	0.1

SITE=DGC #14

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
SO2	2208	2192	99.3	1880	85.8	312	14.2	5.6	0	2	0	11	2	16	0.7

SITE=DGC #16

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
SO2	2208	2194	99.4	1734	79.0	460	21.0	6.3	0	2	0	10	2	14	0.6

SITE=DGC #17

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
NO	2208	2155	97.6	1815	84.2	340	15.8	1.9	34	2	0	9	4	53	2.4
NO2	2208	2154	97.6	440	20.4	1714	79.6	2.6	35	2	0	9	4	54	2.4
SO2	2208	2197	99.5	1876	85.4	321	14.6	5.8	0	2	0	7	2	11	0.5

SITE=Dunn Center

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2198	99.5	0	0.0	2198	100.0		0	0	10	0	0	10	0.5
CON PM10	2208	2171	98.3	37	1.7	2171	100.0	18.4	0	3	10	9	0	37	1.7
CON PM25	2208	2171	98.3	37	1.7	2169	99.9	5.2	0	3	10	9	0	37	1.7
DTEMP	2208	2198	99.5	0	0.0	2198	100.0		0	0	10	0	0	10	0.5
NO	2208	2074	93.9	1102	53.1	972	46.9	1.6	99	2	10	23	0	134	6.1

Data Recovery

SITE=Dunn Center (continued)

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
NO2	2208	2074	93.9	154	7.4	1920	92.6	2.3	99	2	10	23	0	134	6.1
O3	2208	2182	98.8	41	1.9	2141	98.1	30.8	0	0	10	16	0	26	1.2
SO2	2208	2175	98.5	2045	94.0	130	6.0	3.4	0	2	10	21	0	33	1.5
SO2_5	2208	2175	98.5	1927	88.6	248	11.4	3.7	0	2	10	21	0	33	1.5
SR	2208	2198	99.5	0	0.0	2198	100.0		0	0	10	0	0	10	0.5
WD	2208	2198	99.5	0	0.0	2198	100.0		0	0	10	0	0	10	0.5
WS	2208	2198	99.5	0	0.0	2198	100.0	9.2	0	0	10	0	0	10	0.5

SITE=Fargo NW

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2208	100.0	0	0.0	2208	100.0		0	0	0	0	0	0	0.0
CON PM10	2207	2192	99.3	15	0.7	2192	100.0	21.5	0	0	0	7	0	15	0.7
CON PM25	2208	2193	99.3	15	0.7	2183	99.5	6.2	0	2	0	7	0	15	0.7
DTEMP	2208	2208	100.0	0	0.0	2208	100.0		0	0	0	0	0	0	0.0
NO	2208	2187	99.0	1515	69.3	672	30.7	4.4	0	0	0	21	0	21	1.0
NO2	2208	2187	99.0	1	0.0	2186	100.0	4.5	0	0	0	21	0	21	1.0
O3	2208	2193	99.3	15	0.7	2178	99.3	28.7	0	0	0	15	0	15	0.7
SO2	2208	2190	99.2	2181	99.6	9	0.4	2.3	0	0	0	18	0	18	0.8
SO2_5	2208	2190	99.2	2137	97.6	53	2.4	2.9	0	0	0	18	0	18	0.8
SR	2208	2207	100.0	0	0.0	2207	100.0		0	1	0	0	0	1	0.0
WD	2208	2208	100.0	0	0.0	2208	100.0		0	0	0	0	0	0	0.0
WS	2208	2208	100.0	0	0.0	2208	100.0	9.7	0	0	0	0	0	0	0.0

SITE=Hannover

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2204	99.8	0	0.0	2204	100.0		0	0	4	0	0	4	0.2
CON PM25	2208	2185	99.0	23	1.1	2184	100.0	8.2	0	0	4	5	0	23	1.0
NO	2208	2181	98.8	1495	68.5	686	31.5	1.5	0	4	4	19	0	27	1.2
NO2	2208	2181	98.8	235	10.8	1946	89.2	2.4	0	4	4	19	0	27	1.2
O3	2208	2189	99.1	0	0.0	2189	100.0	36.6	0	1	4	14	0	19	0.9
SO2	2208	2187	99.0	1724	78.8	463	21.2	6.1	0	3	4	14	0	21	1.0
SO2_5	2208	2188	99.1	1492	68.2	696	31.8	9.0	0	3	3	14	0	20	0.9
WD	2208	2204	99.8	0	0.0	2204	100.0		0	0	4	0	0	4	0.2
WS	2208	2204	99.8	0	0.0	2204	100.0	14.3	0	0	4	0	0	4	0.2

SITE=Hess - Tioga #1

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2206	99.9	0	0.0	2206	100.0		0	0	0	0	2	2	0.1
SO2	2208	2157	97.7	1944	90.1	213	9.9	3.2	3	3	0	0	3	51	2.3

Data Recovery

SITE=Hess - Tioga #1 (continued)

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
SO2_5	2208	2157	97.7	1769	82.0	388	18.0	5.6	3	3	0	0	3	51	2.3
WD	2208	2206	99.9	0	0.0	2206	100.0		0	0	0	0	2	2	0.1
WS	2208	2206	99.9	0	0.0	2206	100.0	10.2	0	0	0	0	2	2	0.1

SITE=Hess - Tioga #3

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
SO2	2208	2048	92.8	1617	79.0	431	21.0	7.6	14	14	13	0	2	160	7.2
SO2_5	2208	2048	92.8	1156	56.4	892	43.6	13.2	14	14	13	0	2	160	7.2

SITE=Lostwood NWR

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2199	99.6	0	0.0	2199	100.0		0	0	9	0	0	9	0.4
CON PM10	2206	2181	98.9	25	1.1	2181	100.0	15.9	0	0	9	13	0	25	1.1
CON PM25	2208	2182	98.8	26	1.2	2178	99.8	4.7	0	0	9	13	0	26	1.2
DTEMP	2208	2199	99.6	0	0.0	2199	100.0		0	0	9	0	0	9	0.4
NO	2208	2184	98.9	1664	76.2	520	23.8	1.4	0	0	9	15	0	24	1.1
NO2	2208	2183	98.9	751	34.4	1432	65.6	1.6	0	0	9	16	0	25	1.1
O3	2208	2188	99.1	0	0.0	2188	100.0	34.6	0	0	9	11	0	20	0.9
SO2	2208	2187	99.0	1896	86.7	291	13.3	3.7	0	0	9	12	0	21	1.0
SO2_5	2208	2188	99.1	1738	79.4	450	20.6	5.3	0	0	9	11	0	20	0.9
SR	2208	2199	99.6	0	0.0	2199	100.0		0	0	9	0	0	9	0.4
WD	2208	2199	99.6	0	0.0	2199	100.0		0	0	9	0	0	9	0.4
WS	2208	2199	99.6	0	0.0	2199	100.0	10.0	0	0	9	0	0	9	0.4

SITE=TRNP - NU

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2208	100.0	0	0.0	2208	100.0		0	0	0	0	0	0	0.0
CON PM10	2207	2190	99.2	17	0.8	2190	100.0	14.8	0	0	0	12	2	17	0.8
CON PM25	2208	2192	99.3	16	0.7	2161	98.6	4.6	0	0	0	12	2	16	0.7
NO	2208	2190	99.2	1299	59.3	891	40.7	1.1	0	1	0	13	3	18	0.8
NO2	2208	2190	99.2	372	17.0	1818	83.0	1.4	0	1	0	13	3	18	0.8
O3	2208	2195	99.4	0	0.0	2195	100.0	36.3	0	0	0	11	2	13	0.6
SO2	2208	2196	99.5	2117	96.4	79	3.6	3.1	0	0	0	9	3	12	0.5
SO2_5	2208	2196	99.5	2056	93.6	140	6.4	3.1	0	0	0	9	3	12	0.5
WD	2208	2206	99.9	0	0.0	2206	100.0		0	0	0	0	2	2	0.1
WS	2208	2206	99.9	0	0.0	2206	100.0	7.0	0	0	0	0	2	2	0.1

Data Recovery

SITE=TRNP - SU

PARM	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	CALB	POWR	QA_CHK	AUDT	VTOTAL	P_VOID
ATEMP	2208	2057	93.2	0	0.0	2057	100.0		7	0	144	0	0	151	6.8
CON PM25	2208	2179	98.7	29	1.3	2150	98.7	8.5	0	0	0	8	1	29	1.3
O3	2208	2198	99.5	0	0.0	2198	100.0	39.3	0	0	0	9	1	10	0.5
SO2	2208	2198	99.5	2161	98.3	37	1.7	3.0	0	0	0	9	1	10	0.5
SO2_5	2208	2198	99.5	2083	94.8	115	5.2	2.9	0	0	0	9	1	10	0.5
SR	2208	1752	79.3	0	0.0	1752	100.0		312	0	144	0	0	456	20.7
WD	2208	2064	93.5	0	0.0	2064	100.0		0	0	144	0	0	144	6.5
WS	2208	2064	93.5	0	0.0	2064	100.0	11.0	0	0	144	0	0	144	6.5

Data Recovery

PARM= FRM25

SITE	POSS	VAL	RECVRY	L_MDV	PL_MDV	G_MDV	PG_MDV	MEAN	MALF	COLL	BIRD	LAB	VTOTAL	P_VOID
Beulah - North	15	14	93.3	1	7.1	13	92.9	7.9	0	0	0	0	1	6.7
Bismarck Residential	31	31	100.0	1	3.2	30	96.8	8.3	0	0	0	0	0	0.0
Fargo NW	31	31	100.0	1	3.2	30	96.8	8.8	0	0	0	0	0	0.0
TRNP - NU	15	14	93.3	0	0.0	14	100.0	6.5	0	0	0	0	1	6.7
TRNP - SU	15	15	100.0	0	0.0	15	100.0	7.3	0	0	0	0	0	0.0

DATA VOID PERIODS

SITE	PARAMETER	START DATE-HR	END DATE-HR	TOTAL HOURS	REASON FOR DATA VOID
Bear Paw - MGP #3	SO2	07/05-00	07/05-06	7	Power Failure
		07/06-09	07/06-10	2	Precision/Zero/Span
		07/17-09	07/17-10	2	Precision/Zero/Span
		07/29-00	07/29-08	9	Power Failure
		07/30-08	07/30-09	2	Precision/Zero/Span
		08/10-06	08/10-07	2	Precision/Zero/Span
		08/10-15	08/10-16	2	Q C Audit
		08/15-16	08/15-17	2	Power Failure
		08/23-12	08/23-12	1	Precision/Zero/Span
		08/23-13	08/23-15	3	Multi-point Calibration
		09/05-06	09/05-07	2	Precision/Zero/Span
		09/19-09	09/19-10	2	Precision/Zero/Span
Bear Paw - MGP #3	SO2_5 Max	07/05-00	07/05-06	7	Power Failure
		07/06-09	07/06-10	2	Precision/Zero/Span
		07/17-09	07/17-10	2	Precision/Zero/Span
		07/29-00	07/29-08	9	Power Failure
		07/30-08	07/30-09	2	Precision/Zero/Span
		08/10-06	08/10-07	2	Precision/Zero/Span
		08/10-15	08/10-16	2	Q C Audit
		08/15-16	08/15-17	2	Power Failure
		08/23-12	08/23-12	1	Precision/Zero/Span
		08/23-13	08/23-15	3	Multi-point Calibration
		09/05-06	09/05-07	2	Precision/Zero/Span
		09/19-09	09/19-10	2	Precision/Zero/Span
Bear Paw - MGP #3	WS	07/05-00	07/05-06	7	Power Failure
		07/29-00	07/29-08	9	Power Failure
		08/10-10	08/10-10	1	Q C Audit
		08/15-16	08/15-17	2	Power Failure
Bear Paw - MGP #3	WD	07/05-00	07/05-06	7	Power Failure
		07/29-00	07/29-08	9	Power Failure
		08/10-10	08/10-10	1	Q C Audit
		08/15-16	08/15-17	2	Power Failure
Bear Paw - MGP #3	Sigma	07/05-00	07/05-06	7	Power Failure
		07/29-00	07/29-08	9	Power Failure
		08/10-10	08/10-10	1	Q C Audit
		08/15-16	08/15-17	2	Power Failure
Bear Paw - MGP #3	Temp	07/05-00	07/05-06	7	Power Failure
		07/29-00	07/29-08	9	Power Failure
		08/10-10	08/10-10	1	Q C Audit
		08/15-16	08/15-17	2	Power Failure
		08/24-04	08/25-11	32	Machine Malfunction
Bear Paw - MGP #5	SO2	07/06-08	07/06-08	1	Precision/Zero/Span
		07/17-11	07/17-12	2	Precision/Zero/Span
		07/30-07	07/30-08	2	Precision/Zero/Span
		08/10-08	08/10-09	2	Precision/Zero/Span

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Bear Paw - MGP #5	SO2	08/10-12	08/10-14	3	Q C Audit
		08/15-17	08/15-17	1	Power Failure
		08/23-09	08/23-09	1	Precision/Zero/Span
		08/23-10	08/23-12	3	Multi-point Calibration
		09/05-08	09/05-09	2	Precision/Zero/Span
		09/19-08	09/19-09	2	Precision/Zero/Span
Bear Paw - MGP #5	SO2_5 Max	07/06-08	07/06-08	1	Precision/Zero/Span
		07/17-11	07/17-12	2	Precision/Zero/Span
		07/30-07	07/30-08	2	Precision/Zero/Span
		08/10-08	08/10-09	2	Precision/Zero/Span
		08/10-12	08/10-14	3	Q C Audit
		08/15-17	08/15-17	1	Power Failure
		08/23-09	08/23-09	1	Precision/Zero/Span
		08/23-10	08/23-12	3	Multi-point Calibration
		09/05-08	09/05-09	2	Precision/Zero/Span
		09/19-08	09/19-09	2	Precision/Zero/Span
Bear Paw - MGP #5	WS	08/10-11	08/10-11	1	Q C Audit
		08/15-17	08/15-17	1	Power Failure
Bear Paw - MGP #5	WD	08/10-11	08/10-11	1	Q C Audit
		08/15-17	08/15-17	1	Power Failure
Bear Paw - MGP #5	Sigma	08/10-11	08/10-11	1	Q C Audit
		08/15-17	08/15-17	1	Power Failure
Bear Paw - MGP #5	Temp	08/10-11	08/10-11	1	Q C Audit
		08/15-17	08/15-17	1	Power Failure
Beulah - North	SO2	07/01-18	07/01-19	2	Power Failure
		07/05-08	07/05-09	2	Precision/Zero/Span
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/18-07	07/18-09	3	Precision/Zero/Span
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		07/31-07	07/31-08	2	Precision/Zero/Span
		08/15-07	08/15-09	3	Precision/Zero/Span
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-07	08/28-09	3	Precision/Zero/Span
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
		09/13-08	09/13-09	2	Precision/Zero/Span
		09/25-07	09/25-08	2	Precision/Zero/Span
Beulah - North	SO2_5 Max	07/01-18	07/01-19	2	Power Failure
		07/05-08	07/05-09	2	Precision/Zero/Span
		07/12-23	07/13-00	2	Power Failure

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Beulah - North	SO2_5 Max	07/17-07	07/17-09	3	Collection Error
		07/18-07	07/18-09	3	Precision/Zero/Span
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		07/31-07	07/31-08	2	Precision/Zero/Span
		08/15-07	08/15-09	3	Precision/Zero/Span
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-07	08/28-09	3	Precision/Zero/Span
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
		09/13-08	09/13-09	2	Precision/Zero/Span
		09/25-07	09/25-08	2	Precision/Zero/Span
Beulah - North	NO	07/01-18	07/01-19	2	Power Failure
		07/05-08	07/05-09	2	Precision/Zero/Span
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/18-07	07/18-10	4	Precision/Zero/Span
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		07/31-07	07/31-09	3	Precision/Zero/Span
		08/15-07	08/15-10	4	Precision/Zero/Span
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-07	08/28-11	5	Precision/Zero/Span
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
		09/13-08	09/13-10	3	Precision/Zero/Span
		09/25-07	09/25-09	3	Precision/Zero/Span
Beulah - North	NO2	07/01-18	07/01-19	2	Power Failure
		07/05-08	07/05-09	2	Precision/Zero/Span
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/18-07	07/18-10	4	Precision/Zero/Span
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		07/31-07	07/31-09	3	Precision/Zero/Span
		08/15-07	08/15-10	4	Precision/Zero/Span
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-07	08/28-11	5	Precision/Zero/Span
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
		09/13-08	09/13-10	3	Precision/Zero/Span
		09/25-07	09/25-09	3	Precision/Zero/Span

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Beulah - North	NH3	07/01-18	07/01-19	2	Power Failure
		07/05-08	07/05-12	5	Precision/Zero/Span
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/18-07	07/18-11	5	Precision/Zero/Span
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		07/31-07	07/31-11	5	Precision/Zero/Span
		08/15-07	08/15-13	7	Precision/Zero/Span
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-07	08/28-12	6	Precision/Zero/Span
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
		09/13-08	09/13-13	6	Precision/Zero/Span
		09/25-07	09/25-11	5	Precision/Zero/Span
Beulah - North	O3	07/01-18	07/01-19	2	Power Failure
		07/05-09	07/05-11	3	Precision/Zero/Span
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/18-10	07/18-11	2	Precision/Zero/Span
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		07/31-09	07/31-11	3	Precision/Zero/Span
		08/15-09	08/15-11	3	Precision/Zero/Span
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-10	08/28-12	3	Precision/Zero/Span
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
		09/13-10	09/13-12	3	Precision/Zero/Span
		09/25-09	09/25-11	3	Precision/Zero/Span
Beulah - North	WS	07/01-18	07/01-19	2	Power Failure
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
Beulah - North	WD	07/01-18	07/01-19	2	Power Failure
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/21-13	07/21-14	2	Power Failure

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Beulah - North	WD	07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
Beulah - North	WSV	07/01-18	07/01-19	2	Power Failure
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
Beulah - North	WDV	07/01-18	07/01-19	2	Power Failure
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
Beulah - North	Temp	07/01-18	07/01-19	2	Power Failure
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
Beulah - North	Temp Dif.	07/01-18	07/01-19	2	Power Failure
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Beulah - North	Solar Rad	07/01-18	07/01-19	2	Power Failure
		07/12-23	07/13-00	2	Power Failure
		07/17-07	07/17-09	3	Collection Error
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
Beulah - North	BP	07/17-09	07/17-09	1	Calibration
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
Beulah - North	Cont. Pm10	07/17-09	07/17-09	1	Calibration
		07/18-08	07/18-08	1	Precision Check
		07/18-09	07/18-09	1	Collection Error
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		07/31-07	07/31-07	1	Precision Check
		07/31-08	07/31-08	1	Collection Error
		08/15-08	08/15-08	1	Precision Check
		08/15-09	08/15-09	1	Collection Error
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/17-06	08/17-07	2	Collection Error
		08/28-08	08/28-08	1	Precision Check
		08/28-09	08/28-09	1	Collection Error
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
		09/13-09	09/13-09	1	Precision Check
		09/13-10	09/13-10	1	Collection Error
		09/25-08	09/25-08	1	Precision Check
		09/25-09	09/25-10	2	Collection Error
Beulah - North	PM2.5	07/28-00	07/28-23	24	Sample Time out of Limits
Beulah - North	Cont. PM2.5	07/01-18	07/01-19	2	Power Failure
		07/01-20	07/01-20	1	Collection Error
		07/05-08	07/05-08	1	Precision Check
		07/05-09	07/05-09	1	Collection Error
		07/07-14	07/07-19	6	Collection Error
		07/11-16	07/11-19	4	Collection Error
		07/12-23	07/13-00	2	Power Failure

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Beulah - North	Cont. PM2.5	07/17-07	07/17-09	3	Collection Error
		07/18-08	07/18-08	1	Precision Check
		07/18-09	07/18-09	1	Collection Error
		07/21-13	07/21-14	2	Power Failure
		07/28-02	07/28-04	3	Power Failure
		07/28-19	07/28-19	1	Power Failure
		07/31-07	07/31-07	1	Precision Check
		07/31-08	07/31-08	1	Collection Error
		08/15-08	08/15-08	1	Precision Check
		08/15-09	08/15-09	1	Collection Error
		08/16-04	08/16-04	1	Power Failure
		08/16-23	08/17-05	7	Power Failure
		08/17-06	08/17-07	2	Collection Error
		08/28-08	08/28-08	1	Precision Check
		08/28-09	08/28-09	1	Collection Error
		08/28-13	08/28-13	1	Power Failure
		08/29-22	08/29-22	1	Power Failure
		09/13-09	09/13-09	1	Precision Check
		09/13-10	09/13-10	1	Collection Error
		09/25-08	09/25-08	1	Precision Check
		09/25-09	09/25-10	2	Collection Error
Bismarck Residential	SO2	07/07-07	07/07-08	2	Precision/Zero/Span
		07/15-12	07/15-14	3	Construction/repair in Site Area
		07/20-07	07/20-08	2	Precision/Zero/Span
		07/21-09	07/21-14	6	Construction/repair in Site Area
		08/04-07	08/04-08	2	Precision/Zero/Span
		08/18-06	08/18-07	2	Precision/Zero/Span
		09/01-07	09/01-09	3	Precision/Zero/Span
		09/07-09	09/07-11	3	Construction/repair in Site Area
		09/15-08	09/15-09	2	Precision/Zero/Span
		09/29-08	09/29-09	2	Precision/Zero/Span
Bismarck Residential	SO2_5 Max	07/07-07	07/07-08	2	Precision/Zero/Span
		07/15-12	07/15-14	3	Construction/repair in Site Area
		07/20-07	07/20-08	2	Precision/Zero/Span
		07/21-09	07/21-14	6	Construction/repair in Site Area
		08/04-07	08/04-08	2	Precision/Zero/Span
		08/18-06	08/18-07	2	Precision/Zero/Span
		09/01-07	09/01-09	3	Precision/Zero/Span
		09/07-09	09/07-11	3	Construction/repair in Site Area
		09/15-08	09/15-09	2	Precision/Zero/Span
		09/29-08	09/29-09	2	Precision/Zero/Span
Bismarck Residential	NO	07/07-07	07/07-09	3	Precision/Zero/Span
		07/13-05	07/13-07	3	Construction/repair in Site Area
		07/14-05	07/14-09	5	Construction/repair in Site Area
		07/15-12	07/15-18	7	Construction/repair in Site Area
		07/19-06	07/19-08	3	Construction/repair in Site Area
		07/20-05	07/20-06	2	Construction/repair in Site Area
		07/20-07	07/20-09	3	Precision/Zero/Span

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Bismarck Residential	NO	07/21-05	07/21-10	6	Construction/repair in Site Area
		07/24-07	07/24-09	3	Construction/repair in Site Area
		07/25-05	07/25-11	7	Construction/repair in Site Area
		07/26-05	07/26-09	5	Construction/repair in Site Area
		07/28-06	07/28-09	4	Construction/repair in Site Area
		08/01-06	08/01-10	5	Construction/repair in Site Area
		08/02-06	08/02-08	3	Construction/repair in Site Area
		08/03-05	08/03-09	5	Construction/repair in Site Area
		08/04-07	08/04-09	3	Precision/Zero/Span
		08/05-09	08/05-11	3	Construction/repair in Site Area
		08/09-07	08/09-09	3	Construction/repair in Site Area
		08/09-12	08/09-16	5	Construction/repair in Site Area
		08/10-09	08/10-17	9	Construction/repair in Site Area
		08/11-06	08/11-17	12	Construction/repair in Site Area
		08/12-09	08/12-09	1	Construction/repair in Site Area
		08/12-11	08/12-13	3	Construction/repair in Site Area
		08/14-05	08/14-08	4	Construction/repair in Site Area
		08/15-07	08/15-17	11	Construction/repair in Site Area
		08/18-06	08/18-08	3	Precision/Zero/Span
		08/19-05	08/19-09	5	Construction/repair in Site Area
		08/19-14	08/19-16	3	Construction/repair in Site Area
		08/21-12	08/21-16	5	Construction/repair in Site Area
		08/22-07	08/22-10	4	Construction/repair in Site Area
		08/22-12	08/22-17	6	Construction/repair in Site Area
		08/23-05	08/23-08	4	Construction/repair in Site Area
		08/23-13	08/23-15	3	Construction/repair in Site Area
		08/29-07	08/29-17	11	Construction/repair in Site Area
		08/30-06	08/30-17	12	Construction/repair in Site Area
		09/01-05	09/01-06	2	Construction/repair in Site Area
		09/01-07	09/01-10	4	Precision/Zero/Span
		09/04-06	09/04-10	5	Construction/repair in Site Area
		09/05-06	09/05-09	4	Construction/repair in Site Area
		09/06-06	09/06-12	7	Construction/repair in Site Area
		09/07-06	09/07-10	5	Construction/repair in Site Area
		09/09-08	09/09-12	5	Construction/repair in Site Area
		09/10-07	09/10-16	10	Construction/repair in Site Area
		09/11-06	09/11-09	4	Construction/repair in Site Area
		09/12-06	09/12-09	4	Construction/repair in Site Area
		09/13-06	09/13-09	4	Construction/repair in Site Area
		09/14-06	09/14-08	3	Construction/repair in Site Area
		09/15-06	09/15-07	2	Construction/repair in Site Area
		09/15-08	09/15-10	3	Precision/Zero/Span
		09/20-05	09/20-10	6	Construction/repair in Site Area
		09/20-13	09/20-15	3	Construction/repair in Site Area
		09/21-06	09/21-09	4	Construction/repair in Site Area
		09/29-08	09/29-10	3	Precision/Zero/Span
Bismarck Residential	NO2	07/07-07	07/07-09	3	Precision/Zero/Span
		07/13-05	07/13-07	3	Construction/repair in Site Area
		07/14-05	07/14-09	5	Construction/repair in Site Area
		07/15-12	07/15-18	7	Construction/repair in Site Area

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Bismarck Residential	NO2	07/19-06	07/19-08	3	Construction/repair in Site Area
		07/20-05	07/20-06	2	Construction/repair in Site Area
		07/20-07	07/20-09	3	Precision/Zero/Span
		07/21-05	07/21-10	6	Construction/repair in Site Area
		07/24-07	07/24-09	3	Construction/repair in Site Area
		07/25-05	07/25-11	7	Construction/repair in Site Area
		07/26-05	07/26-09	5	Construction/repair in Site Area
		07/28-06	07/28-09	4	Construction/repair in Site Area
		08/01-06	08/01-10	5	Construction/repair in Site Area
		08/02-06	08/02-08	3	Construction/repair in Site Area
		08/03-05	08/03-09	5	Construction/repair in Site Area
		08/04-07	08/04-09	3	Precision/Zero/Span
		08/05-09	08/05-11	3	Construction/repair in Site Area
		08/09-07	08/09-09	3	Construction/repair in Site Area
		08/09-12	08/09-16	5	Construction/repair in Site Area
		08/10-09	08/10-17	9	Construction/repair in Site Area
		08/11-06	08/11-17	12	Construction/repair in Site Area
		08/12-09	08/12-09	1	Construction/repair in Site Area
		08/12-11	08/12-13	3	Construction/repair in Site Area
		08/14-05	08/14-08	4	Construction/repair in Site Area
		08/15-07	08/15-17	11	Construction/repair in Site Area
		08/18-06	08/18-08	3	Precision/Zero/Span
		08/19-05	08/19-09	5	Construction/repair in Site Area
		08/19-14	08/19-16	3	Construction/repair in Site Area
		08/21-12	08/21-16	5	Construction/repair in Site Area
		08/22-07	08/22-10	4	Construction/repair in Site Area
		08/22-12	08/22-17	6	Construction/repair in Site Area
		08/23-05	08/23-08	4	Construction/repair in Site Area
		08/23-13	08/23-15	3	Construction/repair in Site Area
		08/29-07	08/29-17	11	Construction/repair in Site Area
		08/30-06	08/30-17	12	Construction/repair in Site Area
		09/01-05	09/01-06	2	Construction/repair in Site Area
		09/01-07	09/01-10	4	Precision/Zero/Span
		09/04-06	09/04-10	5	Construction/repair in Site Area
		09/05-06	09/05-09	4	Construction/repair in Site Area
		09/06-06	09/06-12	7	Construction/repair in Site Area
		09/07-06	09/07-10	5	Construction/repair in Site Area
		09/09-08	09/09-12	5	Construction/repair in Site Area
		09/10-07	09/10-16	10	Construction/repair in Site Area
		09/11-06	09/11-09	4	Construction/repair in Site Area
		09/12-06	09/12-09	4	Construction/repair in Site Area
		09/13-06	09/13-09	4	Construction/repair in Site Area
		09/14-06	09/14-08	3	Construction/repair in Site Area
		09/15-06	09/15-07	2	Construction/repair in Site Area
		09/15-08	09/15-10	3	Precision/Zero/Span
		09/20-05	09/20-10	6	Construction/repair in Site Area
		09/20-13	09/20-15	3	Construction/repair in Site Area
		09/21-06	09/21-09	4	Construction/repair in Site Area
		09/29-08	09/29-10	3	Precision/Zero/Span
Bismarck Residential	O3	07/07-09	07/07-09	1	Precision/Zero/Span

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Bismarck Residential	O3	07/07-10	07/07-11	2	Calibration
		07/07-13	07/07-17	5	Construction/repair in Site Area
		07/12-15	07/12-18	4	Construction/repair in Site Area
		07/13-05	07/13-07	3	Construction/repair in Site Area
		07/14-05	07/14-09	5	Construction/repair in Site Area
		07/15-12	07/15-18	7	Construction/repair in Site Area
		07/18-08	07/18-13	6	Construction/repair in Site Area
		07/19-06	07/19-08	3	Construction/repair in Site Area
		07/20-05	07/20-06	2	Construction/repair in Site Area
		07/20-09	07/20-10	2	Precision/Zero/Span
		07/21-05	07/21-10	6	Construction/repair in Site Area
		07/24-07	07/24-09	3	Construction/repair in Site Area
		07/25-05	07/25-11	7	Construction/repair in Site Area
		07/26-05	07/26-09	5	Construction/repair in Site Area
		07/28-06	07/28-09	4	Construction/repair in Site Area
		08/01-06	08/01-10	5	Construction/repair in Site Area
		08/02-06	08/02-08	3	Construction/repair in Site Area
		08/03-05	08/03-09	5	Construction/repair in Site Area
		08/04-09	08/04-10	2	Precision/Zero/Span
		08/05-09	08/05-11	3	Construction/repair in Site Area
		08/09-07	08/09-09	3	Construction/repair in Site Area
		08/09-12	08/09-16	5	Construction/repair in Site Area
		08/14-05	08/14-08	4	Construction/repair in Site Area
		08/15-07	08/15-17	11	Construction/repair in Site Area
		08/18-08	08/18-09	2	Precision/Zero/Span
		08/19-05	08/19-09	5	Construction/repair in Site Area
		08/23-05	08/23-08	4	Construction/repair in Site Area
		08/30-09	08/30-17	9	Construction/repair in Site Area
		09/01-05	09/01-07	3	Construction/repair in Site Area
		09/01-10	09/01-11	2	Precision/Zero/Span
		09/04-06	09/04-10	5	Construction/repair in Site Area
		09/05-06	09/05-09	4	Construction/repair in Site Area
		09/06-06	09/06-10	5	Construction/repair in Site Area
		09/07-06	09/07-10	5	Construction/repair in Site Area
		09/12-06	09/12-09	4	Construction/repair in Site Area
		09/13-06	09/13-09	4	Construction/repair in Site Area
		09/14-06	09/14-08	3	Construction/repair in Site Area
		09/15-10	09/15-11	2	Precision/Zero/Span
		09/15-12	09/15-16	5	Construction/repair in Site Area
		09/20-05	09/20-10	6	Construction/repair in Site Area
		09/20-13	09/20-15	3	Construction/repair in Site Area
		09/21-06	09/21-09	4	Construction/repair in Site Area
		09/29-10	09/29-11	2	Precision/Zero/Span
Bismarck Residential	BP	09/29-12	09/29-13	2	Calibration
Bismarck Residential	Cont. PM10	07/07-10	07/07-10	1	Precision Check
		07/07-11	07/07-11	1	Collection Error
		07/20-09	07/20-09	1	Precision Check
		07/20-10	07/20-10	1	Collection Error
		08/04-09	08/04-09	1	Precision Check

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Bismarck Residential	Cont. PM10	08/04-10	08/04-10	1	Collection Error
		08/07-07	08/07-08	2	Collection Error
		08/18-08	08/18-08	1	Precision Check
		08/18-09	08/18-09	1	Collection Error
		09/01-08	09/01-09	2	Collection Error
		09/01-11	09/01-11	1	Precision Check
		09/01-12	09/01-12	1	Collection Error
		09/15-11	09/15-11	1	Precision Check
		09/15-12	09/15-12	1	Collection Error
		09/29-11	09/29-11	1	Precision Check
		09/29-12	09/29-13	2	Calibration
		09/29-14	09/29-14	1	Collection Error
Bismarck Residential	Cont. PM2.5	07/07-10	07/07-10	1	Precision Check
		07/07-11	07/07-11	1	Collection Error
		07/20-09	07/20-09	1	Precision Check
		07/20-10	07/20-10	1	Collection Error
		08/04-09	08/04-09	1	Precision Check
		08/04-10	08/04-10	1	Collection Error
		08/07-07	08/07-08	2	Collection Error
		08/18-08	08/18-08	1	Precision Check
		08/18-09	08/18-09	1	Collection Error
		09/01-08	09/01-09	2	Collection Error
		09/01-11	09/01-11	1	Precision Check
		09/01-12	09/01-12	1	Collection Error
		09/15-11	09/15-11	1	Precision Check
		09/15-12	09/15-12	1	Collection Error
		09/29-11	09/29-11	1	Precision Check
		09/29-12	09/29-13	2	Calibration
		09/29-14	09/29-14	1	Collection Error
DGC #12	SO2	07/10-11	07/10-11	1	Precision/Zero/Span
		07/10-12	07/10-12	1	Miscellaneous Void
		07/26-10	07/26-11	2	Precision/Zero/Span
		08/07-11	08/07-12	2	Precision/Zero/Span
		08/22-07	08/22-07	1	Precision/Zero/Span
		09/05-08	09/05-08	1	Precision/Zero/Span
		09/07-11	09/07-12	2	Q C Audit
		09/18-08	09/18-08	1	Precision/Zero/Span
		09/29-14	09/29-14	1	Power Failure
DGC #12	NO	07/10-12	07/10-12	1	Miscellaneous Void
		07/11-10	07/11-11	2	Precision/Zero/Span
		07/25-10	07/25-11	2	Precision/Zero/Span
		08/08-07	08/08-08	2	Precision/Zero/Span
		08/08-09	08/08-09	1	Maintenance/routine Repairs
		08/08-10	08/08-11	2	Multi-point Calibration
		08/22-10	08/22-11	2	Precision/Zero/Span
		09/05-07	09/05-08	2	Precision/Zero/Span
		09/08-06	09/08-08	3	Q C Audit
		09/18-10	09/18-11	2	Precision/Zero/Span

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
DGC #12	NO	09/21-12	09/21-12	1	Q C Control Points
		09/29-14	09/29-14	1	Power Failure
DGC #12	NO2	07/10-12	07/10-12	1	Miscellaneous Void
		07/11-10	07/11-11	2	Precision/Zero/Span
		07/25-10	07/25-11	2	Precision/Zero/Span
		08/08-07	08/08-08	2	Precision/Zero/Span
		08/08-09	08/08-09	1	Maintenance/routine Repairs
		08/08-10	08/08-11	2	Multi-point Calibration
		08/22-10	08/22-11	2	Precision/Zero/Span
		09/05-07	09/05-08	2	Precision/Zero/Span
		09/08-06	09/08-08	3	Q C Audit
		09/18-10	09/18-11	2	Precision/Zero/Span
		09/21-12	09/21-12	1	Q C Control Points
		09/29-14	09/29-14	1	Power Failure
DGC #12	WS	08/22-10	08/22-10	1	Multi-point Calibration
		09/29-14	09/29-14	1	Power Failure
DGC #12	WD	08/22-10	08/22-10	1	Multi-point Calibration
		09/29-14	09/29-14	1	Power Failure
DGC #12	Sigma	08/22-10	08/22-10	1	Multi-point Calibration
		09/29-14	09/29-14	1	Power Failure
DGC #12	Temp	08/22-10	08/22-10	1	Multi-point Calibration
		09/29-14	09/29-14	1	Power Failure
DGC #14	SO2	07/12-11	07/12-11	1	Precision/Zero/Span
		07/25-07	07/25-07	1	Precision/Zero/Span
		08/09-11	08/09-11	1	Precision/Zero/Span
		08/10-07	08/10-08	2	Q C Control Points
		08/10-09	08/10-09	1	Maintenance/routine Repairs
		08/10-10	08/10-11	2	Multi-point Calibration
		08/21-11	08/21-11	1	Precision/Zero/Span
		09/05-11	09/05-11	1	Precision/Zero/Span
		09/11-08	09/11-08	1	Q C Control Points
		09/12-07	09/12-08	2	Q C Audit
		09/15-10	09/15-11	2	Q C Control Points
		09/18-07	09/18-07	1	Precision/Zero/Span
DGC #16	SO2	07/05-11	07/05-12	2	Precision/Zero/Span
		07/18-11	07/18-11	1	Precision/Zero/Span
		08/02-11	08/02-11	1	Precision/Zero/Span
		08/15-10	08/15-10	1	Precision/Zero/Span
		08/15-11	08/15-12	2	Multi-point Calibration
		08/30-10	08/30-11	2	Precision/Zero/Span
		09/11-10	09/11-11	2	Q C Audit
		09/13-11	09/13-11	1	Precision/Zero/Span
		09/25-10	09/25-11	2	Precision/Zero/Span

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
DGC #17	SO2	07/06-07	07/06-07	1	Precision/Zero/Span
		07/18-12	07/18-12	1	Precision/Zero/Span
		07/31-11	07/31-11	1	Precision/Zero/Span
		08/16-10	08/16-10	1	Precision/Zero/Span
		08/16-11	08/16-12	2	Multi-point Calibration
		08/28-12	08/28-12	1	Precision/Zero/Span
		09/08-11	09/08-12	2	Q C Audit
		09/11-11	09/11-11	1	Precision/Zero/Span
		09/25-12	09/25-12	1	Precision/Zero/Span
DGC #17	NO	07/06-11	07/06-11	1	Precision/Zero/Span
		07/19-11	07/19-11	1	Precision/Zero/Span
		08/01-11	08/01-11	1	Precision/Zero/Span
		08/17-07	08/17-07	1	Precision/Zero/Span
		08/17-08	08/17-10	3	Maintenance/routine Repairs
		08/17-11	08/17-12	2	Multi-point Calibration
		08/29-11	08/29-11	1	Precision/Zero/Span
		09/11-06	09/11-09	4	Q C Audit
		09/11-11	09/11-11	1	Precision/Zero/Span
		09/26-11	09/26-12	2	Precision/Zero/Span
		09/28-00	09/29-09	34	Machine Malfunction
		09/29-10	09/29-10	1	Maintenance/routine Repairs
		09/29-11	09/29-11	1	Precision/Zero/Span
DGC #17	NO2	07/06-11	07/06-11	1	Precision/Zero/Span
		07/19-11	07/19-11	1	Precision/Zero/Span
		08/01-11	08/01-11	1	Precision/Zero/Span
		08/17-07	08/17-07	1	Precision/Zero/Span
		08/17-08	08/17-10	3	Maintenance/routine Repairs
		08/17-11	08/17-12	2	Multi-point Calibration
		08/29-11	08/29-11	1	Precision/Zero/Span
		09/11-06	09/11-09	4	Q C Audit
		09/11-11	09/11-11	1	Precision/Zero/Span
		09/26-11	09/26-12	2	Precision/Zero/Span
		09/28-00	09/29-09	34	Machine Malfunction
		09/29-10	09/29-10	1	Maintenance/routine Repairs
		09/29-11	09/29-11	1	Precision/Zero/Span
		09/29-16	09/29-16	1	Machine Malfunction
Dunn Center	SO2	07/06-08	07/06-09	2	Precision/Zero/Span
		07/12-22	07/13-00	3	Power Failure
		07/19-08	07/19-09	2	Precision/Zero/Span
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/02-08	08/02-09	2	Precision/Zero/Span
		08/02-10	08/02-11	2	Calibration
		08/07-14	08/07-15	2	Power Failure
		08/17-08	08/17-10	3	Precision/Zero/Span
		08/24-10	08/24-10	1	Power Failure
		08/29-08	08/29-11	4	Precision/Zero/Span
		09/14-08	09/14-11	4	Precision/Zero/Span

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Dunn Center	SO2	09/25-08	09/25-11	4	Precision/Zero/Span
Dunn Center	SO2_5 Max	07/06-08	07/06-09	2	Precision/Zero/Span
		07/12-22	07/13-00	3	Power Failure
		07/19-08	07/19-09	2	Precision/Zero/Span
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/02-08	08/02-09	2	Precision/Zero/Span
		08/02-10	08/02-11	2	Calibration
		08/07-14	08/07-15	2	Power Failure
		08/17-08	08/17-10	3	Precision/Zero/Span
		08/24-10	08/24-10	1	Power Failure
		08/29-08	08/29-11	4	Precision/Zero/Span
		09/14-08	09/14-11	4	Precision/Zero/Span
		09/25-08	09/25-11	4	Precision/Zero/Span
Dunn Center	NO	07/06-08	07/06-10	3	Precision/Zero/Span
		07/12-22	07/13-00	3	Power Failure
		07/19-08	07/19-10	3	Precision/Zero/Span
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/02-08	08/02-09	2	Precision/Zero/Span
		08/02-10	08/02-11	2	Calibration
		08/07-14	08/07-15	2	Power Failure
		08/13-05	08/17-07	99	Machine Malfunction
		08/17-08	08/17-11	4	Precision/Zero/Span
		08/24-10	08/24-10	1	Power Failure
		08/29-08	08/29-11	4	Precision/Zero/Span
		09/14-08	09/14-11	4	Precision/Zero/Span
		09/25-08	09/25-10	3	Precision/Zero/Span
Dunn Center	NO2	07/06-08	07/06-10	3	Precision/Zero/Span
		07/12-22	07/13-00	3	Power Failure
		07/19-08	07/19-10	3	Precision/Zero/Span
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/02-08	08/02-09	2	Precision/Zero/Span
		08/02-10	08/02-11	2	Calibration
		08/07-14	08/07-15	2	Power Failure
		08/13-05	08/17-07	99	Machine Malfunction
		08/17-08	08/17-11	4	Precision/Zero/Span
		08/24-10	08/24-10	1	Power Failure
		08/29-08	08/29-11	4	Precision/Zero/Span
		09/14-08	09/14-11	4	Precision/Zero/Span
		09/25-08	09/25-10	3	Precision/Zero/Span
Dunn Center	O3	07/06-10	07/06-11	2	Precision/Zero/Span
		07/12-22	07/13-00	3	Power Failure
		07/19-10	07/19-11	2	Precision/Zero/Span
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Dunn Center	O3	08/02-11	08/02-11	1	Precision/Zero/Span
		08/07-14	08/07-15	2	Power Failure
		08/17-11	08/17-12	2	Precision/Zero/Span
		08/24-10	08/24-10	1	Power Failure
		08/29-10	08/29-12	3	Precision/Zero/Span
		09/14-10	09/14-13	4	Precision/Zero/Span
		09/25-10	09/25-11	2	Precision/Zero/Span
Dunn Center	WS	07/12-22	07/13-00	3	Power Failure
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/07-14	08/07-15	2	Power Failure
		08/24-10	08/24-10	1	Power Failure
Dunn Center	WD	07/12-22	07/13-00	3	Power Failure
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/07-14	08/07-15	2	Power Failure
		08/24-10	08/24-10	1	Power Failure
Dunn Center	WSV	07/12-22	07/13-00	3	Power Failure
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/07-14	08/07-15	2	Power Failure
		08/24-10	08/24-10	1	Power Failure
Dunn Center	WDV	07/12-22	07/13-00	3	Power Failure
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/07-14	08/07-15	2	Power Failure
		08/24-10	08/24-10	1	Power Failure
Dunn Center	Temp	07/12-22	07/13-00	3	Power Failure
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/07-14	08/07-15	2	Power Failure
		08/24-10	08/24-10	1	Power Failure
Dunn Center	Temp Dif.	07/12-22	07/13-00	3	Power Failure
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/07-14	08/07-15	2	Power Failure
		08/24-10	08/24-10	1	Power Failure
Dunn Center	Solar Rad	07/12-22	07/13-00	3	Power Failure
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/07-14	08/07-15	2	Power Failure
		08/24-10	08/24-10	1	Power Failure
Dunn Center	BP	07/12-22	07/13-00	3	Power Failure

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Dunn Center	BP	07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/07-14	08/07-15	2	Power Failure
		08/21-09	08/21-11	3	Calibration
		08/24-10	08/24-10	1	Power Failure
Dunn Center	Cont. PM10	07/06-08	07/06-08	1	Precision Check
		07/06-09	07/06-10	2	Collection Error
		07/12-22	07/13-00	3	Power Failure
		07/19-08	07/19-08	1	Precision Check
		07/19-09	07/19-09	1	Collection Error
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/02-09	08/02-09	1	Precision Check
		08/02-10	08/02-10	1	Collection Error
		08/07-14	08/07-15	2	Power Failure
		08/07-16	08/07-16	1	Collection Error
		08/17-10	08/17-11	2	Precision Check
		08/17-12	08/17-13	2	Collection Error
		08/21-09	08/21-11	3	Calibration
		08/21-12	08/21-12	1	Collection Error
		08/24-10	08/24-10	1	Power Failure
		08/29-08	08/29-08	1	Precision Check
		08/29-09	08/29-11	3	Collection Error
		09/14-08	09/14-09	2	Precision Check
		09/14-10	09/14-11	2	Collection Error
		09/25-08	09/25-08	1	Precision Check
		09/25-09	09/25-10	2	Collection Error
Dunn Center	Cont. PM2.5	07/06-08	07/06-08	1	Precision Check
		07/06-09	07/06-10	2	Collection Error
		07/12-22	07/13-00	3	Power Failure
		07/19-08	07/19-08	1	Precision Check
		07/19-09	07/19-09	1	Collection Error
		07/20-11	07/20-11	1	Power Failure
		07/28-17	07/28-19	3	Power Failure
		08/02-09	08/02-09	1	Precision Check
		08/02-10	08/02-10	1	Collection Error
		08/07-14	08/07-15	2	Power Failure
		08/07-16	08/07-16	1	Collection Error
		08/17-10	08/17-11	2	Precision Check
		08/17-12	08/17-13	2	Collection Error
		08/21-09	08/21-11	3	Calibration
		08/21-12	08/21-12	1	Collection Error
		08/24-10	08/24-10	1	Power Failure
		08/29-08	08/29-08	1	Precision Check
		08/29-09	08/29-11	3	Collection Error
		09/14-08	09/14-09	2	Precision Check
		09/14-10	09/14-11	2	Collection Error
		09/25-08	09/25-08	1	Precision Check
		09/25-09	09/25-10	2	Collection Error

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Fargo NW	SO2 TLE	07/10-12	07/10-14	3	Precision/Zero/Span
		07/11-07	07/11-08	2	Precision/Zero/Span
		07/24-11	07/24-13	3	Precision/Zero/Span
		08/07-13	08/07-14	2	Precision/Zero/Span
		08/22-12	08/22-14	3	Precision/Zero/Span
		09/05-12	09/05-14	3	Precision/Zero/Span
		09/18-11	09/18-12	2	Precision/Zero/Span
Fargo NW	SO2_5 Max TLE	07/10-12	07/10-14	3	Precision/Zero/Span
		07/11-07	07/11-08	2	Precision/Zero/Span
		07/24-11	07/24-13	3	Precision/Zero/Span
		08/07-13	08/07-14	2	Precision/Zero/Span
		08/22-12	08/22-14	3	Precision/Zero/Span
		09/05-12	09/05-14	3	Precision/Zero/Span
		09/18-11	09/18-12	2	Precision/Zero/Span
Fargo NW	NO	07/10-10	07/10-12	3	Precision/Zero/Span
		07/24-10	07/24-12	3	Precision/Zero/Span
		08/07-10	08/07-13	4	Precision/Zero/Span
		08/22-10	08/22-13	4	Precision/Zero/Span
		09/05-10	09/05-13	4	Precision/Zero/Span
		09/18-09	09/18-11	3	Precision/Zero/Span
Fargo NW	NO2	07/10-10	07/10-12	3	Precision/Zero/Span
		07/24-10	07/24-12	3	Precision/Zero/Span
		08/07-10	08/07-13	4	Precision/Zero/Span
		08/22-10	08/22-13	4	Precision/Zero/Span
		09/05-10	09/05-13	4	Precision/Zero/Span
		09/18-09	09/18-11	3	Precision/Zero/Span
Fargo NW	O3	07/10-12	07/10-14	3	Precision/Zero/Span
		07/24-12	07/24-13	2	Precision/Zero/Span
		08/07-13	08/07-14	2	Precision/Zero/Span
		08/22-12	08/22-14	3	Precision/Zero/Span
		09/05-12	09/05-14	3	Precision/Zero/Span
		09/18-11	09/18-12	2	Precision/Zero/Span
Fargo NW	Solar Rad	07/24-11	07/24-11	1	Calibration
Fargo NW	Cont. PM10	07/10-11	07/10-11	1	Precision Check
		07/10-12	07/10-12	1	Collection Error
		07/24-10	07/24-10	1	Precision Check
		07/24-11	07/24-11	1	Collection Error
		08/07-12	08/07-13	2	Precision Check
		08/07-14	08/07-14	1	Collection Error
		08/22-11	08/22-11	1	Precision Check
		08/22-12	08/22-12	1	Collection Error
		09/05-10	09/05-10	1	Precision Check
		09/05-11	09/05-12	2	Collection Error
		09/18-09	09/18-09	1	Precision Check
		09/18-10	09/18-11	2	Collection Error

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Fargo NW	Cont. PM2.5	07/10-11	07/10-11	1	Precision Check
		07/10-12	07/10-12	1	Collection Error
		07/24-10	07/24-10	1	Precision Check
		07/24-11	07/24-11	1	Collection Error
		08/07-12	08/07-13	2	Precision Check
		08/07-14	08/07-14	1	Collection Error
		08/22-11	08/22-11	1	Precision Check
		08/22-12	08/22-12	1	Collection Error
		09/05-10	09/05-10	1	Precision Check
		09/05-11	09/05-12	2	Collection Error
		09/18-09	09/18-09	1	Precision Check
		09/18-10	09/18-11	2	Calibration
Hannover	SO2	07/05-08	07/05-09	2	Precision/Zero/Span
		07/18-08	07/18-09	2	Precision/Zero/Span
		08/01-07	08/01-08	2	Precision/Zero/Span
		08/04-07	08/04-07	1	Power Failure
		08/11-20	08/11-20	1	Power Failure
		08/12-22	08/12-22	1	Power Failure
		08/16-08	08/16-08	1	Precision/Zero/Span
		08/24-07	08/24-07	1	Power Failure
		08/29-07	08/29-08	2	Precision/Zero/Span
		09/13-08	09/13-10	3	Precision/Zero/Span
		09/13-11	09/13-13	3	Calibration
		09/26-07	09/26-08	2	Precision/Zero/Span
Hannover	SO2_5 Max	07/05-08	07/05-09	2	Precision/Zero/Span
		07/18-08	07/18-09	2	Precision/Zero/Span
		08/01-07	08/01-08	2	Precision/Zero/Span
		08/04-07	08/04-07	1	Power Failure
		08/11-20	08/11-20	1	Power Failure
		08/12-22	08/12-22	1	Power Failure
		08/16-08	08/16-08	1	Precision/Zero/Span
		08/29-07	08/29-08	2	Precision/Zero/Span
		09/13-08	09/13-10	3	Precision/Zero/Span
		09/13-11	09/13-13	3	Calibration
		09/26-07	09/26-08	2	Precision/Zero/Span
Hannover	NO	07/05-08	07/05-10	3	Precision/Zero/Span
		07/18-08	07/18-09	2	Precision/Zero/Span
		08/01-07	08/01-09	3	Precision/Zero/Span
		08/04-07	08/04-07	1	Power Failure
		08/11-20	08/11-20	1	Power Failure
		08/12-22	08/12-22	1	Power Failure
		08/16-08	08/16-10	3	Precision/Zero/Span
		08/24-07	08/24-07	1	Power Failure
		08/29-07	08/29-08	2	Precision/Zero/Span
		09/13-08	09/13-10	3	Precision/Zero/Span
		09/13-11	09/13-14	4	Calibration
		09/26-07	09/26-09	3	Precision/Zero/Span

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Hannover	NO2	07/05-08	07/05-10	3	Precision/Zero/Span
		07/18-08	07/18-09	2	Precision/Zero/Span
		08/01-07	08/01-09	3	Precision/Zero/Span
		08/04-07	08/04-07	1	Power Failure
		08/11-20	08/11-20	1	Power Failure
		08/12-22	08/12-22	1	Power Failure
		08/16-08	08/16-10	3	Precision/Zero/Span
		08/24-07	08/24-07	1	Power Failure
		08/29-07	08/29-08	2	Precision/Zero/Span
		09/13-08	09/13-10	3	Precision/Zero/Span
		09/13-11	09/13-14	4	Calibration
		09/26-07	09/26-09	3	Precision/Zero/Span
Hannover	O3	07/05-10	07/05-11	2	Precision/Zero/Span
		07/18-10	07/18-10	1	Precision/Zero/Span
		08/01-09	08/01-10	2	Precision/Zero/Span
		08/04-07	08/04-07	1	Power Failure
		08/11-20	08/11-20	1	Power Failure
		08/12-22	08/12-22	1	Power Failure
		08/16-09	08/16-10	2	Precision/Zero/Span
		08/24-07	08/24-07	1	Power Failure
		08/29-08	08/29-10	3	Precision/Zero/Span
		09/13-14	09/13-15	2	Precision/Zero/Span
		09/13-16	09/13-16	1	Calibration
		09/26-09	09/26-10	2	Precision/Zero/Span
Hannover	WS	08/04-07	08/04-07	1	Power Failure
		08/11-20	08/11-20	1	Power Failure
		08/12-22	08/12-22	1	Power Failure
		08/24-07	08/24-07	1	Power Failure
Hannover	WD	08/04-07	08/04-07	1	Power Failure
		08/11-20	08/11-20	1	Power Failure
		08/12-22	08/12-22	1	Power Failure
		08/24-07	08/24-07	1	Power Failure
Hannover	WSV	08/04-07	08/04-07	1	Power Failure
		08/11-20	08/11-20	1	Power Failure
		08/12-22	08/12-22	1	Power Failure
		08/24-07	08/24-07	1	Power Failure
Hannover	WDV	08/04-07	08/04-07	1	Power Failure
		08/11-20	08/11-20	1	Power Failure
		08/12-22	08/12-22	1	Power Failure
		08/24-07	08/24-07	1	Power Failure
Hannover	Temp	08/04-07	08/04-07	1	Power Failure
		08/11-20	08/11-20	1	Power Failure
		08/12-22	08/12-22	1	Power Failure
		08/24-07	08/24-07	1	Power Failure

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Hannover	Cont. PM2.5	07/05-11	07/05-11	1	Precision Check
		07/05-12	07/05-12	1	Collection Error
		07/12-13	07/12-14	2	Collection Error
		07/12-23	07/13-00	2	Collection Error
		07/24-03	07/24-03	1	Collection Error
		07/25-03	07/25-03	1	Collection Error
		08/01-10	08/01-10	1	Precision Check
		08/01-11	08/01-11	1	Collection Error
		08/04-07	08/04-07	1	Power Failure
		08/11-20	08/11-20	1	Power Failure
		08/12-22	08/12-22	1	Power Failure
		08/16-10	08/16-10	1	Precision Check
		08/24-07	08/24-07	1	Power Failure
		08/24-08	08/24-08	1	Collection Error
		08/29-10	08/29-10	1	Precision Check
		08/29-11	08/29-11	1	Collection Error
		09/06-18	09/06-19	2	Collection Error
		09/09-00	09/09-01	2	Collection Error
		09/26-10	09/26-10	1	Precision Check
Hess - Tioga #1	SO2	07/03-07	07/03-09	3	Auto Calibration
		07/10-07	07/10-09	3	Auto Calibration
		07/17-07	07/17-09	3	Auto Calibration
		07/24-07	07/24-09	3	Auto Calibration
		07/31-07	07/31-09	3	Auto Calibration
		08/07-07	08/07-09	3	Auto Calibration
		08/14-07	08/14-09	3	Auto Calibration
		08/21-07	08/21-09	3	Auto Calibration
		08/28-07	08/28-09	3	Auto Calibration
		09/04-07	09/04-09	3	Auto Calibration
		09/11-07	09/11-09	3	Auto Calibration
		09/18-07	09/18-09	3	Auto Calibration
		09/25-07	09/25-09	3	Auto Calibration
		09/26-07	09/26-09	3	Auto Calibration
		09/26-14	09/26-16	3	Q C Audit
		09/27-16	09/27-18	3	Multi-point Calibration
		09/27-19	09/27-21	3	Machine Malfunction
Hess - Tioga #1	SO2_5 Max	07/03-07	07/03-09	3	Auto Calibration
		07/10-07	07/10-09	3	Auto Calibration
		07/17-07	07/17-09	3	Auto Calibration
		07/24-07	07/24-09	3	Auto Calibration
		07/31-07	07/31-09	3	Auto Calibration
		08/07-07	08/07-09	3	Auto Calibration
		08/14-07	08/14-09	3	Auto Calibration
		08/21-07	08/21-09	3	Auto Calibration
		08/28-07	08/28-09	3	Auto Calibration
		09/04-07	09/04-09	3	Auto Calibration
		09/11-07	09/11-09	3	Auto Calibration
		09/18-07	09/18-09	3	Auto Calibration
		09/25-07	09/25-09	3	Auto Calibration

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Hess - Tioga #1	SO2_5 Max	09/26-07	09/26-09	3	Auto Calibration
		09/26-14	09/26-16	3	Q C Audit
		09/27-16	09/27-18	3	Multi-point Calibration
		09/27-19	09/27-21	3	Machine Malfunction
Hess - Tioga #1	WS	09/27-14	09/27-15	2	Q C Audit
Hess - Tioga #1	WD	09/27-14	09/27-15	2	Q C Audit
Hess - Tioga #1	Sigma	09/27-14	09/27-15	2	Q C Audit
Hess - Tioga #1	Temp	09/27-14	09/27-15	2	Q C Audit
Hess - Tioga #3	SO2	07/05-09	07/05-11	3	Auto Calibration
		07/10-06	07/10-08	3	Auto Calibration
		07/17-06	07/17-08	3	Auto Calibration
		07/24-06	07/24-08	3	Auto Calibration
		07/24-20	07/25-08	13	Power Failure
		07/31-06	07/31-08	3	Auto Calibration
		08/07-06	08/07-08	3	Auto Calibration
		08/14-06	08/14-08	3	Auto Calibration
		08/21-06	08/21-08	3	Auto Calibration
		08/28-06	08/28-08	3	Auto Calibration
		09/04-06	09/04-08	3	Auto Calibration
		09/11-06	09/11-08	3	Auto Calibration
		09/18-06	09/18-08	3	Auto Calibration
		09/25-06	09/25-08	3	Auto Calibration
		09/26-06	09/26-08	3	Auto Calibration
		09/26-12	09/26-13	2	Q C Audit
		09/26-17	09/27-06	14	Machine Malfunction
		09/27-07	09/27-20	14	Multi-point Calibration
		09/27-21	09/30-23	75	Monitoring Waived
Hess - Tioga #3	SO2_5 Max	07/05-09	07/05-11	3	Auto Calibration
		07/10-06	07/10-08	3	Auto Calibration
		07/17-06	07/17-08	3	Auto Calibration
		07/24-06	07/24-08	3	Auto Calibration
		07/24-20	07/25-08	13	Power Failure
		07/31-06	07/31-08	3	Auto Calibration
		08/07-06	08/07-08	3	Auto Calibration
		08/14-06	08/14-08	3	Auto Calibration
		08/21-06	08/21-08	3	Auto Calibration
		08/28-06	08/28-08	3	Auto Calibration
		09/04-06	09/04-08	3	Auto Calibration
		09/11-06	09/11-08	3	Auto Calibration
		09/18-06	09/18-08	3	Auto Calibration
		09/25-06	09/25-08	3	Auto Calibration
		09/26-06	09/26-08	3	Auto Calibration
		09/26-12	09/26-13	2	Q C Audit
		09/26-17	09/27-06	14	Machine Malfunction
		09/27-07	09/27-20	14	Multi-point Calibration

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Hess - Tioga #3	SO2_5 Max	09/27-21	09/30-23	75	Monitoring Waived
Lostwood NWR	SO2	07/03-11	07/03-11	1	Precision/Zero/Span
		07/19-11	07/19-11	1	Precision/Zero/Span
		07/31-05	07/31-06	2	Power Failure
		08/01-11	08/01-12	2	Precision/Zero/Span
		08/11-20	08/12-01	6	Power Failure
		08/15-11	08/15-11	1	Precision/Zero/Span
		08/16-13	08/16-13	1	Power Failure
		08/29-00	08/29-00	1	Precision/Zero/Span
		08/30-11	08/30-12	2	Precision/Zero/Span
		09/12-07	09/12-08	2	Precision/Zero/Span
		09/27-11	09/27-12	2	Precision/Zero/Span
Lostwood NWR	SO2_5 Max	07/03-11	07/03-11	1	Precision/Zero/Span
		07/19-11	07/19-11	1	Precision/Zero/Span
		07/31-05	07/31-06	2	Power Failure
		08/01-11	08/01-12	2	Precision/Zero/Span
		08/11-20	08/12-01	6	Power Failure
		08/15-11	08/15-11	1	Precision/Zero/Span
		08/16-13	08/16-13	1	Power Failure
		08/30-11	08/30-12	2	Precision/Zero/Span
		09/12-07	09/12-08	2	Precision/Zero/Span
		09/27-11	09/27-12	2	Precision/Zero/Span
Lostwood NWR	NO	07/03-11	07/03-12	2	Precision/Zero/Span
		07/19-11	07/19-12	2	Precision/Zero/Span
		07/31-05	07/31-06	2	Power Failure
		08/01-11	08/01-12	2	Precision/Zero/Span
		08/11-20	08/12-01	6	Power Failure
		08/15-11	08/15-12	2	Precision/Zero/Span
		08/16-13	08/16-13	1	Power Failure
		08/30-11	08/30-12	2	Precision/Zero/Span
		09/12-07	09/12-09	3	Precision/Zero/Span
		09/27-11	09/27-12	2	Precision/Zero/Span
Lostwood NWR	NO2	07/03-11	07/03-12	2	Precision/Zero/Span
		07/19-11	07/19-12	2	Precision/Zero/Span
		07/31-05	07/31-06	2	Power Failure
		08/01-11	08/01-12	2	Precision/Zero/Span
		08/11-20	08/12-01	6	Power Failure
		08/15-11	08/15-12	2	Precision/Zero/Span
		08/16-13	08/16-13	1	Power Failure
		08/30-11	08/30-13	3	Precision/Zero/Span
		09/12-07	09/12-09	3	Precision/Zero/Span
		09/27-11	09/27-12	2	Precision/Zero/Span
Lostwood NWR	O3	07/03-12	07/03-12	1	Precision/Zero/Span
		07/19-12	07/19-13	2	Precision/Zero/Span
		07/31-05	07/31-06	2	Power Failure
		08/01-12	08/01-13	2	Precision/Zero/Span

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Lostwood NWR	O3	08/11-20	08/12-01	6	Power Failure
		08/15-12	08/15-13	2	Precision/Zero/Span
		08/16-13	08/16-13	1	Power Failure
		08/30-13	08/30-13	1	Precision/Zero/Span
		09/12-09	09/12-10	2	Precision/Zero/Span
		09/27-13	09/27-13	1	Precision/Zero/Span
Lostwood NWR	WS	07/31-05	07/31-06	2	Power Failure
		08/11-20	08/12-01	6	Power Failure
		08/16-13	08/16-13	1	Power Failure
Lostwood NWR	WD	07/31-05	07/31-06	2	Power Failure
		08/11-20	08/12-01	6	Power Failure
		08/16-13	08/16-13	1	Power Failure
Lostwood NWR	WSV	07/31-05	07/31-06	2	Power Failure
		08/11-20	08/12-01	6	Power Failure
		08/16-13	08/16-13	1	Power Failure
Lostwood NWR	WDV	07/31-05	07/31-06	2	Power Failure
		08/11-20	08/12-01	6	Power Failure
		08/16-13	08/16-13	1	Power Failure
Lostwood NWR	Temp	07/31-05	07/31-06	2	Power Failure
		08/11-20	08/12-01	6	Power Failure
		08/16-13	08/16-13	1	Power Failure
Lostwood NWR	Temp Dif.	07/31-05	07/31-06	2	Power Failure
		08/11-20	08/12-01	6	Power Failure
		08/16-13	08/16-13	1	Power Failure
Lostwood NWR	RH	07/31-05	07/31-06	2	Power Failure
		08/11-20	08/12-01	6	Power Failure
		08/16-13	08/16-13	1	Power Failure
Lostwood NWR	Solar Rad	07/31-05	07/31-06	2	Power Failure
		08/11-20	08/12-01	6	Power Failure
		08/16-13	08/16-13	1	Power Failure
Lostwood NWR	BP	07/31-05	07/31-06	2	Power Failure
		08/11-20	08/12-01	6	Power Failure
		08/16-13	08/16-13	1	Power Failure
Lostwood NWR	Cont. PM10	07/03-11	07/03-12	2	Precision Check
		07/19-11	07/19-12	2	Precision Check
		07/31-05	07/31-06	2	Power Failure
		07/31-07	07/31-07	1	Collection Error
		08/01-11	08/01-12	2	Precision Check
		08/11-20	08/12-01	6	Power Failure
		08/15-11	08/15-12	2	Precision Check
		08/16-13	08/16-13	1	Power Failure

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
Lostwood NWR	Cont. PM10	08/16-14	08/16-14	1	Collection Error
		08/30-11	08/30-11	1	Precision Check
		08/30-12	08/30-12	1	Collection Error
		09/12-07	09/12-08	2	Precision Check
		09/27-11	09/27-12	2	Precision Check
Lostwood NWR	Cont. PM2.5	07/03-11	07/03-12	2	Precision Check
		07/19-11	07/19-12	2	Precision Check
		07/31-05	07/31-06	2	Power Failure
		07/31-07	07/31-07	1	Collection Error
		08/01-11	08/01-12	2	Precision Check
		08/11-20	08/12-01	6	Power Failure
		08/15-11	08/15-12	2	Precision Check
		08/15-13	08/15-14	2	Collection Error
		08/16-13	08/16-13	1	Power Failure
		08/30-11	08/30-11	1	Precision Check
		08/30-12	08/30-12	1	Collection Error
		09/12-07	09/12-08	2	Precision Check
		09/27-11	09/27-12	2	Precision Check
TRNP - NU	SO2	07/12-10	07/12-10	1	Precision/Zero/Span
		07/28-09	07/28-10	2	Precision/Zero/Span
		08/09-10	08/09-11	2	Precision/Zero/Span
		08/16-09	08/16-11	3	Q C Audit
		08/23-09	08/23-10	2	Precision/Zero/Span
		09/06-10	09/06-10	1	Precision/Zero/Span
		09/20-10	09/20-10	1	Precision/Zero/Span
TRNP - NU	SO2_5 Max	07/12-10	07/12-10	1	Precision/Zero/Span
		07/28-09	07/28-10	2	Precision/Zero/Span
		08/09-10	08/09-11	2	Precision/Zero/Span
		08/16-09	08/16-11	3	Q C Audit
		08/23-09	08/23-10	2	Precision/Zero/Span
		09/06-10	09/06-10	1	Precision/Zero/Span
		09/20-10	09/20-10	1	Precision/Zero/Span
TRNP - NU	NO	07/12-10	07/12-10	1	Precision/Zero/Span
		07/12-11	07/12-11	1	Maintenance/routine Repairs
		07/12-12	07/12-12	1	Calibration
		07/28-09	07/28-10	2	Precision/Zero/Span
		08/09-10	08/09-12	3	Precision/Zero/Span
		08/16-09	08/16-11	3	Q C Audit
		08/23-09	08/23-11	3	Precision/Zero/Span
		09/06-10	09/06-11	2	Precision/Zero/Span
		09/20-10	09/20-11	2	Precision/Zero/Span
TRNP - NU	NO2	07/12-10	07/12-10	1	Precision/Zero/Span
		07/12-11	07/12-11	1	Maintenance/routine Repairs
		07/12-12	07/12-12	1	Calibration
		07/28-09	07/28-10	2	Precision/Zero/Span
		08/09-10	08/09-12	3	Precision/Zero/Span

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
TRNP - NU	NO2	08/16-09	08/16-11	3	Q C Audit
		08/23-09	08/23-11	3	Precision/Zero/Span
		09/06-10	09/06-11	2	Precision/Zero/Span
		09/20-10	09/20-11	2	Precision/Zero/Span
TRNP - NU	O3	07/12-12	07/12-13	2	Precision/Zero/Span
		07/28-10	07/28-11	2	Precision/Zero/Span
		08/09-12	08/09-13	2	Precision/Zero/Span
		08/16-12	08/16-13	2	Q C Audit
		08/23-11	08/23-12	2	Precision/Zero/Span
		09/06-11	09/06-12	2	Precision/Zero/Span
		09/20-12	09/20-12	1	Precision/Zero/Span
TRNP - NU	WS	08/16-12	08/16-13	2	Q C Audit
TRNP - NU	WD	08/16-12	08/16-13	2	Q C Audit
TRNP - NU	WSV	08/16-12	08/16-13	2	Q C Audit
TRNP - NU	WDV	08/16-12	08/16-13	2	Q C Audit
TRNP - NU	Cont. PM10	07/12-10	07/12-11	2	Precision Check
		07/28-10	07/28-11	2	Precision Check
		08/09-00	08/09-00	1	Collection Error
		08/09-10	08/09-11	2	Precision Check
		08/09-23	08/10-00	2	Collection Error
		08/16-10	08/16-11	2	Q C Audit
		08/23-10	08/23-11	2	Precision Check
		09/06-10	09/06-11	2	Precision Check
		09/20-10	09/20-11	2	Precision Check
TRNP - NU	PM2.5	08/15-00	08/15-23	24	Insufficient Data (Can't Calculate)
TRNP - NU	Cont. PM2.5	07/12-10	07/12-11	2	Precision Check
		07/28-10	07/28-11	2	Precision Check
		08/09-10	08/09-11	2	Precision Check
		08/09-23	08/10-00	2	Collection Error
		08/16-10	08/16-11	2	Q C Audit
		08/23-10	08/23-11	2	Precision Check
		09/06-10	09/06-11	2	Precision Check
		09/20-10	09/20-11	2	Precision Check
TRNP - SU	SO2	07/12-15	07/12-15	1	Precision/Zero/Span
		07/25-08	07/25-08	1	Q C Audit
		07/25-09	07/25-10	2	Precision/Zero/Span
		08/09-14	08/09-15	2	Precision/Zero/Span
		08/23-14	08/23-15	2	Precision/Zero/Span
		09/06-14	09/06-14	1	Precision/Zero/Span
		09/20-14	09/20-14	1	Precision/Zero/Span
TRNP - SU	SO2_5 Max	07/12-15	07/12-15	1	Precision/Zero/Span

Data Void Periods

Site	Parameter	Start Date-hr	End Date-hr	Total Hours	Reason for Data Void
TRNP - SU	SO2_5 Max	07/25-08	07/25-08	1	Q C Audit
		07/25-09	07/25-10	2	Precision/Zero/Span
		08/09-14	08/09-15	2	Precision/Zero/Span
		08/23-14	08/23-15	2	Precision/Zero/Span
		09/06-14	09/06-14	1	Precision/Zero/Span
		09/20-14	09/20-14	1	Precision/Zero/Span
TRNP - SU	O3	07/12-15	07/12-15	1	Precision/Zero/Span
		07/25-08	07/25-08	1	Q C Audit
		07/25-09	07/25-10	2	Precision/Zero/Span
		08/09-14	08/09-15	2	Precision/Zero/Span
		08/23-14	08/23-15	2	Precision/Zero/Span
		09/06-14	09/06-14	1	Precision/Zero/Span
		09/20-14	09/20-14	1	Precision/Zero/Span
TRNP - SU	WS	08/16-08	08/22-07	144	Power Failure
Trnp - Su	WSV	08/16-08	08/22-07	144	Power Failure
TRNP - SU	WDV	08/16-08	08/22-07	144	Power Failure
TRNP - SU	Sigma	08/16-08	08/22-07	144	Power Failure
TRNP - SU	Temp	08/08-11	08/08-17	7	Machine Malfunction
		08/16-08	08/22-07	144	Power Failure
TRNP - SU	Solar Rad	07/04-00	07/05-23	48	Machine Malfunction
		07/11-00	07/18-23	192	Machine Malfunction
		08/16-08	08/22-07	144	Power Failure
		08/24-00	08/24-23	24	Machine Malfunction
		09/24-00	09/25-23	48	Machine Malfunction
TRNP - SU	Cont. PM2.5	07/12-15	07/12-15	1	Precision Check
		07/12-16	07/12-16	1	Collection Error
		07/25-08	07/25-08	1	Q C Audit
		07/25-09	07/25-09	1	Collection Error
		08/02-22	08/02-22	1	Collection Error
		08/09-14	08/09-15	2	Precision Check
		08/15-21	08/15-22	2	Collection Error
		08/16-03	08/16-04	2	Collection Error
		08/16-08	08/16-09	2	Collection Error
		08/17-03	08/17-04	2	Collection Error
		08/17-22	08/17-22	1	Collection Error
		08/23-14	08/23-15	2	Precision Check
		09/06-14	09/06-14	1	Precision Check
		09/06-15	09/06-15	1	Collection Error
		09/06-21	09/06-21	1	Collection Error
		09/17-18	09/17-18	1	Collection Error
		09/17-22	09/17-22	1	Collection Error
		09/20-14	09/20-15	2	Precision Check
		09/28-03	09/28-06	4	Collection Error