

CALPUFF MODELING RESULTS FOR THE



MARTIN DRAKE POWER PLANT'S SYNTHETIC MINOR PERMIT APPLICATION

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CALPUFF MODELING RESULTS FOR THE MARTIN DRAKE POWER PLANT

Executive Summary

The Colorado Department of Public Health and Environment's (CDPHE) "subject to BART" modeling demonstrated that the Martin Drake Power Plant (Drake Power Plant) would be "subject to BART" due to impacts above the 0.500 deciview threshold at the 98th percentile at one or more Class I Areas; namely, Rawah Wilderness Area, Great Sand Dunes National Park, Eagles Nest Wilderness Area and Rocky Mountain National Park. Colorado Springs Utilities (Utilities) has requested a plant-wide synthetic minor emission permit for the Drake Power Plant such that the plant will not have a visibility impact above 0.500 deciview (dV), and thus not be "subject to BART". This report details the modeling efforts undertaken by Utilities to verify that the requested synthetic minor permit limits will not cause visibility impacts above the exemption threshold at any Class I area.

After several iterations, plant-wide synthetic minor emission limits were established; specifically, 1425.9 lbs/hr of SO₂ emissions and 943.6 lbs/hr of NO_x emissions. Various emissions scenarios were then modeled to demonstrate that the three units at the Drake Power Plant could operate in any number of ways, and still not exceed the 0.500 dV exemption threshold, verifying that a plant-wide limit has no greater potential for visibility impairment. The model runs utilized state approved datasets, including the 12 km 2002 WRAP MM5 dataset. All model runs demonstrated that with plant-wide synthetic minor permit limits the Drake Power Plant will not cause visibility impairments above the 0.500 dV threshold at the 98th percentile.

This report first addresses how emission rates were arrived at and then explains and shows results for several different modeling scenarios. A table including the eight highest visibility impacted days is included.

Emission Rates

Maximum 24-hour SO₂ and NO_x emissions were previously determined for each unit using CEMS data from 2002 through 2nd quarter 2006. These maximum 24-hour average emission rates were previously submitted in subject to BART determinations and the previously submitted BART Analysis and are shown in Tables 3, 5 and 7 below. Note, these are the "worst case" SO₂ and NO_x emissions, and do not necessarily reflect expected operating conditions in the future; rather these are the "base" emissions, a starting point from which needed reductions can be calculated to verify the ability to comply with proposed limits.

All model runs include speciated PM emissions. Speciated PM includes fine particulate (PMF), coarse particulate (PMC), elemental carbon (EC), secondary organic aerosol (SOA), sulfuric acid gas (SO₄) and other inorganic acid gas emissions. Stack testing was conducted on Drake Units #5 and #7, and speciated PM emissions were determined for the two units. Units #5 and #7 underwent stack testing because they represented the greatest range of coal blends. At the time of stack testing, Unit #5 was burning a blend of 60 – 70% Powder River Basin (PRB) coal and 30-40% Foidel Creek (Colorado bituminous) coal. Unit #7 was burning 100% Foidel Creek coal. For some modeled pollutants, such as SO₄ and other acid gases, data from the stack tests was reviewed to determine the highest emission rates (lb/MMBtu) based on the range of coal

blends represented by the tests. The highest emission rates (lb/MMBtu) were conservatively selected as “worst case” based on the assumption that each of the units could burn a range of coal blends, and these emissions are more directly related to coal type. For other pollutants, such as SOA, stack test data for each unit was used, when available, recognizing that specific boiler parameters are likely to be a greater influence on SOA emissions than coal type. Emissions of PMF and PMC are based on stack test data since unit specific pollution control equipment will have the greatest impact on filterable emissions. Based on particle size distribution analysis, all filterable PM has been conservatively modeled as PMF due to the fact that only approximately 1% of filterable PM would be classified as PMC. Elemental carbon emissions were found to be non-detect in the stack tests. Emissions of elemental carbon were conservatively set equal to the detection threshold of 1% of filterable PM. Summary sheets of the stack test results are attached as Appendix A.

For Unit #7, speciated PM emissions came from stack test data. Because Unit #7 was burning the worst case coal, Unit #7’s stack test PM emissions were used to scale PM emissions for Unit #6 using heat input rates (MMBtu/hr). For Unit #5, the highest value of either Unit #5’s stack test data or the scaled value from Unit #7 was used in modeling.

The heat input rates used to scale the emissions data to the specific boiler sizes are found in Table 1 below. Note, these are CEMS derived heat input rates, not “nameplate” heat input rates.

Table 1: Heat Input Rates

Boiler	Max. Heat Input Rate (MMBtu/hr)
Drake Unit #5	580
Drake Unit #6	1,015
Drake Unit #7	1,550

Stack test data from June 2006 was used to model total filterable PM emissions for Units #5 and #7. No stack tests were conducted on Unit #6 in June 2006, so the March 13, 2003 Title V permit compliance stack test data was used for Unit #6 total filterable PM. See Table 2 below.

Table 2: Stack Test Results for Drake Units

Drake Unit	Total Filterable PM (lb/hr)	Date of Stack Test
#5	17.3	June 15, 2006
#6	17.94	March 13, 2003
#7	41.5	June 14, 2006

The “base” emission rates are shown in the Tables 3, 5, and 6 that follow. Note that these emission rates are the worst case emissions identified as described above. Tables 4 and 7 show the acid gas breakdown from the stack test data. The sum of the acid gases was modeled as SO₄ per APCD guidance.

Table 3: Base Emission Rates to Model for Drake Unit #5

Pollutant	Emission Rate (lb/hr)	Emission Rate (g/s)	Notes
SO₂	479.95	60.5	Peak 24-hour actual emission rate in 2006.
SO₄	5.850	0.737	Modeled emissions are scaled based on Unit #7 stack test data. Emissions are scaled based on heat input rate. The scaled emissions are used because they represent probable emissions if worst-case coal blend was burned.
NO_x	266	33.5	Peak 24-hour actual emission rate in 2002.
SOA	0.474	0.060	Average of three runs from June 15, 2006 stack test on Drake #5.
PMF	17.3	2.18	Average of three runs from June 15, 2006 stack test on Drake #5. Less than 1% of PM measured would be defined as PMC, so all PM was conservatively considered PMF.
PMC	0	0	Included in PMF.
EC	0.173	0.0218	Lab data shows that EC is below the detection limit of 1%. EC is conservatively estimated at 1% of PMF.

Table 4: Acid Gas Breakdown by Species for Drake Unit #5

Pollutant	Emission Rate (lb/hr)	Emission Rate (g/s)	Notes
HF	1.78	0.224	Average of three runs from June 15, 2006 stack test on Drake #5.
HCl	1.71	0.215	Average of three runs from June 15, 2006 stack test on Drake #5.
H₂SO₄	0.0437	0.0055	Average of three runs from June 15, 2006 stack test on Drake #5.
TOTAL	3.53	0.445	Total acid gas emission rate is modeled as SO ₄ (per APCD). This is the total of the three acid gases tested. However, scaling emissions from Unit #7 yields a higher result, assumed to be the worst-case coal, therefore the rate from Unit #7 is used. (see "SO ₄ " row in the Table 3 above)

Table 5: Base Emissions Rates to Model for Drake Unit #6

Pollutant	Emission Rate (lb/hr)	Emission Rate (g/s)	Notes
SO₂	866.76	109.2	Peak 24-hour actual emission rate in 2006.
SO₄	10.237	1.290	Modeled emissions are scaled based on Unit #7 emissions. Emissions are scaled based on heat input rate. The scaled emissions are used because they represent probable emissions if the worst-case coal blend was burned.
NO_x	421.2	53.1	Peak 24-hour actual emission rate in 2002.
SOA	0.403	0.051	Modeled emissions are scaled based on Unit# 7 emissions. Emissions are scaled based on heat input rate. The scaled emissions are used because they represent probable emissions if the worst-case coal blend was burned.
PMF	17.94	2.26	Average of three runs from stack test data from March 13, 2003. Less than 1% of PM measured would be defined as PMC, so all PM was conservatively considered PMF.
PMC	0	0	Included in PMF.
EC	0.179	0.023	Lab data shows that EC is below the detection limit of 1%. EC is conservatively estimated at 1% of PMF.
NOTE: No data to break down the acid gases was obtained for Unit #6. Instead, SO ₄ was scaled based on Unit #7 to give the worst-case coal scenario for Unit #6.			

Table 6: Base Emission Rates for Drake Unit #7

Pollutant	Emission Rate (lb/hr)	Emission Rate (g/s)	Notes
SO₂	1377.87	173.6	Peak 24-hour actual emission rate in 2006.
SO₄	15.633	1.970	Includes HF, HCl and H ₂ SO ₄ . Chuck Machovec instructed that acid gases should be added on a lb/hr basis with no molecular weight conversion needed.
NO_x	708.1	89.2	Peak 24-hour actual emission rate in 2006.
SOA	0.616	0.078	Average of three runs from June 14, 2006 stack test.
PMF	41.5	5.229	Average of three runs from June 14, 2006 stack test. Less than 1% of PM measured would be defined as PMC, so all PM was conservatively considered PMF.
PMC	0	0	Included in PMF.
EC	0.415	0.052	Lab data shows that EC is below the detection limit of 1%. EC is conservatively estimated at 1% of PMF.

Table 7: Acid Gas Breakdown by Species for Drake Unit #7

Pollutant	Emission Rate (lb/hr)	Emission Rate (g/s)	Notes
HF	12.6	1.588	Average of three runs from June 14, 2006 stack test on Drake #7.
HCl	2.82	0.355	Average of three runs from June 14, 2006 stack test on Drake #7.
H₂SO₄	0.213	0.027	Average of three runs from June 14, 2006 stack test on Drake #7.
TOTAL	15.633	1.970	Total acid gas emission rate is modeled as SO ₄ in Table 6.

CALMET, CALPUFF, POSTUTIL, and CALPOST

Colorado Springs Utilities used the same model set-up for the Drake Power Plant modeling as was previously used for the Nixon Power Plant. In the modeling work for Nixon, only five parameters were changed in the CALMET input files. These changes were reviewed and approved for use by the CDPHE. As with the Nixon work, for 2002, the 12 km MM5 data set from the WRAP was used.

The modeling domain was the same as that used for the Nixon analysis and has been approved for use by the CDPHE. The domain was set up with a 50 kilometer buffer around the plants and the four Class I Areas closest to the plants. These are the four Class I Areas the CDPHE identified in their subject to BART modeling as having potential visibility impacts greater than 0.500 dV. Analyzing impacts to Class I Areas at a greater distance from the plant was not deemed necessary as the CDPHE modeling showed impacts at these parks were less than 0.500 dV. The grid size was set to 0.5 km.

Changes were not made to parameter settings in CALPUFF, POSTUTIL, and CALPOST input files from the settings used by the CDPHE. In addition, all model versions were the ones specified by the CDPHE in their modeling protocol. The CALPOST post-processor developed by the CDPHE was also used.

Scenario Description and Modeling Results

In order for Drake to cause less than a 0.500 dV visibility impairment at all Class 1 Areas, reductions in emissions are required. As a starting point, a base case was run using maximum historical 24-hour SO₂ emissions for Units #5 and #6. SO₂ emissions were reduced on Unit #7 which is modeled as having a semi-dry scrubber installed. NO_x reductions were also needed on Units #6 and #7.

Although modeling the historical 24-hour maximum emission rates is not required for the synthetic minor permit, a demonstration that the synthetic minor permit limits can be met, even

while operating at the maximum historical emission rates should provide certainty that the synthetic minor permit limitations can be achieved. The 24-hour maximum emission rates do not necessarily coincide on a pollutant by pollutant basis, nor on a unit by unit basis, thus this scenario is very unlikely, and a very conservative check of the ability to comply with the proposed limits. To be within the needed synthetic minor permit limits, a 94.25% SO₂ reduction is required relative to the maximum 24-hour historical SO₂ emission rate from Unit #7 and 40% NO_x reduction (relative to the 24-hour maximum historical NO_x emission rate) is needed on both Units #6 and #7. This scenario is strictly for demonstration purposes. Normal operating conditions and emission rates will require reductions less than the reductions described above. Typical SO₂ emission rates, as well as control over coal purchases, coal blending, load restrictions, and gas co-firing, will allow the typical SO₂ reductions required to fall into a somewhat more typically achievable range of 80 to 90% for day to day operations. There are also many options the Drake Power Plant will evaluate to lower NO_x emissions. These include boiler tuning, overfire air, forced overfire air, rotating opposed fire air (ROFA), and other technologies as they are available.

The base case scenario uses historical 24-hour maximum SO₂ and NO_x emission rates except for the reductions described above (94.25% SO₂ reduction on Drake 7, and 40% NO_x reductions on both Drake 6 and Drake 7). The sum of SO₂ emissions modeled from the three units is 1429.5 lbs/hr. The sum of NO_x emissions modeled from the three units is 943.6 lbs/hr. These values constitute the requested plant-wide limits for the synthetic minor permit. The speciated PM emissions modeled are the “base” emissions previously discussed. The emission rates for the base case scenario are summarized in Table 8 below.

Table 8 – Emissions for Base Case for the Drake Power Plant

Base Case	Unit #5		Unit #6		Unit #7	
	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)
SO ₂	479.95	60.5	866.76	109.2	79.19	10.0
SO ₄	5.85	0.74	10.24	1.29	15.63	1.97
NO _x	266	33.5	252.7	31.8	424.9	53.5
SOA	0.474	0.060	0.403	0.051	0.616	0.078
PMF	17.3	2.18	17.94	2.26	41.5	5.23
PMC	0	0	0	0	0	0
EC	0.173	0.022	0.179	0.023	0.415	0.052

With the addition of a scrubber to Unit #7, emissions of HF, HCl, and H₂SO₄ are expected to be reduced, or be completely eliminated; to be conservative in the modeling, this effect has not been accounted for in the scenarios.

In addition to capping SO₂ and NO_x emissions, the temperature and velocity of the stack gas from Unit #7 was adjusted in proportion to how much SO₂ was scrubbed. Cooler stack gas results in a lower volume of gas going up the stack and in turn causes a slower exit velocity. A table detailing Unit #7 stack parameters used in modeling has been included with each modeling

scenario. Stack parameters for Units #5 and #6 are included in Table 9; these parameters do not change in any scenario where the unit is operating.

Table 9 – Stack Parameters for Base Case for the Drake Power Plant

Unit	Elevation (m)	Stack Height (m)	Stack Diameter (m)	Stack Temperature (Kelvin)	Exit Velocity (m/s)
#5	1814	61	3.23	433	16.71
#6	1814	61	3.84	433	16.63
#7	1814	76.2	4.57	352.48	15.11

From inspection of the values in Table 10, it can be seen that the base case emissions do not cause more than seven days of visibility impairment in any year modeled, nor do the base case emissions cause 22 days of visibility impairment over the modeled 3-year period. In addition, the year with the highest modeled impacts was 2002 at the Rocky Mountain National Park. Therefore, all of the other operating scenarios were only modeled for 2002. Previous work has shown that if the threshold is not exceeded for 2002, then it will not be exceeded for any of the other model years. CALPOST post-processor output showing the number of days of impact (for all the scenarios) are attached as Appendix B.

Table 10 – Impacts from Drake’s Base Case Emissions

Year	Class I Area	Model Results	
		No. of Days > 1.0 dV	No. of Days > 0.5 dV
1996	Rocky Mtn.	1	6
	Great Sand Dunes	0	3
	Eagles’ Nest	0	1
	Rawah	0	2
2001	Rocky Mtn.	0	2
	Great Sand Dunes	0	1
	Eagles’ Nest	0	0
	Rawah	0	0
2002	Rocky Mtn.	2	7
	Great Sand Dunes	1	4
	Eagles’ Nest	0	2
	Rawah	1	3

A variety of scenarios, as detailed below, were subsequently modeled to demonstrate that the proposed synthetic minor permit limits do not allow the modeled visibility impacts to exceed the 0.500 dV threshold as well as to demonstrate that variability of emissions among the units do not appreciably change the magnitude of the visibility impact. In all model runs, the plant-wide SO₂ emissions were capped at 1425.9 lbs/hr and NO_x emissions were limited to 943.6 lbs/hr. Each

scenario modeled shows that the 98th percentile impact at each park is below the 0.500 dV exemption threshold.

The second scenario uses emission rates and emission reductions that are more typical of day to day operations. In a typical situation, an 83.61% reduction in SO₂ and a 40% reduction in NO_x is needed on Unit #7. In addition, a 40% reduction in NO_x is needed on Unit #6. Unit #5 need not utilize any reductions. The emission rates modeled, stack parameters for Unit #7 (simulating a scrubber) and visibility results are summarized in Tables 11, 12, and 13 below.

Table 11 –Typical Emissions for the Drake Power Plant

Typical Emissions 2002	Unit #5		Unit #6		Unit #7	
	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)
SO ₂	450	56.7	750	94.5	225.90	28.5
SO ₄	5.85	0.74	10.24	1.29	15.63	1.97
NO _x	266	33.5	252.7	31.8	424.9	53.5
SOA	0.474	0.060	0.403	0.051	0.616	0.078
PMF	17.3	2.18	17.94	2.26	41.5	5.23
PMC	0	0	0	0	0	0
EC	0.173	0.022	0.179	0.023	0.415	0.052

Table 12 – Stack Parameters for Typical Emissions for the Drake Power Plant

Typical Emissions 2002	Exit Temp	Exit Velocity	Diameter	Stack Height	Base Elevation
	(Kelvin)	(m/s)	(m)	(m)	(m)
Unit #7	360.9	15.47	4.57	76.2	1814

Table 13– Impacts from Drake’s Typical Emissions

Scenario / Year	Class I Area	Model Results	
		No. of Days > 1.0 dV	No. of Days > 0.5 dV
Typical Emissions 2002	Rocky Mtn.	2	7
	Great Sand Dunes	1	4
	Eagles’ Nest	0	2
	Rawah	1	3

The distribution of NO_x emissions was modeled in two different ways. In the first NO_x scenario (NO_x Variation 1), Unit #7 was modeled with a 94.25% reduction of SO₂ due to the use of a scrubber, and a 40% reduction of NO_x on both Units #5 and #6 was modeled. Emission rates

modeled, stack parameters for Unit #7 (simulating a scrubber), and visibility results can be seen in Tables 14, 15, and 16.

Table 14 – Emissions for NO_x Variation 1 for the Drake Power Plant

NO _x Variation 1 2002	Unit #5		Unit #6		Unit #7	
	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)
SO ₂	479.95	60.5	866.76	109.2	79.19	10.0
SO ₄	5.85	0.74	10.24	1.29	15.63	1.97
NO _x	159.6	20.1	252.7	31.8	531.3	66.9
SOA	0.474	0.060	0.403	0.051	0.616	0.078
PMF	17.3	2.18	17.94	2.26	41.5	5.23
PMC	0	0	0	0	0	0
EC	0.173	0.022	0.179	0.023	0.415	0.052

Table 15 – Stack Parameters for NO_x Variation 1 for the Drake Power Plant

NO _x Variation 1 2002	Exit Temp	Exit Velocity	Diameter	Stack Height	Base Elevation
	(Kelvin)	(m/s)	(m)	(m)	(m)
Unit #7	352.48	15.11	4.57	76.2	1814

Table 16– Impacts from Drake’s NO_x Variation 1 Emissions

Scenario / Year	Class I Area	Model Results	
		No. of Days > 1.0 dV	No. of Days > 0.5 dV
NO _x Variation 1 2002	Rocky Mtn.	2	7
	Great Sand Dunes	1	4
	Eagles’ Nest	0	2
	Rawah	1	3

In the second NO_x scenario (NO_x Variation 2), a 94.25% reduction of SO₂ due to the use of a scrubber and a 51.24% reduction of NO_x was modeled on Unit #7 and a 40% reduction of NO_x was modeled on Unit #5. The balance of NO_x was modeled on Unit #6. Emission rates modeled, stack parameters for Unit #7 (simulating a scrubber), and visibility results can be seen in Tables 17, 18, and 19.

Table 17 – Emissions for NO_x Variation 2 for the Drake Power Plant

NO _x Variation 2 2002	Unit #5		Unit #6		Unit #7	
	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)
SO ₂	479.95	60.5	866.76	109.2	79.18619	10.0
SO ₄	5.85	0.74	10.24	1.29	15.63	1.97
NO _x	159.6	20.1	421.2	53.1	362.8	45.7
SOA	0.474	0.060	0.403	0.051	0.616	0.078
PMF	17.3	2.18	17.94	2.26	41.5	5.23
PMC	0	0	0	0	0	0
EC	0.173	0.022	0.179	0.023	0.415	0.052

Table 18 – Stack Parameters for NO_x Variation 2 for the Drake Power Plant

NO _x Variation 2 2002	Exit Temp	Exit Velocity	Diameter	Stack Height	Base Elevation
	(Kelvin)	(m/s)	(m)	(m)	(m)
Unit #7	352.48	15.11	4.57	76.2	1814

Table 19– Impacts from Drake’s NO_x Variation 2 Emissions

Scenario / Year	Class I Area	Model Results	
		No. of Days > 1.0 dV	No. of Days > 0.5 dV
NO _x Variation 2 2002	Rocky Mtn.	2	7
	Great Sand Dunes	1	4
	Eagles’ Nest	0	2
	Rawah	1	3

Four different variations of SO₂ emissions were modeled. In the first scenario (SO₂ Variation 1), Unit #6 was simulated as being shut down. SO₂ and NO_x emissions were increased by approximately 30% on Unit #5. The balance of SO₂ and NO_x emissions adding up to the proposed plant-wide limit(s) were emitted from Unit #7. For Unit #7 this results in an SO₂ reduction from the 24-hour historical max of 40.21% and NO_x was reduced by 15.6% from the historical 24-hour maximum. Emission rates modeled, stack parameters for Unit #7 (simulating a scrubber), and visibility results can be seen in Tables 20, 21, and 22.

Table 20 – Emissions for SO₂ Variation 1 for the Drake Power Plant

SO ₂ Variation 1 2002	Unit #5		Unit #6		Unit #7	
	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)
SO ₂	602	75.9	0	0	823.90	103.8
SO ₄	5.85	0.74	0	0	15.63	1.97
NO _x	346	43.60	0	0	597.64	75.3
SOA	0.474	0.060	0	0	0.616	0.078
PMF	17.3	2.18	0	0	41.5	5.23
PMC	0	0	0	0	0	0
EC	0.173	0.022	0	0	0.415	0.052

Table 21 – Stack Parameters for SO₂ Variation 1 for the Drake Power Plant

SO ₂ Variation 1 2002	Exit Temp	Exit Velocity	Diameter	Stack Height	Base Elevation
	(Kelvin)	(m/s)	(m)	(m)	(m)
Unit #7	395.6	16.96	4.57	76.2	1814

Table 22 – Impacts from Drake’s SO₂ Variation 1 Emissions

Scenario / Year	Class I Area	Model Results	
		No. of Days > 1.0 dV	No. of Days > 0.5 dV
SO ₂ Variation 1 2002	Rocky Mtn.	2	7
	Great Sand Dunes	0	4
	Eagles’ Nest	0	2
	Rawah	1	3

The second SO₂ scenario (SO₂ Variation 2) simulated a Unit #5 shut down. In this scenario, additional NO_x normally emitted by Unit #5 was added to Units #6 and #7, the maximum historical SO₂ emissions were modeled on Unit #6. For Unit #7, SO₂ was reduced by 59.42% and NO_x was reduced by 28.09% from historical maximum values. Emission rates modeled, stack parameters for Unit #7 (simulating a scrubber), and visibility results can be seen in Tables 23, 24, and 25.

Table 23 – Emissions for SO₂ Variation 2 for the Drake Power Plant

SO ₂ Variation 2 2002	Unit #5		Unit #6		Unit #7	
	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)
SO ₂	0	0	866.76	109.2	559.18	70.5
SO ₄	0	0	10.24	1.29	15.63	1.97
NO _x	0	0	434.4	54.7	509.19	64.2
SOA	0	0	0.403	0.051	0.616	0.078
PMF	0	0	17.94	2.26	41.5	5.23
PMC	0	0	0	0	0	0
EC	0	0	0.179	0.023	0.415	0.052

Table 24 – Stack Parameters for SO₂ Variation 2 for the Drake Power Plant

SO ₂ Variation 2 2002	Exit Temp	Exit Velocity	Diameter	Stack Height	Base Elevation
	(Kelvin)	(m/s)	(m)	(m)	(m)
Unit #7	380.2	16.30	4.57	76.2	1814

Table 25– Impacts from Drake’s SO₂ Variation 2 Emissions

Scenario / Year	Class I Area	Model Results	
		No. of Days > 1.0 dV	No. of Days > 0.5 dV
SO ₂ Variation 2 2002	Rocky Mtn.	2	7
	Great Sand Dunes	1	4
	Eagles’ Nest	0	2
	Rawah	1	3

In the third SO₂ scenario (SO₂ Variation 3), Units #5 and #6 were offline and all emissions were put through Unit #7. The resulting modeled emissions were greater than the 24-hour maximum historical emission rates from Unit #7. However, this modeling scenario helps to demonstrate that as long as the plant-wide emission limits are followed, even uncontrolled emissions from Unit #7 would not create a visibility impact greater than 0.5 dV at any of the four modeled Class I areas. Emission rates modeled, stack parameters for Unit #7 (simulating the scrubber being out of service), and visibility results can be seen in Tables 26, 27, and 28.

Table 26 – Emissions for SO₂ Variation 3 for the Drake Power Plant

SO ₂ Variation 3 2002	Unit #5		Unit #6		Unit #7	
	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)
SO ₂	0	0	0	0	1425.90	179.7
SO ₄	0	0	0	0	15.63	1.97
NO _x	0	0	0	0	943.6	118.9
SOA	0	0	0	0	0.616	0.078
PMF	0	0	0	0	41.5	5.23
PMC	0	0	0	0	0	0
EC	0	0	0	0	0.415	0.052

Table 27 – Stack Parameters for SO₂ Variation 3 for the Drake Power Plant

SO ₂ Variation 3 2002	Exit Temp	Exit Velocity	Diameter	Stack Height	Base Elevation
	(Kelvin)	(m/s)	(m)	(m)	(m)
Unit #7	427.6	18.33	4.57	76.2	1814

Table 28– Impacts from Drake’s SO₂ Variation 3 Emissions

Scenario / Year	Class I Area	Model Results	
		No. of Days > 1.0 dV	No. of Days > 0.5 dV
SO ₂ Variation 3 2002	Rocky Mtn.	2	6
	Great Sand Dunes	0	4
	Eagles’ Nest	0	2
	Rawah	1	3

The fourth and final SO₂ scenario is another variation on shutting down Unit #5. In this scenario, SO₂ was increased on Unit #6 simulating a high sulfur coal being burned combined with an outage on Unit #5. For Unit #7, SO₂ was scrubbed by 90.6% and NO_x reduced by 26.23% compared to 24-hour historical emissions rates. Emission rates modeled, stack parameters for Unit #7 (simulating a scrubber), and visibility results can be seen in Tables 29, 30, and 31.

Table 29 – Emissions for SO₂ Variation 4 for the Drake Power Plant

SO ₂ Variation 4 2002	Unit #5		Unit #6		Unit #7	
	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)
SO ₂	0	0	1296.8	163.4	129.1	16.3
SO ₄	0	0	10.24	1.29	15.63	1.97
NO _x	0	0	421.2	53.1	522.37	65.8
SOA	0	0	0.403	0.051	0.616	0.078
PMF	0	0	17.94	2.26	41.5	5.23
PMC	0	0	0	0	0	0
EC	0	0	0.179	0.023	0.415	0.052

Table 30 – Stack Parameters for SO₂ Variation 4 for the Drake Power Plant

SO ₂ Variation 4 2002	Exit Temp	Exit Velocity	Diameter	Stack Height	Base Elevation
	(Kelvin)	(m/s)	(m)	(m)	(m)
Unit #7	355.4	15.23	4.57	76.2	1814

Table 31– Impacts from Drake’s SO₂Variation 4 Emissions

Scenario / Year	Class I Area	Model Results	
		No. of Days > 1.0 dV	No. of Days > 0.5 dV
SO ₂ Variation 4 2002	Rocky Mtn.	2	6
	Great Sand Dunes	1	4
	Eagles’ Nest	0	2
	Rawah	1	3

Scenario Summary – Presentation of Top Eight Deciview Impacts

Table 32 presents the top eight deciview impacts at each of the four Class I Areas for each scenario modeled. No scenario exceeded the 0.500 deciview limit at the 98th percentile (i.e. the 8th highest value).

**Table 32 – Drake Power Plant with Reduced Emissions
 Results for Four Park Areas**

Base Case - 1996

Rocky Mtn. Nat. Park			Great Sand Dunes			Eagle's Nest			Rawah Wilderness Area		
Day	dV	Rank	Day	dV	Rank	Day	dV	Rank	Day	dV	Rank
305	1.243	1	331	0.663	1	33	0.558	1	322	0.557	1
95	0.881	2	329	0.614	2	96	0.495	2	306	0.548	2
59	0.86	3	295	0.525	3	59	0.483	3	60	0.361	3
144	0.697	4	238	0.475	4	32	0.471	4	145	0.34	4
33	0.566	5	334	0.379	5	95	0.337	5	34	0.306	5
57	0.505	6	270	0.32	6	236	0.315	6	96	0.291	6
96	0.498	7	225	0.282	7	58	0.287	7	257	0.25	7
321	0.473	8	159	0.24	8	254	0.276	8	238	0.169	8
6 days > 0.5 dV			3 days > 0.5 dV			1 day > 0.5 dV			2 days > 0.5 dV		

Base Case - 2001

Rocky Mtn. Nat. Park			Great Sand Dunes			Eagle's Nest			Rawah Wilderness Area		
Day	dV	Rank	Day	dV	Rank	Day	dV	Rank	Day	dV	Rank
170	0.701	1	251	0.5	1	172	0.45	1	170	0.301	1
59	0.548	2	40	0.368	2	39	0.444	2	59	0.261	2
107	0.471	3	331	0.354	3	16	0.419	3	190	0.23	3
85	0.426	4	124	0.326	4	76	0.407	4	67	0.209	4
39	0.397	5	358	0.273	5	67	0.389	5	172	0.182	5
172	0.387	6	221	0.229	6	70	0.207	6	58	0.164	6
100	0.348	7	332	0.189	7	17	0.17	7	75	0.151	7
58	0.295	8	180	0.181	8	122	0.161	8	66	0.134	8
2 days > 0.5 dV			1 day > 0.5 dV			0 days > 0.5 dV			0 days > 0.5 dV		

Base Case - 2002

Rocky Mtn. Nat. Park			Great Sand Dunes			Eagle's Nest			Rawah Wilderness Area		
Day	dV	Rank	Day	dV	Rank	Day	dV	Rank	Day	dV	Rank
305	1.906	1	338	1.033	1	305	0.887	1	305	1.188	1
297	1.55	2	307	0.947	2	304	0.553	2	30	0.919	2
93	0.855	3	330	0.676	3	297	0.475	3	297	0.522	3
304	0.836	4	342	0.569	4	357	0.399	4	93	0.298	4
30	0.672	5	4	0.456	5	199	0.256	5	304	0.277	5
84	0.617	6	302	0.449	6	74	0.238	6	357	0.263	6
129	0.568	7	303	0.395	7	197	0.215	7	75	0.238	7
275	0.496	8	10	0.392	8	200	0.209	8	200	0.228	8
7 days > 0.5 dV			4 days > 0.5 dV			2 days > 0.5 dV			3 days > 0.5 dV		

Typical Emissions - 2002

Rocky Mtn. Nat. Park			Great Sand Dunes			Eagle's Nest			Rawah Wilderness Area		
Day	dV	Rank	Day	dV	Rank	Day	dV	Rank	Day	dV	Rank
305	1.894	1	338	1.043	1	305	0.887	1	305	1.186	1
297	1.568	2	307	0.925	2	304	0.553	2	30	0.918	2
93	0.854	3	330	0.67	3	297	0.471	3	297	0.527	3
304	0.838	4	342	0.568	4	357	0.4	4	93	0.297	4
30	0.67	5	4	0.456	5	199	0.256	5	304	0.278	5
84	0.618	6	302	0.449	6	74	0.238	6	357	0.266	6
129	0.563	7	303	0.395	7	197	0.214	7	75	0.238	7
275	0.495	8	10	0.392	8	200	0.208	8	200	0.228	8
7 days > 0.5 dV			4 days > 0.5 dV			2 days > 0.5 dV			3 days > 0.5 dV		

NO_x Variation 1 - 2002

Rocky Mtn. Nat. Park			Great Sand Dunes			Eagle's Nest			Rawah Wilderness Area		
Day	dV	Rank	Day	dV	Rank	Day	dV	Rank	Day	dV	Rank
305	1.906	1	338	1.03	1	305	0.888	1	305	1.189	1
297	1.556	2	307	0.948	2	304	0.554	2	30	0.919	2
93	0.856	3	330	0.668	3	297	0.473	3	297	0.523	3
304	0.838	4	342	0.568	4	357	0.398	4	93	0.298	4
30	0.672	5	4	0.457	5	199	0.256	5	304	0.278	5
84	0.618	6	302	0.449	6	74	0.238	6	357	0.263	6
129	0.567	7	303	0.395	7	197	0.215	7	75	0.238	7
275	0.496	8	10	0.392	8	200	0.209	8	200	0.228	8
7 days > 0.5 dV			4 days > 0.5 dV			2 days > 0.5 dV			3 days > 0.5 dV		

NO_x Variation 2 - 2002

Rocky Mtn. Nat. Park			Great Sand Dunes			Eagle's Nest			Rawah Wilderness Area		
Day	dV	Rank	Day	dV	Rank	Day	dV	Rank	Day	dV	Rank
305	1.902	1	338	1.034	1	305	0.888	1	305	1.187	1
297	1.561	2	307	0.943	2	304	0.552	2	30	0.918	2
93	0.855	3	330	0.668	3	297	0.472	3	297	0.525	3
304	0.835	4	342	0.569	4	357	0.4	4	93	0.298	4
30	0.672	5	4	0.457	5	199	0.257	5	304	0.276	5
84	0.618	6	302	0.449	6	74	0.237	6	357	0.263	6
129	0.565	7	303	0.395	7	197	0.216	7	75	0.238	7
275	0.496	8	10	0.394	8	200	0.209	8	200	0.228	8
7 days > 0.5 dV			4 days > 0.5 dV			2 days > 0.5 dV			3 days > 0.5 dV		

SO₂ Variation 1 - 2002

Rocky Mtn. Nat. Park			Great Sand Dunes			Eagle's Nest			Rawah Wilderness Area		
Day	dV	Rank	Day	dV	Rank	Day	dV	Rank	Day	dV	Rank
305	1.829	1	338	0.958	1	305	0.871	1	305	1.166	1
297	1.478	2	307	0.862	2	304	0.547	2	30	0.883	2
304	0.852	3	330	0.687	3	297	0.477	3	297	0.51	3
93	0.835	4	342	0.55	4	357	0.351	4	93	0.29	4
30	0.638	5	4	0.441	5	199	0.248	5	304	0.284	5
84	0.612	6	302	0.435	6	74	0.236	6	357	0.254	6
129	0.535	7	10	0.398	7	197	0.205	7	75	0.232	7
275	0.478	8	303	0.389	8	200	0.199	8	200	0.224	8
7 days > 0.5 dV			4 days > 0.5 dV			2 days > 0.5 dV			3 days > 0.5 dV		

SO₂ Variation 2 - 2002

Rocky Mtn. Nat. Park			Great Sand Dunes			Eagle's Nest			Rawah Wilderness Area		
Day	dV	Rank	Day	dV	Rank	Day	dV	Rank	Day	dV	Rank
305	1.868	1	338	1.005	1	305	0.88	1	305	1.177	1
297	1.587	2	307	0.895	2	304	0.55	2	30	0.896	2
93	0.843	3	330	0.617	3	297	0.445	3	297	0.532	3
304	0.84	4	342	0.556	4	357	0.364	4	93	0.293	4
30	0.651	5	4	0.448	5	199	0.25	5	304	0.281	5
84	0.615	6	302	0.439	6	74	0.235	6	357	0.266	6
129	0.535	7	10	0.391	7	197	0.207	7	75	0.232	7
275	0.484	8	303	0.39	8	200	0.203	8	200	0.227	8
7 days > 0.5 dV			4 days > 0.5 dV			2 days > 0.5 dV			3 days > 0.5 dV		

SO₂ Variation 3 - 2002

Rocky Mtn. Nat. Park			Great Sand Dunes			Eagle's Nest			Rawah Wilderness Area		
Day	dV	Rank	Day	dV	Rank	Day	dV	Rank	Day	dV	Rank
305	1.713	1	338	0.887	1	305	0.853	1	305	1.139	1
297	1.476	2	307	0.744	2	304	0.533	2	30	0.845	2
304	0.849	3	342	0.537	3	297	0.443	3	297	0.509	3
93	0.806	4	330	0.533	4	357	0.297	4	304	0.279	4
84	0.611	5	4	0.436	5	199	0.238	5	93	0.272	5
30	0.603	6	302	0.421	6	74	0.225	6	357	0.259	6
129	0.488	7	303	0.384	7	197	0.195	7	75	0.223	7
275	0.446	8	10	0.353	8	200	0.187	8	200	0.218	8
6 days > 0.5 dV			4 days > 0.5 dV			2 days > 0.5 dV			3 days > 0.5 dV		

SO₂ Variation 4 - 2002

Rocky Mtn. Nat. Park			Great Sand Dunes			Eagle's Nest			Rawah Wilderness Area		
Day	dV	Rank	Day	dV	Rank	Day	dV	Rank	Day	dV	Rank
305	1.862	1	338	1.028	1	305	0.883	1	305	1.174	1
297	1.589	2	307	0.919	2	304	0.549	2	30	0.903	2
93	0.843	3	330	0.606	3	297	0.449	3	297	0.528	3
304	0.829	4	342	0.559	4	357	0.397	4	93	0.294	4
30	0.658	5	4	0.448	5	199	0.25	5	304	0.276	5
84	0.615	6	302	0.44	6	74	0.234	6	357	0.263	6
129	0.544	7	10	0.392	7	197	0.208	7	75	0.234	7
275	0.488	8	303	0.39	8	200	0.205	8	200	0.225	8
7 days > 0.5 dV			4 days > 0.5 dV			2 days > 0.5 dV			3 days > 0.5 dV		

Conclusion

Springs Utilities has requested a synthetic minor permit to limit the Martin Drake Power Plant’s visibility impacts on Class 1 Areas such that the plant is no longer “Subject to BART”. Springs Utilities has shown that even when using very conservative emission estimates for speciated PM emissions, the requested plant-wide SO₂ and NO_x emission rates do not cause visibility impairment in Class 1 Areas above the BART exemption threshold. It has also been demonstrated that the variation of emissions from one stack to another has very little impact on the magnitude of the visibility impact at Class 1 Areas. The APCD has previously approved the CalPuff visibility model settings used in this demonstration. Based on these results, the requested plant-wide limits of 1425.9 lbs/hr SO₂ emissions and 943.6 lbs/hr NO_x are appropriate to ensure the Martin Drake Power Plant is not “Subject to BART”.

Additionally, Springs Utilities affirms that, under this proposal, an SO₂ control device will be installed on Drake Unit #7 to achieve the proposed SO₂ permit limits. No specific technology has been selected to achieve the required NO_x reductions; this decision will be made based on the outcome of discussions with consultants and pollution control vendors.

APPENDIX A

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Summary of Results

Table 1 – Unit 5 Filterable and Condensible Particulate Results

<u>Test Parameters</u>	Run 1	Run 2	Run 3	Average
Date	6/15/2006	6/15/2006	6/15/2006	
Start Time	11:06	14:17	17:42	
Stop Time	13:11	16:24	19:48	
<u>Gas Conditions</u>				
Temperature (°F)	332	334	333	333
Volumetric Flow Rate (acfm)	276,000	283,000	292,000	284,000
Volumetric Flow Rate (scfm)	143,000	146,000	151,000	147,000
Volumetric Flow Rate (dscfm)	132,000	136,000	142,000	137,000
Carbon Dioxide (% dry)	13.2	13.1	13.2	13.1
Oxygen (% dry)	5.90	5.99	5.88	5.92
Moisture (%)	7.88	7.08	5.83	6.93
<u>Front Half Particulate Results</u>				
Concentration (grains/dscf)	NA	0.0172	0.0119	0.0145
Emission Rate (lb/hr)	NA	20.1	14.5	17.3
Emission Rate (lb/MBtu)	NA	0.0337	0.0231	0.0284
<u>Condensible Organic Particulate</u>				
Concentration (grains/dscf)	0.000288	0.000709	0.000222	0.000406
Emission Rate (lb/hr)	0.325	0.826	0.270	0.474
Emission Rate (lb/MBtu)	0.000560	0.00139	0.000431	0.000793
<u>Condensible Inorganic Particulate</u>				
Concentration (grains/dscf)	0.00340	0.00234	0.00191	0.00255
Emission Rate (lb/hr)	3.84	2.72	2.33	2.96
Emission Rate (lb/MBtu)	0.00661	0.00457	0.00371	0.00497
<u>Total Particulate</u>				
Concentration (grains/dscf)	NA	0.0203	0.0140	0.0171
Emission Rate (lb/hr)	NA	23.6	17.1	20.3
Emission Rate (lb/MBtu)	NA	0.0397	0.0272	0.0335

Note: Run 1 had port scrapings in the probe wash.

Table 2 – Unit 5 Sulfur Trioxide, Including Sulfuric Acid Mist Results

<u>Test Parameters</u>	Run 1	Run 2	Run 3	Average
Date	6/15/2006	6/15/2006	6/15/2006	
Start Time	11:30	14:49	18:06	
Stop Time	13:30	16:49	20:06	
<u>Gas Conditions</u>				
Temperature (°F)	332	334	333	333
Volumetric Flow Rate (acfm)	276,000	283,000	292,000	284,000
Volumetric Flow Rate (scfm)	143,000	146,000	151,000	147,000
Volumetric Flow Rate (dscfm)	132,000	136,000	142,000	137,000
Carbon Dioxide (% dry)	13.2	13.1	13.2	13.1
Oxygen (% dry)	5.90	5.99	5.88	5.92
Moisture (%)	7.88	7.08	5.83	6.93
<u>Sulfuric Acid Mist/Sulfur Trioxide Results</u>				
Concentration (ppm)	0.0295	0.0236	0.0240	0.0257
Concentration (lb/dscf)	6.13E-09	4.91E-09	4.98E-09	5.34E-09
Emission Rate (lb/hr)	0.0485	0.0400	0.0425	0.0437
Emission Rate (lb/MBtu)	8.35E-05	6.73E-05	6.78E-05	7.29E-05

Table 3 – Unit 5 Particle Size Distribution and Elemental Carbon Results

<u>Test Parameters</u>	Run 1	Run 2	Run 3	Average
Date	6/13/2006	6/13/2006	6/13/2006	
Start Time	10:25	11:03	11:42	
Stop Time	10:35	11:13	11:52	
 <u>Particle Size Distribution Results</u>				
Less Than 0.5 micron (%)	78.1	75.1	87.1	80.1
0.5 micron < Particle Diameter < 1 micron (%)	12.4	15.4	8.93	12.3
1 micron < Particle Diameter < 1.5 micron (%)	5.22	5.78	2.91	4.64
1.5 micron < Particle Diameter < 2 micron (%)	1.49	1.73	0.364	1.20
2 micron < Particle Diameter < 2.5 micron (%)	1.24	0.963	0.182	0.797
Greater Than 2.5 Micron (%)	1.49	0.963	0.546	1.00
 <u>Elemental Carbon Results</u>				
Concentration (%)	<1.00	<1.00	<1.00	<1.00

Table 4 – Unit 5 Hydrogen Fluoride and Hydrogen Chloride Results

<u>Test Parameters</u>	Run 1	Run 2	Run 3	Average
Date	6/15/2006	6/15/2006	6/15/2006	
Start Time	11:06	14:17	17:42	
Stop Time	13:11	16:24	19:48	
 <u>Gas Conditions</u>				
Temperature (°F)	332	334	333	333
Volumetric Flow Rate (acfm)	276,000	283,000	292,000	284,000
Volumetric Flow Rate (scfm)	143,000	146,000	151,000	147,000
Volumetric Flow Rate (dscfm)	132,000	136,000	142,000	137,000
Carbon Dioxide (% dry)	13.2	13.1	13.2	13.1
Oxygen (% dry)	5.90	5.99	5.88	5.92
Moisture (%)	7.88	7.08	5.83	6.93
 <u>Hydrogen Fluoride Results</u>				
Concentration (lb/dscf)	1.91E-07	2.40E-07	2.19E-07	2.17E-07
Concentration (ppm)	3.68	4.63	4.21	4.17
Emission Rate (lb/hr)	1.51	1.96	1.86	1.78
Emission Rate (lb/MBtu)	0.00260	0.00330	0.00298	0.00296
 <u>Hydrogen Chloride Results</u>				
Concentration (lb/dscf)	2.05E-07	2.22E-07	1.98E-07	2.08E-07
Concentration (ppm)	2.17	2.34	2.09	2.20
Emission Rate (lb/hr)	1.62	1.81	1.69	1.71
Emission Rate (lb/MBtu)	0.00280	0.00304	0.00270	0.00284

Table 5 – Unit 6 Elemental Carbon Results

<u>Test Parameters</u>	Run 1	Run 2	Run 3	Average
Date	6/13/2006	6/13/2006	6/13/2006	
Start Time	15:00	15:31	16:10	
Stop Time	15:10	15:46	16:25	
<u>Elemental Carbon Results</u>				
Concentration (%)	<1.00	<1.00	<1.00	<1.00

Table 6 – Unit 7 Filterable and Condensible Particulate Results

<u>Test Parameters</u>	Run 1	Run 2	Run 3	Average
Date	6/14/2006	6/14/2006	6/14/2006	
Start Time	13:07	17:42	20:46	
Stop Time	15:41	20:00	22:52	
<u>Gas Conditions</u>				
Temperature (°F)	299	301	299	300
Volumetric Flow Rate (acfm)	598,000	589,000	586,000	591,000
Volumetric Flow Rate (scfm)	330,000	324,000	324,000	326,000
Volumetric Flow Rate (dscfm)	299,000	305,000	309,000	304,000
Carbon Dioxide (% dry)	14.3	14.0	14.2	14.2
Oxygen (% dry)	4.6	4.9	4.8	4.76
Moisture (%)	9.50	6.05	4.37	6.64
<u>Front Half Particulate Results</u>				
Concentration (grains/dscf)	0.0167	0.0107	0.0202	0.0159
Emission Rate (lb/hr)	42.7	27.9	53.7	41.5
Emission Rate (lb/mmBtu)	0.0299	0.0195	0.0366	0.0287
<u>Condensible Organic Particulate</u>				
Concentration (grains/dscf)	0.000609	0.000367	0.0000724	0.000350
Emission Rate (lb/hr)	1.56	0.960	0.192	0.904
Emission Rate (lb/mmBtu)	0.00109	0.000670	0.000131	0.000631
<u>Condensible Inorganic Particulate</u>				
Concentration (grains/dscf)	0.00413	0.0116	0.00249	0.00607
Emission Rate (lb/hr)	10.6	30.3	6.60	15.8315
Emission Rate (lb/mmBtu)	0.00740	0.0212	0.00450	0.0110
<u>Total Particulate</u>				
Concentration (grains/dscf)	0.0214	0.0227	0.0228	0.0223
Emission Rate (lb/hr)	54.8	59.2	60.5	58.2
Emission Rate (lb/mmBtu)	0.0384	0.0414	0.0412	0.0403



Table 7 – Unit 7 Sulfur Trioxide, Including Sulfuric Acid Mist Results

<u>Test Parameters</u>	Run 1	Run 2	Run 3	Average
Date	6/14/2006	6/14/2006	6/14/2006	
Start Time	13:07	17:42	20:45	
Stop Time	15:07	19:42	22:45	
 <u>Gas Conditions</u>				
Temperature (°F)	299	301	299	300
Volumetric Flow Rate (acfm)	598,000	589,000	586,000	591,000
Volumetric Flow Rate (scfm)	330,000	324,000	324,000	326,000
Volumetric Flow Rate (dscfm)	299,000	305,000	309,000	304,000
Carbon Dioxide (% dry)	14.3	14.0	14.2	14.2
Oxygen (% dry)	4.6	4.9	4.8	4.76
Moisture (%)	9.50	6.05	4.37	6.64
 <u>Sulfuric Acid Mist/Sulfur Trioxide Results</u>				
Concentration (ppm)	0.0481	0.0600	0.0599	0.0560
Concentration (lb/dscf)	1.00E-08	1.25E-08	1.24E-08	1.16E-08
Emission Rate (lb/hr)	0.179	0.228	0.231	0.213
Emission Rate (lb/MBtu)	1.26E-04	1.59E-04	1.58E-04	1.47E-04

Table 8 – Unit 7 Particle Size Distribution and Elemental Carbon Results

<u>Test Parameters</u>	Run 2	Run 3	Average
Date	6/14/2006	6/14/2006	
Start Time	9:00	9:46	
Stop Time	9:15	10:01	
<u>Particle Size Distribution Results</u>			
Less Than 0.5 micron (%)	71.6	48.2	59.9
0.5 micron < Particle Diameter < 1 micron (%)	19.9	28.9	24.4
1 micron < Particle Diameter < 1.5 micron (%)	4.52	11.9	8.21
1.5 micron < Particle Diameter < 2 micron (%)	3.02	5.47	4.24
2 micron < Particle Diameter < 2.5 micron (%)	0.754	3.22	1.98
Greater Than 2.5 Micron (%)	0.251	2.25	1.25
<u>Elemental Carbon Results</u>			
Concentration (%)	<1.00	<1.00	<1.00

Table 9 – Unit 7 Hydrogen Fluoride and Hydrogen Chloride Results

<u>Test Parameters</u>	Run 1	Run 2	Run 3	Average
Date	6/14/2006	6/14/2006	6/14/2006	
Start Time	13:07	17:42	20:46	
Stop Time	15:41	20:00	22:52	
 <u>Gas Conditions</u>				
Temperature (°F)	299	301	299	300
Volumetric Flow Rate (acfm)	598,000	589,000	586,000	591,000
Volumetric Flow Rate (scfm)	330,000	324,000	324,000	326,000
Volumetric Flow Rate (dscfm)	299,000	305,000	309,000	304,000
Carbon Dioxide (% dry)	14.3	14.0	14.2	14.2
Oxygen (% dry)	4.6	4.9	4.8	4.76
Moisture (%)	9.50	6.05	4.37	6.64
 <u>Hydrogen Fluoride Results</u>				
Concentration (lb/dscf)	9.39E-07	7.34E-07	4.01E-07	6.92E-07
Concentration (ppm)	18.1	14.1	7.72	13.3
Emission Rate (lb/hr)	16.8	13.4	7.45	12.6
Emission Rate (lb/MBtu)	0.01180	0.00937	0.00508	0.00875
 <u>Hydrogen Chloride Results</u>				
Concentration (lb/dscf)	1.70E-07	1.57E-07	1.37E-07	1.55E-07
Concentration (ppm)	1.80	1.66	1.44	1.63
Emission Rate (lb/hr)	3.05	2.87	2.54	2.82
Emission Rate (lb/MBtu)	0.00214	0.00200	0.00173	0.00196

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APPENDIX B

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Cross Reference of Scenario Description and Model Folder Names

Scenario Name	CDPHE Post processor output title	DVD file location
Base Case	Pass_5	Pass_5
Typical Emissions	Typical	Typical
NOx Variation 1	NOx Variation 1	NOx_Var_1
NOx Variation 2	NOx Variation 2	NOx_Var_2
SO2 Variation 1	SO2 Coal Variation	SO2_5_7
SO2 Variation 2	SO2 Unit 5 Down	SO2_6_7
SO2 Variation 3	SO2 Unit 7 Only	SO2_7
SO2 Variation 4	SO2 Unit 5 Down, Extra on 6	SO2_6

Title from CALPOST:
DRAKE - Eagles Nest WA (EAG);Pass_5 ; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
1996 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 358
Receptors processed: 213
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.558 dv
Number of days with delta-deciview => 0.5: 1
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.276 dv
at receptor 603 on day 254(1996)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.250 dv
at receptor 644 on day 166(1996)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.280 dv
at receptor 644
using days 58(1996) and 166(1996)

Title from CALPOST:
DRAKE - Great Sand Dune NP (GSD; Pass_5; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
1996 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 358
Receptors processed: 195
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.663 dv
Number of days with delta-deciview => 0.5: 3
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.240 dv
at receptor 191 on day 159(1996)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.240 dv
at receptor 191 on day 159(1996)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.274 dv
at receptor 191
using days 225(1996) and 159(1996)

Title from CALPOST:
BART- Rawah (RAW); Pass 5;spec PM emiss
MVISBK = 6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
1996 36km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 357
Receptors processed: 116
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.557 dv
Number of days with delta-deciview => 0.5: 2
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.169 dv
at receptor 816 on day 238(1996)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.169 dv
at receptor 816 on day 238(1996)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.237 dv
at receptor 816
using days 257(1996) and 238(1996)

Title from CALPOST:
DRAKE - Rocky Mtn NP (ROM); Pass_5 ; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
1996 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 358
Receptors processed: 407
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.243 dv
Number of days with delta-deciview => 0.5: 6
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.473 dv
at receptor 532 on day 321(1996)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.407 dv
at receptor 288 on day 321(1996)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.469 dv
at receptor 206
using days 57(1996) and 321(1996)

Title from CALPOST:

DRAKE - Eagles Nest WA (EAG);Pass_5 ; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2001 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 365
Receptors processed: 213
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.450 dv
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The ' 8 High' value from the model is: 0.161 dv
at receptor 666 on day 122(2001)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.153 dv
at receptor 666 on day 15(2001)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.158 dv
at receptor 666
using days 122(2001) and 15(2001)

Title from CALPOST:

DRAKE - Great Sand Dune NP (GSD; Pass_5; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2001 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 365
Receptors processed: 195
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.500 dv
Number of days with delta-deciview => 0.5: 1
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The '8 High' value from the model is: 0.181 dv
at receptor 150 on day 242(2001)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.181 dv
at receptor 192 on day 242(2001)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.184 dv
at receptor 191
using days 332(2001) and 180(2001)

Title from CALPOST:
BART- Rawah (RAW); Pass_5;spec PM emiss
MVISBK = 6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2001 36km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 365
Receptors processed: 116
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.301 dv
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.134 dv
at receptor 860 on day 66(2001)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.133 dv
at receptor 846 on day 66(2001)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.144 dv
at receptor 819
using days 75(2001) and 66(2001)

Title from CALPOST:
DRAKE - Rocky Mtn NP (ROM); Pass_5 ; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2001 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 365
Receptors processed: 407
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.701 dv
Number of days with delta-deciview => 0.5: 2
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.295 dv
at receptor 461 on day 58(2001)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.280 dv
at receptor 258 on day 58(2001)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.318 dv
at receptor 222
using days 100(2001) and 58(2001)

pTitle from CALPOST:

DRAKE - Eagles Nest WA (EAG);Pass_5 ; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 213
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.887 dv
Number of days with delta-deciview => 0.5: 2
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.209 dv
at receptor 666 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.175 dv
at receptor 786 on day 74(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.189 dv
at receptor 666
using days 200(2002) and 197(2002)

Title from CALPOST:
DRAKE - Great Sand Dune NP (GSD; Pass_5; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 195
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.033 dv
Number of days with delta-deciview => 0.5: 4
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.392 dv
at receptor 150 on day 10(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.374 dv
at receptor 192 on day 10(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.379 dv
at receptor 193
using days 4(2002) and 10(2002)

Title from CALPOST:
BART- Rawah (RAW); Pass_5;spec PM emiss
MVISBK = 6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 36km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 116
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.188 dv
Number of days with delta-deciview => 0.5: 3
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.228 dv
at receptor 819 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.225 dv
at receptor 830 on day 200(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.229 dv
at receptor 840
using days 75(2002) and 200(2002)

Title from CALPOST:
DRAKE - Rocky Mtn NP (ROM); Pass_5 ; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 407
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.906 dv
Number of days with delta-deciview => 0.5: 7
Number of days with delta-deciview => 1.00: 2

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The '8 High' value from the model is: 0.496 dv
at receptor 222 on day 275(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.496 dv
at receptor 222 on day 275(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.534 dv
at receptor 323
using days 129(2002) and 275(2002)

Title from CALPOST:

DRAKE - Eagles Nest WA (EAG);NOx Variation 1; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 213
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.888 dv
Number of days with delta-deciview => 0.5: 2
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The '8 High' value from the model is: 0.209 dv
at receptor 666 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.175 dv
at receptor 786 on day 74(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.189 dv
at receptor 666
using days 200(2002) and 197(2002)

Title from CALPOST:
DRAKE - Great Sand Dune NP (GSD); NOx Variation 1; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 195
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.030 dv
Number of days with delta-deciview => 0.5: 4
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The ' 8 High' value from the model is: 0.392 dv
at receptor 150 on day 10(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.374 dv
at receptor 192 on day 10(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.380 dv
at receptor 193
using days 4(2002) and 10(2002)

Title from CALPOST:
DRAKE - Rawah (RAW); NOx Variation 1; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 116
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.189 dv
Number of days with delta-deciview => 0.5: 3
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The '8 High' value from the model is: 0.228 dv
at receptor 819 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.225 dv
at receptor 830 on day 200(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.229 dv
at receptor 840
using days 75(2002) and 200(2002)

Title from CALPOST:
DRAKE - Rocky Mtn NP (ROM); NOx Variation 1; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 407
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.906 dv
Number of days with delta-deciview => 0.5: 7
Number of days with delta-deciview => 1.00: 2

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The '8 High' value from the model is: 0.496 dv
at receptor 222 on day 275(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.496 dv
at receptor 222 on day 275(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.533 dv
at receptor 323
using days 129(2002) and 275(2002)

Title from CALPOST:

DRAKE - Eagles Nest WA (EAG);NOx Variation 2; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 213
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.888 dv
Number of days with delta-deciview => 0.5: 2
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The ' 8 High' value from the model is: 0.209 dv
at receptor 666 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.175 dv
at receptor 786 on day 74(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.189 dv
at receptor 666
using days 200(2002) and 197(2002)

Title from CALPOST:
DRAKE - Great Sand Dune NP (GSD); NOx Variation 2; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 195
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.034 dv
Number of days with delta-deciview => 0.5: 4
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.394 dv
at receptor 150 on day 10(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.375 dv
at receptor 192 on day 4(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.380 dv
at receptor 193
using days 4(2002) and 10(2002)

Title from CALPOST:
DRAKE - Rawah (RAW); NOx Variation 2; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 116
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.187 dv
Number of days with delta-deciview => 0.5: 3
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The '8 High' value from the model is: 0.228 dv
at receptor 819 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.225 dv
at receptor 830 on day 200(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.229 dv
at receptor 840
using days 75(2002) and 200(2002)

Title from CALPOST:

DRAKE - Rocky Mtn NP (ROM); NOx Variation 2; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MMS, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 407
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.902 dv
Number of days with delta-deciview => 0.5: 7
Number of days with delta-deciview => 1.00: 2

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The ' 8 High' value from the model is: 0.496 dv
at receptor 222 on day 275(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.496 dv
at receptor 222 on day 275(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.531 dv
at receptor 323
using days 129(2002) and 275(2002)

Title from CALPOST:
DRAKE - Eagles Nest WA (EAG);SO2 Coal Variation; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 213
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.871 dv
Number of days with delta-deciview => 0.5: 2
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The ' 8 High' value from the model is: 0.199 dv
at receptor 666 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.174 dv
at receptor 786 on day 74(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.180 dv
at receptor 666
using days 200(2002) and 197(2002)

Title from CALPOST:

DRAKE - Great Sand Dune NP (GSD); SO2 Coal Variation; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 195
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.958 dv
Number of days with delta-deciview => 0.5: 4
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.389 dv
at receptor 150 on day 303(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.372 dv
at receptor 194 on day 302(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.377 dv
at receptor 192
using days 10(2002) and 4(2002)

Title from CALPOST:
DRAKE - Rawah (RAW); SO2 Coal Variation; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 116
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.166 dv
Number of days with delta-deciview => 0.5: 3
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The '8 High' value from the model is: 0.224 dv
at receptor 819 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.221 dv
at receptor 830 on day 200(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.226 dv
at receptor 853
using days 304(2002) and 200(2002)

Title from CALPOST:
DRAKE - Rocky Mtn NP (ROM); SO2 Coal Variation; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 407
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.829 dv
Number of days with delta-deciview => 0.5: 7
Number of days with delta-deciview => 1.00: 2

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The '8 High' value from the model is: 0.478 dv
at receptor 222 on day 275(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.478 dv
at receptor 222 on day 275(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.506 dv
at receptor 323
using days 129(2002) and 275(2002)

Title from CALPOST:
DRAKE - Eagles Nest WA (EAG);SO2 Unit 5 Down, Extra on 6; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 213
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.883 dv
Number of days with delta-deciview => 0.5: 2
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.205 dv
at receptor 666 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.172 dv
at receptor 786 on day 74(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.184 dv
at receptor 666
using days 200(2002) and 197(2002)

Title from CALPOST:

DRAKE - Great Sand Dune NP (GSD); SO2 Unit 5 Down, Extra on 6; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 195
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.028 dv
Number of days with delta-deciview => 0.5: 4
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The '8 High' value from the model is: 0.390 dv
at receptor 150 on day 303(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.370 dv
at receptor 193 on day 10(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.375 dv
at receptor 193
using days 4(2002) and 10(2002)

Title from CALPOST:

DRAKE - Rawah (RAW); SO2 Unit 5 Down, Extra on 6; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 116
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.174 dv
Number of days with delta-deciview => 0.5: 3
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.225 dv
at receptor 819 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.222 dv
at receptor 830 on day 200(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.226 dv
at receptor 846
using days 75(2002) and 200(2002)

Title from CALPOST:
DRAKE - Rocky Mtn NP (ROM); SO2 Unit 5 Down, extra on 6; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 407
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.862 dv
Number of days with delta-deciview => 0.5: 7
Number of days with delta-deciview => 1.00: 2

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The '8 High' value from the model is: 0.488 dv
at receptor 222 on day 275(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.488 dv
at receptor 222 on day 275(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.515 dv
at receptor 323
using days 129(2002) and 275(2002)

Title from CALPOST:
DRAKE - Eagles Nest WA (EAG);SO2 Unit 5 Down; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 213
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.880 dv
Number of days with delta-deciview => 0.5: 2
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The '8 High' value from the model is: 0.203 dv
at receptor 666 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.172 dv
at receptor 786 on day 74(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.182 dv
at receptor 666
using days 200(2002) and 197(2002)

Title from CALPOST:

DRAKE - Great Sand Dune NP (GSD); SO2 Unit 5 Down; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 195
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.005 dv
Number of days with delta-deciview => 0.5: 4
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.390 dv
at receptor 150 on day 303(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.371 dv
at receptor 193 on day 10(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.375 dv
at receptor 193
using days 4(2002) and 10(2002)

Title from CALPOST:

DRAKE - Rawah (RAW); SO2 Unit 5 Down; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 116
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.177 dv
Number of days with delta-deciview => 0.5: 3
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The '8 High' value from the model is: 0.227 dv
at receptor 819 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.223 dv
at receptor 835 on day 200(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.226 dv
at receptor 846
using days 75(2002) and 200(2002)

Title from CALPOST:
DRAKE - Rocky Mtn NP (ROM); SO2 Unit 5 Down; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 407
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.868 dv
Number of days with delta-deciview => 0.5: 7
Number of days with delta-deciview => 1.00: 2

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The ' 8 High' value from the model is: 0.484 dv
at receptor 222 on day 275(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.484 dv
at receptor 222 on day 275(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.508 dv
at receptor 323
using days 129(2002) and 275(2002)

Title from CALPOST:
DRAKE - Eagles Nest WA (EAG);SO2 Unit 7 Only; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 213
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.853 dv
Number of days with delta-deciview => 0.5: 2
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.187 dv
at receptor 666 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.163 dv
at receptor 786 on day 197(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.168 dv
at receptor 666
using days 200(2002) and 197(2002)

Title from CALPOST:

DRAKE - Great Sand Dune NP (GSD); SO2 Unit 7 Only; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 195
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.887 dv
Number of days with delta-deciview => 0.5: 4
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:

The '8 High' value from the model is: 0.353 dv
at receptor 150 on day 10(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:

The 'High 8 High' value from the model is: 0.337 dv
at receptor 154 on day 10(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:

The calculated 98th percentile value
using a weighted averaging method is: 0.356 dv
at receptor 193
using days 302(2002) and 10(2002)

Title from CALPOST:
DRAKE - Rawah (RAW); SO2 Unit 7 Only; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 116
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.139 dv
Number of days with delta-deciview => 0.5: 3
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The '8 High' value from the model is: 0.218 dv
at receptor 819 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.215 dv
at receptor 835 on day 200(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.218 dv
at receptor 853
using days 75(2002) and 200(2002)

Title from CALPOST:

DRAKE - Rocky Mtn NP (ROM); SO2 Unit 7 Only; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 407
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.713 dv
Number of days with delta-deciview => 0.5: 6
Number of days with delta-deciview => 1.00: 2

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.446 dv
at receptor 222 on day 275(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.443 dv
at receptor 258 on day 275(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.466 dv
at receptor 323
using days 129(2002) and 275(2002)

Title from CALPOST:

DRAKE - Eagles Nest WA (EAG);Typical; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 213
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 0.887 dv
Number of days with delta-deciview => 0.5: 2
Number of days with delta-deciview => 1.00: 0

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.208 dv
at receptor 666 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.175 dv
at receptor 786 on day 74(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.189 dv
at receptor 666
using days 200(2002) and 197(2002)

Title from CALPOST:
DRAKE - Great Sand Dune NP (GSD); Typical; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MMS, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 195
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.043 dv
Number of days with delta-deciview => 0.5: 4
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The '8 High' value from the model is: 0.392 dv
at receptor 150 on day 10(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.375 dv
at receptor 192 on day 10(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.380 dv
at receptor 193
using days 4(2002) and 10(2002)

Title from CALPOST:
DRAKE - Rawah (RAW); Typical; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MM5, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 116
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.186 dv
Number of days with delta-deciview => 0.5: 3
Number of days with delta-deciview => 1.00: 1

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.228 dv
at receptor 819 on day 200(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.225 dv
at receptor 830 on day 200(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.229 dv
at receptor 840
using days 75(2002) and 200(2002)

Title from CALPOST:
DRAKE - Rocky Mtn NP (ROM); Typical; spec PM emiss.
MVISBK=6; EPA2003 centroid monthly f(RH); EPA2003 20%bestdays natural backgrd
2002 12km MMS, 0.5km CALMET, hourly ozone; DRAKE

Days processed: 364
Receptors processed: 407
CALPOST species: ALL
Contribution threshold (or user-specified threshold): 0.5

Summary of delta-deciview results:

The largest delta-deciview change is: 1.894 dv
Number of days with delta-deciview => 0.5: 7
Number of days with delta-deciview => 1.00: 2

98th Percentile Results:

Method 1. DAY-SPECIFIC - closest modeled value:
The ' 8 High' value from the model is: 0.495 dv
at receptor 222 on day 275(2002)

Method 2a. RECEPTOR-SPECIFIC - closest modeled value:
The 'High 8 High' value from the model is: 0.495 dv
at receptor 222 on day 275(2002)
Number of days with delta-deciview => 0.5: 0
Number of days with delta-deciview => 1.00: 0

Method 2b. RECEPTOR-SPECIFIC - Weighted Average at X[(n+1)p]:
The calculated 98th percentile value
using a weighted averaging method is: 0.530 dv
at receptor 323
using days 129(2002) and 275(2002)
