NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
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November 30, 2005

FILE

Cris Miller, P.E.
Environmental Coordinator
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck, ND 58503

Dear Mr. Miller:

As specified in the June 15, 2005 final amendments to the EPA July, 1999 regional haze rule, the Department has completed visibility modeling to determine which North Dakota BART-eligible (Best Available Retrofit Technology) sources are subject to BART. The Department's visibility analysis for this BART screening followed the protocol outlined in "Protocol for BART-Related Visibility Impairment Modeling Analyses in North Dakota" (North Dakota Department of Health, November, 2005).

As you are aware, the Basin Electric Leland Olds Generating Station Units 1 and 2 are BART-eligible sources. Completed visibility modeling for the Leland Olds Station (Units 1 and 2 combined) indicates that the maximum 98$^{th}$ percentile delta-deciview prediction for the facility exceeds the BART screening threshold of 0.5 deciviews. Therefore, Leland Olds Units 1 and 2 are subject to BART.

Two summaries of modeling results are enclosed. Attachment A provides a summary of 98$^{th}$ percentile predictions for the worst-case meteorological year for all BART-eligible facilities. Attachment B provides more detailed results specific to the Leland Olds Generating Station. Included in Attachment B are results for all delta-deciview metrics recommended in the North Dakota protocol, for each year of meteorological data. Also provided are worst-case day and receptor, and the percent contribution for each species.

If you have any questions regarding these results, please contact Steve Weber or Rob White of my staff at (701)328-5188. We look forward to working with you to develop appropriate BART control strategies for Leland Olds Units 1 and 2.

Sincerely,

Steve Weber for

Terry L. O'Clair, P.E.
Director
Division of Air Quality

TLO/SW:csc
Enc:

Attachment A

Summary of BART Screening Results
98th Percentile Prediction for Worst-case Met. Year (2000-2002)
(24-hr Delta-Deciview)

| | TRNP South | TRNP North | TRNP Elk. Ranch | Lostwood NWA |
|---|---|---|---|---|
| Leland Olds Station | 6.22 | 5.32 | 4.49 | 5.42 |
| Milton R Young Station | 6.69 | 5.58 | 6.10 | 4.88 |
| Coal Creek Station | 4.48 | 3.56 | 3.04 | 4.04 |
| Stanton Station Unit 1 | 1.68 | 1.54 | 1.43 | 1.35 |
| Heskett Station Unit 2 | 0.82 | 0.54 | 0.61 | 0.58 |
| Mandan Refinery | 0.05 | 0.04 | 0.04 | 0.04 |

29-Nov-05

Attachment B

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Leland Olds Station (base case) for Year 2000 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Leland Olds Station (Units 1+2) - BART Protocol - Postutil 1.4
Year 2000 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 7.676 | 9.909 | 2.234 | 2000 | 74 | 49 | 103 | 2.80 | 89.58 | 10.24 | 0.11 | 0.07 |
| 98th %tile Delta-DV | 3.269 | 5.503 | 2.234 | 2000 | 71 | 45 | 45 | 2.80 | 72.73 | 26.87 | 0.31 | 0.10 |
| 90th %tile Delta-DV | 0.941 | 3.111 | 2.170 | 2000 | 161 | 53 | 107 | 2.50 | 95.82 | 3.74 | 0.27 | 0.17 |

Number of days with Delta-Deciview > 0.50: 56
Number of days with Delta-Deciview > 1.00: 35
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 6.496 | 8.730 | 2.234 | 2000 | 72 | 82 | 71 | 2.80 | 77.67 | 22.01 | 0.26 | 0.07 |
| 98th %tile Delta-DV | 3.596 | 5.830 | 2.234 | 2000 | 44 | 83 | 112 | 2.80 | 62.20 | 37.34 | 0.34 | 0.11 |
| 90th %tile Delta-DV | 0.945 | 3.179 | 2.234 | 2000 | 48 | 82 | 71 | 2.80 | 79.57 | 20.37 | 0.02 | 0.03 |

Number of days with Delta-Deciview > 0.50: 53
Number of days with Delta-Deciview > 1.00: 34
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 8.972 | 11.206 | 2.234 | 2000 | 74 | 90 | 72 | 2.80 | 98.74 | 1.08 | 0.10 | 0.07 |
| 98th %tile Delta-DV | 2.376 | 4.609 | 2.234 | 2000 | 54 | 90 | 72 | 2.80 | 83.67 | 16.04 | 0.21 | 0.07 |
| 90th %tile Delta-DV | 0.769 | 2.897 | 2.127 | 2000 | 101 | 90 | 72 | 2.30 | 62.90 | 36.48 | 0.44 | 0.17 |

Number of days with Delta-Deciview > 0.50: 49
Number of days with Delta-Deciview > 1.00: 28
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 11.303 | 13.578 | 2.275 | 2000 | 47 | 99 | 81 | 2.90 | 98.80 | 0.98 | 0.16 | 0.06 |
| 98th %tile Delta-DV | 3.726 | 6.001 | 2.275 | 2000 | 48 | 99 | 81 | 2.90 | 80.59 | 19.28 | 0.09 | 0.04 |
| 90th %tile Delta-DV | 1.646 | 3.878 | 2.232 | 2000 | 209 | 99 | 81 | 2.70 | 80.47 | 18.08 | 1.09 | 0.36 |

Number of days with Delta-Deciview > 0.50: 78
Number of days with Delta-Deciview > 1.00: 56
Max number of consecutive days with Delta-Deciview > 0.50: 3

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Leland Olds Station (base case) for Year 2002 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Leland Olds Station (Units 1+2) - BART Protocol - Postutil 1.4
Year 2002 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 10.896 | 13.129 | 2.234 | 2002 | 73 | 51 | 105 | 2.80 | 91.62 | 8.03 | 0.26 | 0.08 |
| 98th %tile Delta-DV | 6.222 | 8.455 | 2.234 | 2002 | 64 | 4 | 4 | 2.80 | 67.53 | 32.10 | 0.26 | 0.11 |
| 90th %tile Delta-DV | 1.617 | 3.766 | 2.149 | 2002 | 189 | 51 | 105 | 2.40 | 97.79 | 1.34 | 0.69 | 0.18 |

Number of days with Delta-Deciview > 0.50: 63
Number of days with Delta-Deciview > 1.00: 48
Max number of consecutive days with Delta-Deciview > 0.50: 6

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 11.862 | 14.096 | 2.234 | 2002 | 73 | 89 | 118 | 2.80 | 80.01 | 19.53 | 0.37 | 0.09 |
| 98th %tile Delta-DV | 5.322 | 7.556 | 2.234 | 2002 | 50 | 83 | 112 | 2.80 | 62.02 | 37.50 | 0.36 | 0.11 |
| 90th %tile Delta-DV | 1.213 | 3.467 | 2.255 | 2002 | 30 | 82 | 71 | 2.90 | 79.74 | 20.18 | 0.05 | 0.03 |

Number of days with Delta-Deciview > 0.50: 61
Number of days with Delta-Deciview > 1.00: 41
Max number of consecutive days with Delta-Deciview > 0.50: 5

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 11.392 | 13.625 | 2.234 | 2002 | 73 | 90 | 72 | 2.80 | 88.63 | 10.98 | 0.30 | 0.09 |
| 98th %tile Delta-DV | 4.490 | 6.617 | 2.127 | 2002 | 293 | 90 | 72 | 2.30 | 72.61 | 26.42 | 0.75 | 0.23 |
| 90th %tile Delta-DV | 0.858 | 2.964 | 2.106 | 2002 | 219 | 90 | 72 | 2.20 | 97.08 | 2.60 | 0.21 | 0.11 |

Number of days with Delta-Deciview > 0.50: 56
Number of days with Delta-Deciview > 1.00: 34
Max number of consecutive days with Delta-Deciview > 0.50: 4

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 8.315 | 10.591 | 2.275 | 2002 | 74 | 97 | 79 | 2.90 | 84.80 | 15.00 | 0.14 | 0.05 |
| 98th %tile Delta-DV | 4.762 | 7.102 | 2.340 | 2002 | 351 | 96 | 78 | 3.20 | 84.18 | 15.30 | 0.40 | 0.12 |
| 90th %tile Delta-DV | 1.125 | 3.271 | 2.145 | 2002 | 247 | 97 | 79 | 2.30 | 93.71 | 4.95 | 1.02 | 0.32 |

Number of days with Delta-Deciview > 0.50: 61
Number of days with Delta-Deciview > 1.00: 41
Max number of consecutive days with Delta-Deciview > 0.50: 4

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Leland Olds Station (base case) for Year 2001 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Leland Olds Station (Units 1+2) - BART Protocol - Postutil 1.4
Year 2001 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 6.997 | 9.230 | 2.234 | 2001 | 64 | 46 | 46 | 2.80 | 79.37 | 20.50 | 0.09 | 0.03 |
| 98th %tile Delta-DV | 3.187 | 5.315 | 2.127 | 2001 | 92 | 51 | 105 | 2.30 | 61.09 | 38.48 | 0.32 | 0.10 |
| 90th %tile Delta-DV | 0.869 | 2.996 | 2.127 | 2001 | 98 | 45 | 45 | 2.30 | 41.60 | 56.84 | 1.26 | 0.30 |

Number of days with Delta-Deciview > 0.50: 50
Number of days with Delta-Deciview > 1.00: 35
Max number of consecutive days with Delta-Deciview > 0.50: 4

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 7.950 | 10.183 | 2.234 | 2001 | 64 | 82 | 71 | 2.80 | 85.72 | 14.11 | 0.13 | 0.04 |
| 98th %tile Delta-DV | 4.293 | 6.399 | 2.106 | 2001 | 261 | 89 | 118 | 2.20 | 96.58 | 3.15 | 0.19 | 0.08 |
| 90th %tile Delta-DV | 1.208 | 3.484 | 2.276 | 2001 | 339 | 63 | 52 | 3.00 | 48.01 | 51.03 | 0.79 | 0.17 |

Number of days with Delta-Deciview > 0.50: 65
Number of days with Delta-Deciview > 1.00: 44
Max number of consecutive days with Delta-Deciview > 0.50: 6

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 6.835 | 9.069 | 2.234 | 2001 | 64 | 90 | 72 | 2.80 | 80.33 | 19.54 | 0.09 | 0.03 |
| 98th %tile Delta-DV | 3.070 | 5.304 | 2.234 | 2001 | 84 | 90 | 72 | 2.80 | 68.67 | 30.97 | 0.27 | 0.09 |
| 90th %tile Delta-DV | 0.633 | 2.761 | 2.127 | 2001 | 101 | 90 | 72 | 2.30 | 84.53 | 15.40 | 0.04 | 0.03 |

Number of days with Delta-Deciview > 0.50: 44
Number of days with Delta-Deciview > 1.00: 24
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 12.197 | 14.536 | 2.340 | 2001 | 326 | 97 | 79 | 3.20 | 97.10 | 2.54 | 0.27 | 0.08 |
| 98th %tile Delta-DV | 5.419 | 7.564 | 2.145 | 2001 | 261 | 98 | 80 | 2.30 | 93.51 | 5.83 | 0.54 | 0.13 |
| 90th %tile Delta-DV | 1.541 | 3.686 | 2.145 | 2001 | 260 | 97 | 79 | 2.30 | 89.77 | 10.06 | 0.13 | 0.05 |

Number of days with Delta-Deciview > 0.50: 80
Number of days with Delta-Deciview > 1.00: 53
Max number of consecutive days with Delta-Deciview > 0.50: 6

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November 30, 2005

FILE

John Graves, P.E.
Environmental Manager
Minnkota Power Cooperative, Inc.
P.O. Box 13200
Grand Forks, ND 58208

Dear Mr. Graves:

As specified in the June 15, 2005 final amendments to the EPA July, 1999 regional haze rule, the Department has completed visibility modeling to determine which North Dakota BART-eligible (Best Available Retrofit Technology) sources are subject to BART. The Department's visibility analysis for this BART screening followed the protocol outlined in "Protocol for BART-Related Visibility Impairment Modeling Analyses in North Dakota" (North Dakota Department of Health, November, 2005).

As you are aware, the Minnkota Milton R. Young Generating Station Units 1 and 2 are BART-eligible sources. Completed visibility modeling for Milton R. Young Station (Units 1 and 2 combined) indicates that the maximum 98th percentile delta-deciview prediction for the facility exceeds the BART screening threshold of 0.5 deciviews. Therefore, Milton R. Young Units 1 and 2 are subject to BART.

Two summaries of modeling results are enclosed. Attachment A provides a summary of 98th percentile predictions for the worst-case meteorological year for all BART-eligible facilities. Attachment B provides more detailed results specific to the Milton R. Young Generating Station. Included in Attachment B are results for all delta-deciview metrics recommended in the North Dakota protocol, for each year of meteorological data. Also provided are worst-case day and receptor, and the percent contribution for each species.

If you have any questions regarding these results, please contact Steve Weber or Rob White of my staff at (701)328-5188. We look forward to working with you to develop appropriate BART control strategies for Milton R. Young Units 1 and 2.

Sincerely,

Steve Weber for

Terry L. O'Clair, P.E.
Director
Division of Air Quality

TLO/SW:csc
Enc:

Attachment A

Summary of BART Screening Results
98th Percentile Prediction for Worst-case Met. Year (2000-2002)
(24-hr Delta-Deciview)

| | TRNP South | TRNP North | TRNP Elk. Ranch | Lostwood NWA |
|---|---|---|---|---|
| Leland Olds Station | 6.22 | 5.32 | 4.49 | 5.42 |
| Milton R Young Station | 6.69 | 5.58 | 6.10 | 4.88 |
| Coal Creek Station | 4.48 | 3.56 | 3.04 | 4.04 |
| Stanton Station Unit 1 | 1.68 | 1.54 | 1.43 | 1.35 |
| Heskett Station Unit 2 | 0.82 | 0.54 | 0.61 | 0.58 |
| Mandan Refinery | 0.05 | 0.04 | 0.04 | 0.04 |

29-Nov-05

Attachment B

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Milton R Young Station (base case) for Year 2000 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Milton R Young Station (Units 1+2) - BART Protocol - Postutil 1.4
Year 2000 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 8.396 | 10.630 | 2.234 | 2000 | 72 | 53 | 107 | 2.80 | 52.24 | 47.53 | 0.17 | 0.06 |
| 98th %tile Delta-DV | 2.813 | 5.088 | 2.276 | 2000 | 316 | 45 | 45 | 3.00 | 49.46 | 50.40 | 0.10 | 0.04 |
| 90th %tile Delta-DV | 1.010 | 3.158 | 2.149 | 2000 | 199 | 53 | 107 | 2.40 | 91.23 | 8.14 | 0.44 | 0.19 |

Number of days with Delta-Deciview > 0.50: 57
Number of days with Delta-Deciview > 1.00: 38
Max number of consecutive days with Delta-Deciview > 0.50: 4

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 6.587 | 8.820 | 2.234 | 2000 | 66 | 71 | 60 | 2.80 | 63.04 | 36.71 | 0.19 | 0.07 |
| 98th %tile Delta-DV | 3.800 | 6.033 | 2.234 | 2000 | 74 | 67 | 56 | 2.80 | 60.75 | 39.18 | 0.03 | 0.04 |
| 90th %tile Delta-DV | 0.828 | 2.977 | 2.149 | 2000 | 190 | 67 | 56 | 2.40 | 80.73 | 18.89 | 0.30 | 0.08 |

Number of days with Delta-Deciview > 0.50: 53
Number of days with Delta-Deciview > 1.00: 32
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 7.511 | 9.745 | 2.234 | 2000 | 74 | 90 | 72 | 2.80 | 87.78 | 12.12 | 0.04 | 0.05 |
| 98th %tile Delta-DV | 2.403 | 4.636 | 2.234 | 2000 | 69 | 90 | 72 | 2.80 | 44.55 | 55.23 | 0.15 | 0.07 |
| 90th %tile Delta-DV | 0.676 | 2.951 | 2.276 | 2000 | 336 | 90 | 72 | 3.00 | 36.33 | 63.43 | 0.18 | 0.06 |

Number of days with Delta-Deciview > 0.50: 48
Number of days with Delta-Deciview > 1.00: 27
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 8.636 | 10.911 | 2.275 | 2000 | 47 | 97 | 79 | 2.90 | 96.21 | 3.64 | 0.10 | 0.05 |
| 98th %tile Delta-DV | 3.674 | 5.950 | 2.275 | 2000 | 70 | 93 | 75 | 2.90 | 40.63 | 59.17 | 0.13 | 0.07 |
| 90th %tile Delta-DV | 1.506 | 3.716 | 2.211 | 2000 | 158 | 93 | 75 | 2.60 | 48.18 | 50.90 | 0.67 | 0.25 |

Number of days with Delta-Deciview > 0.50: 75
Number of days with Delta-Deciview > 1.00: 53
Max number of consecutive days with Delta-Deciview > 0.50: 3

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Milton R Young Station (base case) for Year 2001 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Milton R Young Station (Units 1+2) - BART Protocol - Postutil 1.4
Year 2001 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 5.982 | 8.216 | 2.234 | 2001 | 64 | 46 | 46 | 2.80 | 65.47 | 34.42 | 0.07 | 0.03 |
| 98th %tile Delta-DV | 3.284 | 5.390 | 2.106 | 2001 | 261 | 48 | 102 | 2.20 | 89.27 | 10.50 | 0.16 | 0.07 |
| 90th %tile Delta-DV | 0.794 | 2.900 | 2.106 | 2001 | 224 | 53 | 107 | 2.20 | 95.34 | 4.17 | 0.37 | 0.12 |

Number of days with Delta-Deciview > 0.50: 47
Number of days with Delta-Deciview > 1.00: 27
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 7.578 | 9.811 | 2.234 | 2001 | 64 | 82 | 71 | 2.80 | 66.87 | 33.02 | 0.08 | 0.03 |
| 98th %tile Delta-DV | 3.848 | 5.954 | 2.106 | 2001 | 260 | 85 | 114 | 2.20 | 93.69 | 6.09 | 0.16 | 0.06 |
| 90th %tile Delta-DV | 1.249 | 3.419 | 2.170 | 2001 | 175 | 82 | 71 | 2.50 | 97.03 | 2.23 | 0.57 | 0.18 |

Number of days with Delta-Deciview > 0.50: 64
Number of days with Delta-Deciview > 1.00: 45
Max number of consecutive days with Delta-Deciview > 0.50: 5

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 5.707 | 7.941 | 2.234 | 2001 | 64 | 90 | 72 | 2.80 | 67.56 | 32.35 | 0.07 | 0.03 |
| 98th %tile Delta-DV | 3.543 | 5.818 | 2.276 | 2001 | 328 | 90 | 72 | 3.00 | 64.64 | 35.30 | 0.03 | 0.02 |
| 90th %tile Delta-DV | 0.590 | 2.865 | 2.276 | 2001 | 345 | 90 | 72 | 3.00 | 60.31 | 39.50 | 0.15 | 0.05 |

Number of days with Delta-Deciview > 0.50: 41
Number of days with Delta-Deciview > 1.00: 23
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 12.974 | 15.313 | 2.340 | 2001 | 327 | 91 | 73 | 3.20 | 61.26 | 38.63 | 0.07 | 0.04 |
| 98th %tile Delta-DV | 4.875 | 7.151 | 2.275 | 2001 | 41 | 91 | 73 | 2.90 | 50.20 | 49.65 | 0.10 | 0.05 |
| 90th %tile Delta-DV | 1.586 | 3.926 | 2.340 | 2001 | 311 | 97 | 79 | 3.20 | 35.41 | 64.39 | 0.14 | 0.06 |

Number of days with Delta-Deciview > 0.50: 77
Number of days with Delta-Deciview > 1.00: 52
Max number of consecutive days with Delta-Deciview > 0.50: 5

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Milton R Young Station (base case) for Year 2002 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Milton R Young Station (Units 1+2) - BART Protocol - Postutil 1.4
Year 2002 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 11.011 | 13.245 | 2.234 | 2002 | 73 | 48 | 102 | 2.80 | 62.86 | 36.93 | 0.15 | 0.06 |
| 98th %tile Delta-DV | 6.693 | 8.926 | 2.234 | 2002 | 64 | 54 | 108 | 2.80 | 50.52 | 49.30 | 0.11 | 0.07 |
| 90th %tile Delta-DV | 1.394 | 3.628 | 2.234 | 2002 | 75 | 51 | 105 | 2.80 | 71.86 | 28.09 | 0.02 | 0.03 |

Number of days with Delta-Deciview > 0.50: 66
Number of days with Delta-Deciview > 1.00: 49
Max number of consecutive days with Delta-Deciview > 0.50: 5

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 10.964 | 13.197 | 2.234 | 2002 | 73 | 58 | 47 | 2.80 | 55.28 | 44.49 | 0.17 | 0.06 |
| 98th %tile Delta-DV | 5.581 | 7.836 | 2.255 | 2002 | 26 | 63 | 52 | 2.90 | 48.31 | 51.36 | 0.26 | 0.08 |
| 90th %tile Delta-DV | 1.588 | 3.737 | 2.149 | 2002 | 184 | 82 | 71 | 2.40 | 97.43 | 2.05 | 0.38 | 0.14 |

Number of days with Delta-Deciview > 0.50: 65
Number of days with Delta-Deciview > 1.00: 45
Max number of consecutive days with Delta-Deciview > 0.50: 4

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 11.808 | 14.042 | 2.234 | 2002 | 73 | 90 | 72 | 2.80 | 62.62 | 37.15 | 0.17 | 0.06 |
| 98th %tile Delta-DV | 6.103 | 8.378 | 2.276 | 2002 | 336 | 90 | 72 | 3.00 | 60.71 | 39.02 | 0.21 | 0.06 |
| 90th %tile Delta-DV | 0.950 | 3.077 | 2.127 | 2002 | 125 | 90 | 72 | 2.30 | 43.11 | 56.79 | 0.02 | 0.08 |

Number of days with Delta-Deciview > 0.50: 53
Number of days with Delta-Deciview > 1.00: 35
Max number of consecutive days with Delta-Deciview > 0.50: 4

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 7.423 | 9.698 | 2.275 | 2002 | 74 | 97 | 79 | 2.90 | 60.49 | 39.41 | 0.06 | 0.04 |
| 98th %tile Delta-DV | 4.112 | 6.387 | 2.275 | 2002 | 75 | 97 | 79 | 2.90 | 62.76 | 37.17 | 0.04 | 0.04 |
| 90th %tile Delta-DV | 1.219 | 3.364 | 2.145 | 2002 | 95 | 91 | 73 | 2.30 | 26.24 | 73.26 | 0.30 | 0.20 |

Number of days with Delta-Deciview > 0.50: 61
Number of days with Delta-Deciview > 1.00: 45
Max number of consecutive days with Delta-Deciview > 0.50: 5

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
1200 Missouri Avenue, Bismarck, ND 58504-5264
P.O. Box 5520, Bismarck, ND 58506-5520
701.328.5200 (fax)
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November 30, 2005

FILE

Mr. Jay Skabo
Environmental Coordinator
Montana-Dakota Utilities
400 North Fourth Street
Bismarck, ND 58501

Dear Mr. Skabo:

As specified in the June 15, 2005 final amendments to the EPA July, 1999 regional haze rule, the Department has completed visibility modeling to determine which North Dakota BART-eligible (Best Available Retrofit Technology) sources are subject to BART. The Department's visibility analysis for this BART screening followed the protocol outlined in "Protocol for BART-Related Visibility Impairment Modeling Analyses in North Dakota" (North Dakota Department of Health, November, 2005).

As you are aware, the Montana-Dakota Utilities Heskett Unit 2 is a BART-eligible source. Completed visibility modeling for the Heskett Station Unit 2 indicates that the maximum 98th percentile delta-deciview prediction for the facility exceeds the BART screening threshold of 0.5 deciviews. Therefore, Heskett Unit 2 is subject to BART.

Two summaries of modeling results are enclosed. Attachment A provides a summary of 98th percentile predictions for the worst-case meteorological year for all BART-eligible facilities. Attachment B provides more detailed results specific to the Heskett Station Unit 2. Included in Attachment B are results for all delta-deciview metrics recommended in the North Dakota protocol, for each year of meteorological data. Also provided are worst-case day and receptor, and the percent contribution for each species.

If you have any questions regarding these results, please contact Steve Weber or Rob White of my staff at (701)328-5188. We look forward to working with you to develop an appropriate BART control strategy for Heskett Unit 2.

Sincerely,

Steve Weber for

Terry L. O'Clair, P.E.
Director
Division of Air Quality

TLO/SW:csc
Enc:

Attachment A

Summary of BART Screening Results
98th Percentile Prediction for Worst-case Met. Year (2000-2002)
(24-hr Delta-Deciview)

| | TRNP South | TRNP North | TRNP Elk. Ranch | Lostwood NWA |
|---|---|---|---|---|
| Leland Olds Station | 6.22 | 5.32 | 4.49 | 5.42 |
| Milton R Young Station | 6.69 | 5.58 | 6.10 | 4.88 |
| Coal Creek Station | 4.48 | 3.56 | 3.04 | 4.04 |
| Stanton Station Unit 1 | 1.68 | 1.54 | 1.43 | 1.35 |
| Heskett Station Unit 2 | 0.82 | 0.54 | 0.61 | 0.58 |
| Mandan Refinery | 0.05 | 0.04 | 0.04 | 0.04 |

29-Nov-05

Attachment B

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Heskett Station Unit 2 (base case) for Year 2000 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Heskett Station (Unit 2) - BART Protocol - Postutil 1.4
Year 2000 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 1.791 | 4.025 | 2.234 | 2000 | 74 | 46 | 46 | 2.80 | 82.01 | 17.62 | 0.01 | 0.36 |
| 98th %tile Delta-DV | 0.350 | 2.605 | 2.255 | 2000 | 11 | 52 | 106 | 2.90 | 73.39 | 25.94 | 0.02 | 0.66 |
| 90th %tile Delta-DV | 0.084 | 2.233 | 2.149 | 2000 | 199 | 51 | 105 | 2.40 | 95.76 | 3.40 | 0.04 | 0.79 |

Number of days with Delta-Deciview > 0.50: 3
Number of days with Delta-Deciview > 1.00: 1
Max number of consecutive days with Delta-Deciview > 0.50: 1

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 1.120 | 3.353 | 2.234 | 2000 | 54 | 82 | 71 | 2.80 | 75.79 | 23.58 | 0.04 | 0.58 |
| 98th %tile Delta-DV | 0.355 | 2.631 | 2.276 | 2000 | 336 | 63 | 52 | 3.00 | 53.65 | 45.25 | 0.09 | 1.01 |
| 90th %tile Delta-DV | 0.102 | 2.208 | 2.106 | 2000 | 239 | 82 | 71 | 2.20 | 88.79 | 10.53 | 0.04 | 0.65 |

Number of days with Delta-Deciview > 0.50: 6
Number of days with Delta-Deciview > 1.00: 1
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 0.685 | 2.919 | 2.234 | 2000 | 74 | 90 | 72 | 2.80 | 82.49 | 17.16 | 0.01 | 0.34 |
| 98th %tile Delta-DV | 0.381 | 2.508 | 2.127 | 2000 | 106 | 90 | 72 | 2.30 | 70.64 | 28.49 | 0.06 | 0.80 |
| 90th %tile Delta-DV | 0.064 | 2.297 | 2.234 | 2000 | 37 | 90 | 72 | 2.80 | 66.93 | 32.38 | 0.03 | 0.66 |

Number of days with Delta-Deciview > 0.50: 3
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 1

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 1.488 | 3.828 | 2.340 | 2000 | 349 | 99 | 81 | 3.20 | 73.22 | 26.34 | 0.01 | 0.43 |
| 98th %tile Delta-DV | 0.346 | 2.578 | 2.232 | 2000 | 209 | 99 | 81 | 2.70 | 82.84 | 15.72 | 0.08 | 1.36 |
| 90th %tile Delta-DV | 0.154 | 2.364 | 2.211 | 2000 | 158 | 91 | 73 | 2.60 | 69.46 | 28.04 | 0.09 | 2.41 |

Number of days with Delta-Deciview > 0.50: 3
Number of days with Delta-Deciview > 1.00: 1
Max number of consecutive days with Delta-Deciview > 0.50: 2

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Heskett Station Unit 2 (base case) for Year 2001 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Heskett Station (Unit 2) - BART Protocol - Postutil 1.4
Year 2001 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 0.719 | 2.973 | 2.255 | 2001 | 13 | 47 | 101 | 2.90 | 62.71 | 36.39 | 0.07 | 0.83 |
| 98th %tile Delta-DV | 0.351 | 2.478 | 2.127 | 2001 | 109 | 49 | 103 | 2.30 | 64.52 | 33.09 | 0.15 | 2.24 |
| 90th %tile Delta-DV | 0.069 | 2.196 | 2.127 | 2001 | 94 | 52 | 106 | 2.30 | 81.87 | 17.94 | 0.01 | 0.19 |

Number of days with Delta-Deciview > 0.50: 4
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 1

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 2.349 | 4.603 | 2.255 | 2001 | 12 | 82 | 71 | 2.90 | 79.98 | 19.53 | 0.03 | 0.46 |
| 98th %tile Delta-DV | 0.536 | 2.812 | 2.276 | 2001 | 328 | 85 | 114 | 3.00 | 82.70 | 17.06 | 0.01 | 0.23 |
| 90th %tile Delta-DV | 0.110 | 2.216 | 2.106 | 2001 | 257 | 82 | 71 | 2.20 | 72.72 | 26.22 | 0.02 | 1.04 |

Number of days with Delta-Deciview > 0.50: 9
Number of days with Delta-Deciview > 1.00: 1
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 0.884 | 3.139 | 2.255 | 2001 | 12 | 90 | 72 | 2.90 | 79.65 | 19.98 | 0.02 | 0.34 |
| 98th %tile Delta-DV | 0.400 | 2.675 | 2.276 | 2001 | 327 | 90 | 72 | 3.00 | 82.09 | 17.61 | 0.01 | 0.28 |
| 90th %tile Delta-DV | 0.052 | 2.158 | 2.106 | 2001 | 224 | 90 | 72 | 2.20 | 97.68 | 1.54 | 0.04 | 0.74 |

Number of days with Delta-Deciview > 0.50: 4
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 3.500 | 5.840 | 2.340 | 2001 | 327 | 93 | 75 | 3.20 | 78.40 | 21.23 | 0.02 | 0.35 |
| 98th %tile Delta-DV | 0.583 | 2.858 | 2.275 | 2001 | 89 | 99 | 81 | 2.90 | 73.25 | 26.20 | 0.02 | 0.53 |
| 90th %tile Delta-DV | 0.183 | 2.351 | 2.167 | 2001 | 233 | 99 | 81 | 2.40 | 89.27 | 9.66 | 0.07 | 0.99 |

Number of days with Delta-Deciview > 0.50: 9
Number of days with Delta-Deciview > 1.00: 3
Max number of consecutive days with Delta-Deciview > 0.50: 2

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Heskett Station Unit 2 (base case) for Year 2002 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Heskett Station (Unit 2) - BART Protocol - Postutil 1.4
Year 2002 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 1.662 | 3.895 | 2.234 | 2002 | 73 | 47 | 101 | 2.80 | 74.31 | 25.21 | 0.04 | 0.44 |
| 98th %tile Delta-DV | 0.822 | 2.971 | 2.149 | 2002 | 199 | 28 | 28 | 2.40 | 79.43 | 18.89 | 0.12 | 1.56 |
| 90th %tile Delta-DV | 0.115 | 2.263 | 2.149 | 2002 | 198 | 54 | 108 | 2.40 | 91.94 | 7.02 | 0.06 | 0.98 |

Number of days with Delta-Deciview > 0.50: 15
Number of days with Delta-Deciview > 1.00: 5
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 2.116 | 4.350 | 2.234 | 2002 | 50 | 67 | 56 | 2.80 | 76.85 | 22.71 | 0.03 | 0.41 |
| 98th %tile Delta-DV | 0.496 | 2.666 | 2.170 | 2002 | 174 | 67 | 56 | 2.50 | 95.85 | 3.62 | 0.03 | 0.50 |
| 90th %tile Delta-DV | 0.142 | 2.375 | 2.234 | 2002 | 84 | 71 | 60 | 2.80 | 41.54 | 56.28 | 0.17 | 2.01 |

Number of days with Delta-Deciview > 0.50: 7
Number of days with Delta-Deciview > 1.00: 2
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 1.673 | 3.906 | 2.234 | 2002 | 73 | 90 | 72 | 2.80 | 72.95 | 26.55 | 0.04 | 0.46 |
| 98th %tile Delta-DV | 0.606 | 2.839 | 2.234 | 2002 | 39 | 90 | 72 | 2.80 | 73.62 | 25.63 | 0.03 | 0.72 |
| 90th %tile Delta-DV | 0.090 | 2.217 | 2.127 | 2002 | 138 | 90 | 72 | 2.30 | 76.73 | 22.33 | 0.05 | 0.89 |

Number of days with Delta-Deciview > 0.50: 10
Number of days with Delta-Deciview > 1.00: 2
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 0.677 | 2.953 | 2.275 | 2002 | 76 | 99 | 81 | 2.90 | 58.48 | 40.30 | 0.03 | 1.19 |
| 98th %tile Delta-DV | 0.457 | 2.797 | 2.340 | 2002 | 312 | 97 | 79 | 3.20 | 77.89 | 21.54 | 0.01 | 0.56 |
| 90th %tile Delta-DV | 0.102 | 2.269 | 2.167 | 2002 | 218 | 99 | 81 | 2.40 | 91.91 | 7.09 | 0.02 | 0.99 |

Number of days with Delta-Deciview > 0.50: 5
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 1

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
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P.O. Box 5520, Bismarck, ND 58506-5520
701.328.5200 (fax)
www.ndhealth.gov

November 30, 2005

FILE

Ms. Dianne Stockdill
Environmental Coordinator
Great River Energy
2875 Third Street SW
Underwood, ND 58576

Dear Ms. Stockdill:

As specified in the June 15, 2005 final amendments to the EPA July, 1999 regional haze rule, the Department has completed visibility modeling to determine which North Dakota BART-eligible (Best Available Retrofit Technology) sources are subject to BART. The Department's visibility analysis for this BART screening followed the protocol outlined in "Protocol for BART-Related Visibility Impairment Modeling Analyses in North Dakota" (North Dakota Department of Health, November, 2005).

As you are aware, the Great River Energy Coal Creek Generating Station Units 1 and 2 are BART-eligible sources. Completed visibility modeling for the Coal Creek Station (Units 1 and 2 combined) indicates that the maximum 98$^{th}$ percentile delta-deciview prediction for the facility exceeds the BART screening threshold of 0.5 deciviews. Therefore, Coal Creek Units 1 and 2 are subject to BART.

Two summaries of modeling results are enclosed. Attachment A provides a summary of 98$^{th}$ percentile predictions for the worst-case meteorological year for all BART-eligible facilities. Attachment B provides more detailed results specific to the Coal Creek Generating Station. Included in Attachment B are results for all delta-deciview metrics recommended in the North Dakota protocol, for each year of meteorological data. Also provided are worst-case day and receptor, and the percent contribution for each species.

If you have any questions regarding these results, please contact Steve Weber or Rob White of my staff at (701)328-5188. We look forward to working with you to develop appropriate BART control strategies for Coal Creek Units 1 and 2.

Sincerely,

Steve Weber for

Terry L. O'Clair, P.E.
Director
Division of Air Quality

TLO/SW:csc
Enc:
xc/enc: Deb Nelson - Great River Energy

Attachment A

Summary of BART Screening Results
98th Percentile Prediction for Worst-case Met. Year (2000-2002)
(24-hr Delta-Deciview)

| | TRNP South | TRNP North | TRNP Elk. Ranch | Lostwood NWA |
|---|---|---|---|---|
| Leland Olds Station | 6.22 | 5.32 | 4.49 | 5.42 |
| Milton R Young Station | 6.69 | 5.58 | 6.10 | 4.88 |
| Coal Creek Station | 4.48 | 3.56 | 3.04 | 4.04 |
| Stanton Station Unit 1 | 1.68 | 1.54 | 1.43 | 1.35 |
| Heskett Station Unit 2 | 0.82 | 0.54 | 0.61 | 0.58 |
| Mandan Refinery | 0.05 | 0.04 | 0.04 | 0.04 |

29-Nov-05

Attachment B

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Coal Creek Station (base case) for Year 2000 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Coal Creek Station (Units 1+2) - BART Protocol - Postutil 1.4
Year 2000 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 5.024 | 7.258 | 2.234 | 2000 | 72 | 53 | 107 | 2.80 | 66.43 | 32.84 | 0.25 | 0.48 |
| 98th %tile Delta-DV | 2.176 | 4.346 | 2.170 | 2000 | 164 | 51 | 105 | 2.50 | 97.09 | 1.47 | 0.53 | 0.92 |
| 90th %tile Delta-DV | 0.553 | 2.680 | 2.127 | 2000 | 100 | 51 | 105 | 2.30 | 63.30 | 35.11 | 0.55 | 1.04 |

Number of days with Delta-Deciview > 0.50: 41
Number of days with Delta-Deciview > 1.00: 22
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 4.550 | 6.783 | 2.234 | 2000 | 74 | 67 | 56 | 2.80 | 82.48 | 17.04 | 0.06 | 0.42 |
| 98th %tile Delta-DV | 1.836 | 4.069 | 2.234 | 2000 | 36 | 82 | 71 | 2.80 | 58.41 | 40.68 | 0.25 | 0.66 |
| 90th %tile Delta-DV | 0.586 | 2.734 | 2.149 | 2000 | 183 | 82 | 71 | 2.40 | 93.83 | 4.90 | 0.41 | 0.86 |

Number of days with Delta-Deciview > 0.50: 41
Number of days with Delta-Deciview > 1.00: 19
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 4.813 | 7.046 | 2.234 | 2000 | 74 | 90 | 72 | 2.80 | 78.69 | 20.85 | 0.07 | 0.40 |
| 98th %tile Delta-DV | 1.391 | 3.497 | 2.106 | 2000 | 265 | 90 | 72 | 2.20 | 87.87 | 11.21 | 0.28 | 0.64 |
| 90th %tile Delta-DV | 0.401 | 2.635 | 2.234 | 2000 | 56 | 90 | 72 | 2.80 | 74.35 | 24.92 | 0.22 | 0.51 |

Number of days with Delta-Deciview > 0.50: 35
Number of days with Delta-Deciview > 1.00: 15
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 5.654 | 7.930 | 2.275 | 2000 | 47 | 99 | 81 | 2.90 | 86.27 | 13.15 | 0.19 | 0.39 |
| 98th %tile Delta-DV | 2.157 | 4.432 | 2.275 | 2000 | 72 | 97 | 79 | 2.90 | 69.75 | 29.78 | 0.16 | 0.30 |
| 90th %tile Delta-DV | 0.945 | 3.177 | 2.232 | 2000 | 204 | 96 | 78 | 2.70 | 66.55 | 32.48 | 0.34 | 0.63 |

Number of days with Delta-Deciview > 0.50: 58
Number of days with Delta-Deciview > 1.00: 33
Max number of consecutive days with Delta-Deciview > 0.50: 3

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Coal Creek Station (base case) for Year 2001 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Coal Creek Station (Units 1+2) - BART Protocol - Postutil 1.4
Year 2001 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 5.001 | 7.235 | 2.234 | 2001 | 64 | 52 | 106 | 2.80 | 75.58 | 24.10 | 0.10 | 0.22 |
| 98th %tile Delta-DV | 2.181 | 4.287 | 2.106 | 2001 | 257 | 48 | 102 | 2.20 | 80.18 | 18.59 | 0.43 | 0.80 |
| 90th %tile Delta-DV | 0.466 | 2.572 | 2.106 | 2001 | 254 | 45 | 45 | 2.20 | 94.17 | 3.91 | 0.58 | 1.34 |

Number of days with Delta-Deciview > 0.50: 34
Number of days with Delta-Deciview > 1.00: 21
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 6.322 | 8.555 | 2.234 | 2001 | 64 | 82 | 71 | 2.80 | 75.32 | 24.29 | 0.13 | 0.26 |
| 98th %tile Delta-DV | 2.094 | 4.221 | 2.127 | 2001 | 100 | 82 | 71 | 2.30 | 76.82 | 22.82 | 0.07 | 0.29 |
| 90th %tile Delta-DV | 0.694 | 2.928 | 2.234 | 2001 | 62 | 82 | 71 | 2.80 | 80.07 | 19.61 | 0.08 | 0.24 |

Number of days with Delta-Deciview > 0.50: 46
Number of days with Delta-Deciview > 1.00: 25
Max number of consecutive days with Delta-Deciview > 0.50: 4

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 5.006 | 7.240 | 2.234 | 2001 | 64 | 90 | 72 | 2.80 | 76.29 | 23.40 | 0.11 | 0.21 |
| 98th %tile Delta-DV | 1.949 | 4.076 | 2.127 | 2001 | 92 | 90 | 72 | 2.30 | 56.05 | 42.91 | 0.35 | 0.69 |
| 90th %tile Delta-DV | 0.365 | 2.493 | 2.127 | 2001 | 109 | 90 | 72 | 2.30 | 61.06 | 37.85 | 0.27 | 0.82 |

Number of days with Delta-Deciview > 0.50: 27
Number of days with Delta-Deciview > 1.00: 16
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 6.517 | 8.793 | 2.275 | 2001 | 64 | 97 | 79 | 2.90 | 82.16 | 17.18 | 0.17 | 0.48 |
| 98th %tile Delta-DV | 4.038 | 6.313 | 2.275 | 2001 | 63 | 91 | 73 | 2.90 | 82.39 | 17.32 | 0.08 | 0.21 |
| 90th %tile Delta-DV | 0.984 | 3.151 | 2.167 | 2001 | 232 | 91 | 73 | 2.40 | 88.98 | 9.56 | 0.29 | 1.17 |

Number of days with Delta-Deciview > 0.50: 56
Number of days with Delta-Deciview > 1.00: 35
Max number of consecutive days with Delta-Deciview > 0.50: 6

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Coal Creek Station (base case) for Year 2002 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Coal Creek Station (Units 1+2) - BART Protocol - Postutil 1.4
Year 2002 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 6.675 | 8.908 | 2.234 | 2002 | 78 | 46 | 46 | 2.80 | 79.57 | 19.89 | 0.10 | 0.44 |
| 98th %tile Delta-DV | 4.475 | 6.730 | 2.255 | 2002 | 26 | 47 | 101 | 2.90 | 63.14 | 36.13 | 0.27 | 0.46 |
| 90th %tile Delta-DV | 0.971 | 3.077 | 2.106 | 2002 | 270 | 53 | 107 | 2.20 | 58.87 | 39.49 | 0.62 | 1.02 |

Number of days with Delta-Deciview > 0.50: 50
Number of days with Delta-Deciview > 1.00: 36
Max number of consecutive days with Delta-Deciview > 0.50: 4

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 10.081 | 12.314 | 2.234 | 2002 | 73 | 89 | 118 | 2.80 | 65.93 | 33.24 | 0.33 | 0.49 |
| 98th %tile Delta-DV | 3.557 | 5.664 | 2.106 | 2002 | 250 | 82 | 71 | 2.20 | 89.34 | 9.05 | 0.68 | 0.93 |
| 90th %tile Delta-DV | 0.706 | 2.834 | 2.127 | 2002 | 152 | 85 | 114 | 2.30 | 92.23 | 6.33 | 0.38 | 1.06 |

Number of days with Delta-Deciview > 0.50: 45
Number of days with Delta-Deciview > 1.00: 27
Max number of consecutive days with Delta-Deciview > 0.50: 4

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 8.644 | 10.878 | 2.234 | 2002 | 73 | 90 | 72 | 2.80 | 69.59 | 29.70 | 0.26 | 0.45 |
| 98th %tile Delta-DV | 3.039 | 5.315 | 2.276 | 2002 | 336 | 90 | 72 | 3.00 | 59.83 | 39.18 | 0.44 | 0.55 |
| 90th %tile Delta-DV | 0.581 | 2.708 | 2.127 | 2002 | 95 | 90 | 72 | 2.30 | 56.20 | 42.67 | 0.31 | 0.82 |

Number of days with Delta-Deciview > 0.50: 42
Number of days with Delta-Deciview > 1.00: 21
Max number of consecutive days with Delta-Deciview > 0.50: 4

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 6.332 | 8.608 | 2.275 | 2002 | 74 | 97 | 79 | 2.90 | 71.70 | 27.78 | 0.17 | 0.35 |
| 98th %tile Delta-DV | 3.190 | 5.487 | 2.297 | 2002 | 29 | 97 | 79 | 3.00 | 67.24 | 32.23 | 0.19 | 0.34 |
| 90th %tile Delta-DV | 0.707 | 2.852 | 2.145 | 2002 | 247 | 97 | 79 | 2.30 | 96.30 | 1.90 | 0.59 | 1.21 |

Number of days with Delta-Deciview > 0.50: 45
Number of days with Delta-Deciview > 1.00: 29
Max number of consecutive days with Delta-Deciview > 0.50: 4

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
1200 Missouri Avenue, Bismarck, ND 58504-5264
P.O. Box 5520, Bismarck, ND 58506-5520
701.328.5200 (fax)
www.ndhealth.gov

November 30, 2005

FILE

Mr. Steve Smokey
Environmental Coordinator
Great River Energy
4001 Highway 200A
Stanton, ND 58571

Dear Mr. Smokey:

As specified in the June 15, 2005 final amendments to the EPA July, 1999 regional haze rule, the Department has completed visibility modeling to determine which North Dakota BART-eligible (Best Available Retrofit Technology) sources are subject to BART. The Department's visibility analysis for this BART screening followed the protocol outlined in "Protocol for BART-Related Visibility Impairment Modeling Analyses in North Dakota" (North Dakota Department of Health, November, 2005).

As you are aware, the Great River Energy Stanton Generating Station Unit 1 is a BART-eligible source. Completed visibility modeling for Stanton Station Unit 1 indicates that the maximum 98$^{th}$ percentile delta-deciview prediction for the facility exceeds the BART screening threshold of 0.5 deciviews. Therefore, Stanton Unit 1 is subject to BART.

Two summaries of modeling results are enclosed. Attachment A provides a summary of 98$^{th}$ percentile predictions for the worst-case meteorological year for all BART-eligible facilities. Attachment B provides more detailed results specific to the Stanton Station Unit 1. Included in Attachment B are results for all delta-deciview metrics recommended in the North Dakota protocol, for each year of meteorological data. Also provided are worst-case day and receptor, and the percent contribution for each species.

If you have any questions regarding these results, please contact Steve Weber or Rob White of my staff at (701)328-5188. We look forward to working with you to develop an appropriate BART control strategy for Stanton Station Unit 1.

Sincerely,

Steve Weber for

Terry L. O'Clair, P.E.
Director
Division of Air Quality

TLO/SW:csc
Enc:
xc/enc: Deb Nelson - Great River Energy

Attachment A

Summary of BART Screening Results
98th Percentile Prediction for Worst-case Met. Year (2000-2002)
(24-hr Delta-Deciview)

| | TRNP South | TRNP North | TRNP Elk. Ranch | Lostwood NWA |
|---|---|---|---|---|
| Leland Olds Station | 6.22 | 5.32 | 4.49 | 5.42 |
| Milton R Young Station | 6.69 | 5.58 | 6.10 | 4.88 |
| Coal Creek Station | 4.48 | 3.56 | 3.04 | 4.04 |
| Stanton Station Unit 1 | 1.68 | 1.54 | 1.43 | 1.35 |
| Heskett Station Unit 2 | 0.82 | 0.54 | 0.61 | 0.58 |
| Mandan Refinery | 0.05 | 0.04 | 0.04 | 0.04 |

29-Nov-05

Attachment B

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Stanton Station Unit 1 (base case) for Year 2000 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Stanton Station (Unit 1) - BART Protocol - Postutil 1.4
Year 2000 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 3.134 | 5.367 | 2.234 | 2000 | 74 | 48 | 102 | 2.80 | 82.39 | 17.54 | 0.05 | 0.01 |
| 98th %tile Delta-DV | 0.937 | 3.170 | 2.234 | 2000 | 71 | 45 | 45 | 2.80 | 73.49 | 26.34 | 0.14 | 0.02 |
| 90th %tile Delta-DV | 0.228 | 2.356 | 2.127 | 2000 | 110 | 49 | 103 | 2.30 | 52.31 | 46.77 | 0.79 | 0.13 |

Number of days with Delta-Deciview > 0.50: 17
Number of days with Delta-Deciview > 1.00: 4
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 3.031 | 5.264 | 2.234 | 2000 | 36 | 82 | 71 | 2.80 | 70.43 | 29.39 | 0.15 | 0.03 |
| 98th %tile Delta-DV | 0.947 | 3.181 | 2.234 | 2000 | 44 | 83 | 112 | 2.80 | 62.34 | 37.42 | 0.20 | 0.04 |
| 90th %tile Delta-DV | 0.221 | 2.327 | 2.106 | 2000 | 261 | 83 | 112 | 2.20 | 91.67 | 7.86 | 0.41 | 0.07 |

Number of days with Delta-Deciview > 0.50: 17
Number of days with Delta-Deciview > 1.00: 7
Max number of consecutive days with Delta-Deciview > 0.50: 1

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 3.787 | 6.020 | 2.234 | 2000 | 74 | 90 | 72 | 2.80 | 83.38 | 16.56 | 0.05 | 0.01 |
| 98th %tile Delta-DV | 0.868 | 3.101 | 2.234 | 2000 | 44 | 90 | 72 | 2.80 | 66.10 | 33.73 | 0.14 | 0.03 |
| 90th %tile Delta-DV | 0.184 | 2.312 | 2.127 | 2000 | 100 | 90 | 72 | 2.30 | 80.07 | 19.68 | 0.21 | 0.04 |

Number of days with Delta-Deciview > 0.50: 10
Number of days with Delta-Deciview > 1.00: 6
Max number of consecutive days with Delta-Deciview > 0.50: 1

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 4.385 | 6.660 | 2.275 | 2000 | 47 | 97 | 79 | 2.90 | 86.50 | 13.42 | 0.06 | 0.01 |
| 98th %tile Delta-DV | 0.991 | 3.267 | 2.275 | 2000 | 72 | 97 | 79 | 2.90 | 80.71 | 19.22 | 0.06 | 0.01 |
| 90th %tile Delta-DV | 0.344 | 2.576 | 2.232 | 2000 | 212 | 99 | 81 | 2.70 | 98.41 | 1.47 | 0.09 | 0.03 |

Number of days with Delta-Deciview > 0.50: 23
Number of days with Delta-Deciview > 1.00: 7
Max number of consecutive days with Delta-Deciview > 0.50: 2

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Stanton Station Unit 1 (base case) for Year 2001 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Stanton Station (Unit 1) - BART Protocol - Postutil 1.4
Year 2001 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 1.736 | 3.970 | 2.234 | 2001 | 64 | 52 | 106 | 2.80 | 84.43 | 15.53 | 0.04 | 0.01 |
| 98th %tile Delta-DV | 0.901 | 3.177 | 2.276 | 2001 | 329 | 53 | 107 | 3.00 | 69.58 | 30.05 | 0.30 | 0.07 |
| 90th %tile Delta-DV | 0.214 | 2.447 | 2.234 | 2001 | 43 | 52 | 106 | 2.80 | 82.16 | 17.79 | 0.04 | 0.02 |

Number of days with Delta-Deciview > 0.50: 17
Number of days with Delta-Deciview > 1.00: 7
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 4.052 | 6.307 | 2.255 | 2001 | 12 | 83 | 112 | 2.90 | 82.21 | 17.66 | 0.11 | 0.02 |
| 98th %tile Delta-DV | 1.205 | 3.438 | 2.234 | 2001 | 42 | 82 | 71 | 2.80 | 82.36 | 17.57 | 0.06 | 0.02 |
| 90th %tile Delta-DV | 0.319 | 2.467 | 2.149 | 2001 | 195 | 85 | 114 | 2.40 | 97.64 | 2.29 | 0.06 | 0.01 |

Number of days with Delta-Deciview > 0.50: 21
Number of days with Delta-Deciview > 1.00: 12
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 2.026 | 4.280 | 2.255 | 2001 | 12 | 90 | 72 | 2.90 | 81.37 | 18.57 | 0.05 | 0.01 |
| 98th %tile Delta-DV | 0.733 | 2.839 | 2.106 | 2001 | 261 | 90 | 72 | 2.20 | 93.65 | 6.27 | 0.07 | 0.02 |
| 90th %tile Delta-DV | 0.144 | 2.271 | 2.127 | 2001 | 94 | 90 | 72 | 2.30 | 82.66 | 17.29 | 0.04 | 0.01 |

Number of days with Delta-Deciview > 0.50: 13
Number of days with Delta-Deciview > 1.00: 5
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 4.914 | 7.254 | 2.340 | 2001 | 326 | 91 | 73 | 3.20 | 82.39 | 17.50 | 0.09 | 0.02 |
| 98th %tile Delta-DV | 1.351 | 3.626 | 2.275 | 2001 | 41 | 91 | 73 | 2.90 | 73.92 | 25.97 | 0.09 | 0.02 |
| 90th %tile Delta-DV | 0.386 | 2.596 | 2.211 | 2001 | 179 | 93 | 75 | 2.60 | 69.89 | 29.70 | 0.37 | 0.04 |

Number of days with Delta-Deciview > 0.50: 30
Number of days with Delta-Deciview > 1.00: 16
Max number of consecutive days with Delta-Deciview > 0.50: 3

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Stanton Station Unit 1 (base case) for Year 2002 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Stanton Station (Unit 1) - BART Protocol - Postutil 1.4
Year 2002 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 3.841 | 6.074 | 2.234 | 2002 | 73 | 49 | 103 | 2.80 | 78.06 | 21.83 | 0.09 | 0.02 |
| 98th %tile Delta-DV | 1.675 | 3.781 | 2.106 | 2002 | 233 | 53 | 107 | 2.20 | 86.14 | 13.70 | 0.14 | 0.02 |
| 90th %tile Delta-DV | 0.310 | 2.416 | 2.106 | 2002 | 270 | 48 | 102 | 2.20 | 55.36 | 44.28 | 0.30 | 0.06 |

Number of days with Delta-Deciview > 0.50: 29
Number of days with Delta-Deciview > 1.00: 17
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 4.809 | 7.042 | 2.234 | 2002 | 73 | 89 | 118 | 2.80 | 72.40 | 27.42 | 0.16 | 0.02 |
| 98th %tile Delta-DV | 1.540 | 3.774 | 2.234 | 2002 | 50 | 71 | 60 | 2.80 | 63.26 | 36.45 | 0.26 | 0.04 |
| 90th %tile Delta-DV | 0.312 | 2.546 | 2.234 | 2002 | 91 | 82 | 71 | 2.80 | 77.06 | 22.87 | 0.05 | 0.02 |

Number of days with Delta-Deciview > 0.50: 23
Number of days with Delta-Deciview > 1.00: 14
Max number of consecutive days with Delta-Deciview > 0.50: 3

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 4.345 | 6.579 | 2.234 | 2002 | 73 | 90 | 72 | 2.80 | 76.06 | 23.81 | 0.11 | 0.02 |
| 98th %tile Delta-DV | 1.432 | 3.666 | 2.234 | 2002 | 39 | 90 | 72 | 2.80 | 78.88 | 20.97 | 0.12 | 0.03 |
| 90th %tile Delta-DV | 0.233 | 2.467 | 2.234 | 2002 | 83 | 90 | 72 | 2.80 | 51.30 | 48.24 | 0.41 | 0.05 |

Number of days with Delta-Deciview > 0.50: 14
Number of days with Delta-Deciview > 1.00: 9
Max number of consecutive days with Delta-Deciview > 0.50: 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 2.442 | 4.717 | 2.275 | 2002 | 74 | 97 | 79 | 2.90 | 81.69 | 18.24 | 0.05 | 0.01 |
| 98th %tile Delta-DV | 1.150 | 3.489 | 2.340 | 2002 | 363 | 97 | 79 | 3.20 | 77.19 | 22.76 | 0.04 | 0.01 |
| 90th %tile Delta-DV | 0.308 | 2.541 | 2.232 | 2002 | 195 | 99 | 81 | 2.70 | 71.54 | 27.70 | 0.68 | 0.09 |

Number of days with Delta-Deciview > 0.50: 25
Number of days with Delta-Deciview > 1.00: 11
Max number of consecutive days with Delta-Deciview > 0.50: 4

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
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November 30, 2005

FILE

Mr. Ron Day
Manager, Health, Safety & Environment
Tesoro Refinery & Marketing Co.
900 Old Red Trail NE
Mandan, ND 58554

Dear Mr. Day:

As specified in the June 15, 2005 final amendments to the EPA July, 1999 regional haze rule, the Department has completed visibility modeling to determine which North Dakota BART-eligible (Best Available Retrofit Technology) sources are subject to BART. The Department's visibility analysis for this BART screening followed the protocol outlined in "Protocol for BART-Related Visibility Impairment Modeling Analyses in North Dakota" (North Dakota Department of Health, November, 2005).

As you are aware, the Tesoro Mandan Refinery CO furnace is a BART-eligible source. Completed visibility modeling for the CO furnace indicates that the maximum 98$^{th}$ percentile delta-deciview prediction for the facility is below the BART screening threshold of 0.5 deciviews. Therefore, the CO furnace is not subject to BART.

Two summaries of modeling results are enclosed. Attachment A provides a summary of 98$^{th}$ percentile predictions for the worst-case meteorological year for all BART-eligible facilities. Attachment B provides more detailed results specific to the Mandan Refinery CO furnace. Included in Attachment B are results for all delta-deciview metrics recommended in the North Dakota protocol, for each year of meteorological data. Also provided are worst-case day and receptor, and the percent contribution for each species.

If you have any questions regarding these results, please contact Steve Weber or Rob White of my staff at (701)328-5188.

Sincerely,

Steve Weber for

Terry L. O'Clair, P.E.
Director
Division of Air Quality

TLO/SW:csc
Enc:

Attachment A

Summary of BART Screening Results
98th Percentile Prediction for Worst-case Met. Year (2000-2002)
(24-hr Delta-Deciview)

| | TRNP South | TRNP North | TRNP Elk. Ranch | Lostwood NWA |
|---|---|---|---|---|
| Leland Olds Station | 6.22 | 5.32 | 4.49 | 5.42 |
| Milton R Young Station | 6.69 | 5.58 | 6.10 | 4.88 |
| Coal Creek Station | 4.48 | 3.56 | 3.04 | 4.04 |
| Stanton Station Unit 1 | 1.68 | 1.54 | 1.43 | 1.35 |
| Heskett Station Unit 2 | 0.82 | 0.54 | 0.61 | 0.58 |
| Mandan Refinery | 0.05 | 0.04 | 0.04 | 0.04 |

29-Nov-05

Attachment B

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Mandan Refinery (base case) for Year 2000 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Mandan Refinery (CO Furnace) - BART Protocol - Postutil 1.4
Year 2000 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 0.132 | 2.366 | 2.234 | 2000 | 74 | 52 | 106 | 2.80 | 50.86 | 45.06 | 0.00 | 4.08 |
| 98th %tile Delta-DV | 0.036 | 2.311 | 2.276 | 2000 | 336 | 45 | 45 | 3.00 | 17.08 | 75.03 | 0.00 | 7.89 |
| 90th %tile Delta-DV | 0.004 | 2.132 | 2.127 | 2000 | 105 | 3 | 3 | 2.30 | 43.33 | 51.14 | 0.00 | 5.53 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 0.094 | 2.327 | 2.234 | 2000 | 54 | 82 | 71 | 2.80 | 41.67 | 52.99 | 0.00 | 5.34 |
| 98th %tile Delta-DV | 0.033 | 2.266 | 2.234 | 2000 | 55 | 82 | 71 | 2.80 | 16.77 | 73.56 | 0.00 | 9.67 |
| 90th %tile Delta-DV | 0.008 | 2.136 | 2.127 | 2000 | 97 | 82 | 71 | 2.30 | 29.69 | 62.52 | 0.00 | 7.79 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 0.062 | 2.189 | 2.127 | 2000 | 98 | 90 | 72 | 2.30 | 21.36 | 69.04 | 0.00 | 9.60 |
| 98th %tile Delta-DV | 0.034 | 2.289 | 2.255 | 2000 | 11 | 90 | 72 | 2.90 | 32.88 | 59.71 | 0.00 | 7.41 |
| 90th %tile Delta-DV | 0.004 | 2.110 | 2.106 | 2000 | 261 | 90 | 72 | 2.20 | 60.10 | 20.63 | 0.00 | 19.27 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 0.108 | 2.448 | 2.340 | 2000 | 349 | 93 | 75 | 3.20 | 33.79 | 61.74 | 0.00 | 4.46 |
| 98th %tile Delta-DV | 0.024 | 2.300 | 2.275 | 2000 | 55 | 91 | 73 | 2.90 | 57.42 | 36.95 | 0.00 | 5.62 |
| 90th %tile Delta-DV | 0.009 | 2.242 | 2.232 | 2000 | 200 | 99 | 81 | 2.70 | 71.44 | 23.64 | 0.00 | 4.93 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Mandan Refinery (base case) for Year 2001 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Mandan Refinery (CO Furnace) - BART Protocol - Postutil 1.4
Year 2001 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 0.076 | 2.330 | 2.255 | 2001 | 13 | 45 | 45 | 2.90 | 15.62 | 74.72 | 0.00 | 9.66 |
| 98th %tile Delta-DV | 0.028 | 2.134 | 2.106 | 2001 | 260 | 46 | 46 | 2.20 | 77.10 | 17.67 | 0.00 | 5.23 |
| 90th %tile Delta-DV | 0.004 | 2.110 | 2.106 | 2001 | 257 | 53 | 107 | 2.20 | 68.00 | 25.65 | 0.00 | 6.36 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 0.155 | 2.410 | 2.255 | 2001 | 12 | 82 | 71 | 2.90 | 49.02 | 46.23 | 0.00 | 4.76 |
| 98th %tile Delta-DV | 0.036 | 2.270 | 2.234 | 2001 | 43 | 67 | 56 | 2.80 | 41.62 | 53.64 | 0.00 | 4.74 |
| 90th %tile Delta-DV | 0.007 | 2.156 | 2.149 | 2001 | 199 | 58 | 47 | 2.40 | 76.60 | 16.14 | 0.00 | 7.26 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 0.068 | 2.322 | 2.255 | 2001 | 12 | 90 | 72 | 2.90 | 47.16 | 49.02 | 0.00 | 3.82 |
| 98th %tile Delta-DV | 0.027 | 2.303 | 2.276 | 2001 | 328 | 90 | 72 | 3.00 | 52.10 | 44.85 | 0.00 | 3.05 |
| 90th %tile Delta-DV | 0.004 | 2.131 | 2.127 | 2001 | 100 | 90 | 72 | 2.30 | 60.48 | 37.06 | 0.00 | 2.46 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 0.268 | 2.607 | 2.340 | 2001 | 327 | 91 | 73 | 3.20 | 44.63 | 51.28 | 0.00 | 4.09 |
| 98th %tile Delta-DV | 0.040 | 2.185 | 2.145 | 2001 | 269 | 99 | 81 | 2.30 | 16.76 | 67.08 | 0.00 | 16.16 |
| 90th %tile Delta-DV | 0.011 | 2.157 | 2.145 | 2001 | 262 | 97 | 79 | 2.30 | 32.66 | 53.46 | 0.00 | 13.88 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0

CALBART - Summary of Visibility Results for 24-hr Delta-Deciview

Mandan Refinery (base case) for Year 2002 Meteorological Data

Title lines from CALPUFF (POSTUTIL) output file:

Mandan Refinery (CO Furnace) - BART Protocol - Postutil 1.4
Year 2002 Calmet Met. Data - RUC2d Mesoscale Data - Monthly NH3
BART Protocol Receptors (99)

| | DELTA-DV | DV(Total) | DV(BKG) | YEAR | DAY | SEQ RECEP | ND RECEP | F(RH) | % of Modeled Extinction by Species %_SO4 | %_NO3 | %_PMC | %_PMF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP SOUTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 0.119 | 2.246 | 2.127 | 2002 | 293 | 53 | 107 | 2.30 | 31.69 | 57.61 | 0.00 | 10.70 |
| 98th %tile Delta-DV | 0.054 | 2.288 | 2.234 | 2002 | 51 | 51 | 105 | 2.80 | 53.00 | 43.33 | 0.00 | 3.67 |
| 90th %tile Delta-DV | 0.008 | 2.241 | 2.234 | 2002 | 67 | 54 | 108 | 2.80 | 25.68 | 65.53 | 0.00 | 8.80 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP NORTH UNIT** | | | | | | | | | | | | |
| Largest Delta-DV | 0.115 | 2.348 | 2.234 | 2002 | 50 | 67 | 56 | 2.80 | 41.88 | 53.56 | 0.00 | 4.56 |
| 98th %tile Delta-DV | 0.039 | 2.167 | 2.127 | 2002 | 301 | 82 | 71 | 2.30 | 25.65 | 66.52 | 0.00 | 7.83 |
| 90th %tile Delta-DV | 0.009 | 2.136 | 2.127 | 2002 | 116 | 58 | 47 | 2.30 | 24.56 | 66.44 | 0.00 | 9.00 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRNP ELKHORN RANCH** | | | | | | | | | | | | |
| Largest Delta-DV | 0.089 | 2.323 | 2.234 | 2002 | 73 | 90 | 72 | 2.80 | 42.09 | 53.50 | 0.00 | 4.41 |
| 98th %tile Delta-DV | 0.042 | 2.276 | 2.234 | 2002 | 74 | 90 | 72 | 2.80 | 50.74 | 45.51 | 0.00 | 3.75 |
| 90th %tile Delta-DV | 0.006 | 2.133 | 2.127 | 2002 | 127 | 90 | 72 | 2.30 | 36.74 | 54.59 | 0.00 | 8.66 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOSTWOOD NWA** | | | | | | | | | | | | |
| Largest Delta-DV | 0.059 | 2.335 | 2.275 | 2002 | 76 | 97 | 79 | 2.90 | 23.48 | 67.89 | 0.00 | 8.63 |
| 98th %tile Delta-DV | 0.027 | 2.302 | 2.275 | 2002 | 51 | 91 | 73 | 2.90 | 59.45 | 37.60 | 0.00 | 2.95 |
| 90th %tile Delta-DV | 0.006 | 2.217 | 2.211 | 2002 | 178 | 97 | 79 | 2.60 | 86.85 | 2.82 | 0.00 | 10.32 |

Number of days with Delta-Deciview > 0.50: 0
Number of days with Delta-Deciview > 1.00: 0
Max number of consecutive days with Delta-Deciview > 0.50: 0