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SUBJECT: AERMOD Technical Assistance –
Modification of CALPUFF and CALMET Final Report

This report summarizes the changes to the CALPUFF Modeling System and the affect of those changes on pollutant impacts using the EPA Assessment Tool (EPA, 2008).

The current version of the EPA-approved CALPUFF Modeling System dates back to 2007 for CALPUFF and CALMET (version 5.8 for both). Over the years the CALPUFF modeling system was updated by its developers to fix 'bugs' and introduce new features. These changes are documented in Model Change Bulletins (MCBs). The EPA-approved version of CALPUFF currently available represents changes through MCB D. Three more recent MCBs - E, F, and G - updated CALPUFF and CALMET to version 5.815, level 110421 (April 2011). The EPA-approved CALPOST program was updated in 2008 to version 6.221 and does not have any changes associated with the MCBs E, F, and G. In addition to CALPUFF and CALMET, a few minor changes to COORDLIB and CALUTILS were also part of the MCBs, as noted below.

CODE UPDATES

Prior to beginning any changes to the CALPUFF and CALMET source code, the MCBs were reviewed and each problem area was identified as either a bug fix or an enhancement. AMEC was tasked by EPA's Air Quality Modeling Group (AQMG) to apply only those changes in the MCBs related to bug fixes. Table 1 shows a summary of changes to CALPUFF and CALMET associated with MCB-E (both models were updated). Changes highlighted in gray are considered enhancements and were not included in updating the CALPUFF and CALMET code. The determination if a change is an enhancement or bug fix was made in consultation with EPA. Table 2 shows the changes associated with MCB-F, which only affected CALPUFF, and Table 3 shows the changes associated with MCB-G, which only affected CALMET. MCB-E also

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addressed a problem area in CALUTILS and two problem areas in COORDLIB; MCB-F addressed a change in CALUTILS that enhanced the system but did not affect model results.

The following abbreviations are used in Tables 1, 2, and 3.

MCB = Model Change Bulletin
Chg = component and change number:

- P-x = CALPUFF problem area 'x' in the corresponding MCB
- M-y = CALMET problem area 'y' in the corresponding MCB
- CL = COORDLIB
- CU = CALUTILS

Problem Area – brief description of the change(s)
Name = Subroutine name
No. changes = number of blocks of code that changed from the previous version of the component
E/B = **E**nhancement or **B**ug Fix

The description of the problem area is taken from the text in each of the Model Change Bulletins. Not all text that appeared in a MCB is included due to the length of many of the descriptions.

Each MCB also contained the 'before' and 'after' code changes for the particular problem areas. AMEC used these code 'snippets' to make the changes to each component and followed up by comparing our changes to the code to the source code available associated with the model change bulletins on the compact disks (CDs) provided by EPA for this project. The complete model source code was also useful for adding comments to each routine to indicate what changed in the routine associated with the MCB.

AMEC applied changes to the code that were identified as bug fixes in a stepwise progression beginning with MCB-E and proceeding to MCB-F and ending with MCB-G. Once the bug fixes associated with a MCB were addressed, executables (either CALPUFF or CALMET or both) were built using the Intel Fortran compiler. A simple test case, using data and control files prepared for a separate project, was run to be sure the modeling system was not generating runtime errors. Since the CALPOST program was not modified under any of the MCBs, version 6.221 was compiled with the Intel Fortran compiler and used for all analyses.

Table 1. Changes Associated with Model Change Bulletin E

MCB	Chg[1]	Problem Area	Name	No. changes	E/B
E	P-1	When performing cavity sampling for PRIME downwash, restrict primary source calculations to receptors downwind of primary source and add screen for receptors located far to the side (no impact). Without this restriction, the model may halt with an attempted division by zero.	CAV-SAMP	2	B
E	P-2	Fix bug in wet flux calculation for sampling puffs (not slugs). Horizontal sampling factors were not recalculated if puff mass did not diffuse to the surface. These factors are needed for the wet fluxes due to elevated puffs.	CALCPF	3	B
E	P-3	Add cap on sigma-z to avoid a floating-point error when computing virtuals, which halts a run.	Block data READCF COMP	1 6 3	B
E	P-4	Add check for ATAN2(0.0,0.0) in FOGREC, as function will halt execution if both arguments are zero. Fix sets flow vector to 0.0	FOGREC	1	B
E	P-5	Assign several undefined variables that do not affect results	LN2FILL RDTIEM3 DRY VCBAR WET VOLS POINTS1 POINTS2 AREAS1 AREAS2	1 1 2 1 1 1 1 1 1 1	B
E	P-6	Relax requirement that the input restart file be from the same version and level of the code, and report a WARNING	RESTARTQ	2	E
E	P-7	Refine mixing height adjustment to the extent of the layer that spans a puff (used for obtaining the transport wind).	PUFFDZ ADVECT	1 1	E
E	P-8	Treat case of falling puff in the procedure that determines the average transport during a step that includes gradual rise near a point source. The layer for averaging the wind should extend from the bottom of the puff at the start of the step to the top of the puff at the end of the step, regardless of whether the puff is rising or falling. Also, the gradual rise for point sources with Schulman-Scire downwash active must be explicitly addressed in RISEWIND because the GRISE calls do not include it.	RISEWIND	2	B

[1] Component and change number, where P refers to CALPUFF changes and M refers to CALMET changes.

MCB	Chg[1]	Problem Area	Name	No. changes	E/B
E	P-9	Procedure that determines the average transport during a step that includes gradual rise near a point source does not include the stack-tip downwash adjustment to the puff height.	GRISE PUFRECS SLGRECS PLGRECS ZTRACE	1 1 1 1 1	B
E	P-10	a) Replace source-based storage arrays related to plume rise and PRIME downwash tabulations with puff-based storage arrays, implemented via a direct access (DA) file. This allows all time-of-release tabulations to be accessed for meteorological periods that precede the current period. Previous implementation only provided the previous period rise tables for buoyant line sources, and otherwise used final rise properties for puffs from the previous period even when still within the gradual rise distance from the source. b) To RESTART file, add source tabulations stored for previous met periods and introduce dataset name and version record. Without the table for a previous met period in a restart file, table values of zero at start-up may be accessed and halt the run with a divide-by-zero.	INITPUF COMP SETPUF PUFRECS GRISE RESTARTQ RESTARTO RESTARTI POINTS1 POINTS2 AREAS1 AREAS2 LINES1 LINES2 VOLS BCS1 OPENOT SWAP WAKE_TAB RECSPEC0	1 3 1 1 7 3 4 2 9 9 4 6 12 11 4 4 2 2 3 3	B
E	P-11	Fix logic to implement QA on MTILT. An errant ELSEIF condition caused checks for NSPEC, SG, and MCTADJ to be skipped.	QAINP	1	B
E	M-1	The date test performed in the case of a simulation ending on the first hour of a year following a leap year was not done correctly and neither was the computation of *dtinc* for a run ending on the first hour of a new year.	RDMM5	1	B
E	M-2	When no upper air observations are used in the simulation, CALMET uses the wrong coordinates for the precipitation stations when the coordinates are included in the control (.inp) file, as opposed to included in the precip.dat file	READCF	1	B
E	M-3	CALMET stops searching for a first valid MM5 record after it has read through the first MM5 file listed as input data, even if there subsequent MM5 data files possibly issuing a "ran out of MM5 data before start" error message too soon	RDMM5	1	B
E	M-4	For overwater grid points, as defined by JWAT1-JWAT2, and for cases when there is no SEA.DAT file, the RH overwater default was set to 80% instead of 100%. This was inconsistent with the RH value overwater in the rest of the code	SURFVAR	1	B

MCB	Chg[1]	Problem Area	Name	No. changes	E/B
E	M-5	In NOOBS mode using MM4 data, when the simulation started during convective conditions (e.g.in high latitudes or when the base time zone is different from local time zone), the prognostic sounding used to compute the convective mixing height growth was not yet initialized, causing the simulation to stop.	RDMM4	1	B
E	M-6	In NOOBs-temperature mode (ITPROG=2),at the first time step, the surface temperatures are initialized with not-yet defined variables, which could cause the simulation to stop with some compilers	SURFVAR	1	B
E	M-7	In NOOBS mode, there is no check made on the values of ISURFT or IUPT (because they do not matter). However using a MOD5 CALMET.INP file that has negative values with MOD6 can trigger a non-consistent simulation (in particular, ISURFT=-1 and IUPT=-1 trigger 2D surface temperatures and lapse rates instead of domain-average ones in MOD6)	READCF	1	E
E	M-8	When the coordinates of the surface stations are provided in the SURF.DAT file and CALMET also uses precipitation observations, CALMET checks for precipitation IDs in the PRECIP.DAT file even when those coordinates are only listed in the control (.inp) file	READHD	1	B
E	M-9	When cloud ceiling heights are computed based on prognostic cloud mixing ratios (ICLOUD=3), prognostic data is of MM5 type (IPROG>5), prognostic time step is longer than CALMET time step (ISTEPPG>1), and MM5 cloudy skies are replaced by clear skies at the next MM5 time step, the ceiling heights at intermediate hours were underestimated	RDMM5	1	E
E	M-10	Prognostic ceiling heights (ICLOUD=3) were not correctly interpolated to the CALMET grid points	RDMM5	1	B
E	M-11	No vertical extrapolation of temperature from lowest 3D.DAT level to lower CALMET levels was performed overwater when ITWPROG=2. Constant T profile was assumed below lowest 3D.DAT level instead of the intended interpolation between SST and lowest 3D.DAT level temperature. Only applies to overwater grid points when prognostic temperatures are used	RDMM5	1	B
E	CL-1	A non-zero False Northing appropriate for UTM-S was used when converting S. hemisphere locations to UTM-N coordinates. This causes the coordinates returned to be in UTM-S.	PJINIT COORDS	1 2	B
E	CL-2	Three work-array variables and one output variable were not completely initialized, causing the program to halt when extra compiler-checking options are used.	COORDS	1	B
E	CU-1	Exponential notation processing in ALTONU did not properly interpret an entry without a decimal point.	ALTONU	1	B

Table 2. Changes Associated with Model Change Bulletin F

MCB	Chg[1]	Problem Area	Name	No. changes	E/B
F	P-1	Relax test for small negative travel in SIGTZ following the approach used in SIGTY. Small negative travel should be interpreted as zero, but larger negative travel indicates a potential problem and the code should halt as it does now.	FIN SIGTY SIGTZ WARN	1 2 3 6	B
F	P-2	Align specific details of PRIME implementation with those used in ISC-PRIME – a) Fix cavity concentrations (missing ground reflection, etc.) b) Include BID in computing sigmas in entry to building wake c) Compute receptor-specific sigmas downwind of end of PRIME wake d) Align calculation of plume *drdx* in wake region with ISC-PRIME e) Trap negative virtuals when computing source sigma f) Use ISC-PRIME method of computing distance for numerical rise g) Disable comparison of wake-influenced sigma growth h) Remove approximate calculations of the BID-enhanced sigmas	CAV_CONC CAV_SAMP NUMPR1 NUMRISE POINTS1 POINTS2 PUFRECS SETPUF SETSLG WAKE_DRDX WAKE_FIN WAKW_TAB WAKE_XSIG	6 8 2 2 2 2 2 7 21 3 4 3 3	B
F	P-3	Rename station ID returned from FINDR and FINDI (used when data are missing at nearest station) so that it **does not replace** the station ID obtained from the NEARS array	EXMET	6	B
F	P-4	Roughness adjustment to PG sigmas is computed for 1 roughness length and should be used with non-gridded meteorological data, so restrict MROUGH = 1 to METFM = 2, 3, 4, or 5 to avoid unintended application with gridded data	QAINP	1	B
F	P-5	Calculate mid-point of sampling step using half the step rather than as the average of the 2 end-points to improve precision	COMP	1	E

MCB	Chg[1]	Problem Area	Name	No. changes	E/B
F	P-6	Add concentration calculations at elevated receptors that are located above the mixing height when there is mass above. The impact at these receptors had been set to zero. Also, restrict deposition fluxes to receptors that are located ON the ground	AREAINT CALCBC CALCPF CALCSL COMP CPQROMB CPTRAP LSSLINT PLMFOG POINTS1 POINTS2 ROMBTIN SLUGAVE SLUGINT SLUGSNP TRAPSL VCBAR VCOUP	3 8 12 21 7 4 5 4 1 1 1 4 5 3 3 5 8 5	B
F	P-7	Trap case in which the shear adjustment to Briggs plume rise is applied in near-calm conditions. A distance to final rise of zero (calm) can produce an incorrect shear-modified rise that is zero.	POINTS1 POINTS2	2 2	B
F	P-8	Assign power-law exponent to default value for met file types that do not use power-law profiles so that exponent is available for Briggs plume rise wind shear modification option	Block data ADVECT AREAS1 AREAS2 LINES1 LINES2 NUMMET POINTS1 POINTS2 POWLAW PRFINSH PRSHEAR SETLINE VOLS WINDSET	1 3 3 3 4 4 5 5 5 1 1 1 1 3 3	B
F	P-9	Add call to SRCTABOUT to update the source number of the current puff in the DA file when line-source slugs are processed during the first step. The model had halted in the second time step. This only affects buoyant line sources when modeled with slugs.	COMP	2	B
F	P-10	Use local source-table arrays in the subroutine used to move the puff index when inactive puffs are removed from DA file of source-related tabulations. The current contents in the arrays had been overwritten before being used because the /SRCTAB/ common had been included.	COMP	3	B

MCB	Chg[1]	Problem Area	Name	No. changes	E/B
F	P-11	Do not allow the receptor-specific sigmas for a line source to be zero. Avoids halt due to divide-by-zero.	LINES1 LINES2	1 1	B
F	P-12	Add check for zero final rise from a buoyant line source when computing receptor-specific sigmas for the case of an emitting slug, which **can** result in a divide-by-zero that halts the model.	RECSPEC0	1	B
F	P-13	A number of variables were not properly defined or initialized.	COMP FOGREC LINES1 MET2 MET3 MET4 POINTS1 POINTS2 QAPLOT1 RDEMBC RDHDBC RDHDBC2 RDMET4 RDMET5 SLGRECS SLUGINT TFERCF WAKE_DBG	1 1 1 3 3 3 1 1 1 3 1 2 1 1 2 1 4 3	B
F	CU-1	Increased control file length to 200 characters Retrieve date and time using intrinsic F95 routine	PARAMS[(a)] READIN DATETM	1 1 6	

(a) PARAMSS.MET, PARAMSM.MET, PARAMSL.MET

Table 3. Changes Associated with Model Change Bulletin G

MCB	Chg[1]	Problem Area	Name	No. changes	E/B
G	M-1	When using multiple multi-hourly M3D files with overlapping times CALMET simulation stopped sooner than the requested end time	RDMM5	1	B
G	M-2	When using convective overwater mixing height options (IMIXH>0) the overwater convective mixing height grows from the previous hour mixing height, not from the previous hour convective mixing height. This affects the values of overwater convective mixing heights overwater if conditions switch from stable/neutral to convective overwater during the simulation.	WATER WATERP	3 3	B
G	M-3	At night when CALMET temperatures are computed from 3D.DAT temperatures (ITPROG>0) and CALMET lower level(s) are below the lowest 3D.DAT level, CALMET lowest temperature (s), which in that case are based on vertical extrapolation of the lowest 3D.DAT temperatures, assumed radiative cooling even in (rare) cases of nighttime warming	STULL	1	B
G	M-4	In case of several upper air stations, the upper air station selected for the computation of the lapse rate (IUPT) was not necessarily used for the computation of the lapse rate at the top of the boundary layer or the computation of the BG mixing height (the closest station was used, whether IUPT was specified or not)	MIXHT MIXHTST	2 2	B
G	M-5	There is no check to make sure that the CALMET grid is located within the prognostic grid, thus possibly using far away and irrelevant prognostic grid points to initialize CALMET variables.	RDHD4 RDHD5 PARAMS[(a)] READCF INOUT	3 2 2 1 1[(b)]	B
G	M-6	For NPSTA=-1 (precipitation interpolated from prognostic precipitation), the user-defined SIGMAP is not checked against the prognostic grid size thus allowing more than the 4 nearest prognostic. Grid points to be used for the interpolation onto the CALMET grid, possibly resulting in non-consistent precipitation fields	RDHD4 RDHD5 READHD	2 2 3	B

(a) PARAMSS.MET, PARAMSM.MET, PARAMSL.MET
(b) NEW SUBROUTINE

ASSESSMENT OF MODEL CHANGES

EPA developed the CALPUFF Assessment Tool (EPA, 2008), which includes a set of scenarios, source types, and batch files to assess the effect of changes to CALPUFF and CALMET on modeled pollutant impacts. The eleven scenarios included in the CALPUFF Assessment Tool are described in Table 4 and the source types modeled in each scenario are shown in Table 5. Note that not every source type is modeled in each scenario.

A complete assessment consists of "primary" assessments that identify the magnitude of the combined impact of CALPUFF and CALMET code changes on the resulting pollutant impacts (if any) for each scenario, and "secondary" assessments that identify whether the changes are attributable to CALPUFF, CALMET, or both. The primary assessment compares results form the Base-CALPUFF/Base-CALMET run with results from the Beta-CALPUFF/Beta-CALMET run to determine the net effect of CALPUFF and CALMET changes. The secondary assessments pair each scenario's Base-CALPUFF/Base-CALMET run with the Base-CALPUFF/Beta-CALMET run ('a' scenario) and each scenario's Beta-CALPUFF/Beta-CALMET run with the Base-CALPUFF/Beta-CALMET results ('b' scenario), to determine whether differences are attributable to changes in CALPUFF, CALMET, or both (see Figure 1).

	CALPUFF Base	**CALPUFF Beta**
CALMET Base	Base Case (Primary Analysis)	new CALPUFF effects (not run)
CALMET Beta	new CALMET effects (Secondary Analysis)	Beta Case (Primary Analysis)

Figure 1. Summary of Primary and Secondary Analyses for CALPUFF Tool

AMEC ran the CALPUFF Assessment Tool for both primary and secondary assessments for each set of MCBs, using the Intel-built executables. The Assessment Tool generates minimum and maximum overall percent differences, minimum and maximum overall percent differences normalized by the high value, and a comparison of high values for each source type in the scenario. The percent difference of the overall result normalized by high value, without consideration of the averaging period, is tabulated for each MCB in the tables below.

Tables 6 and 7 show the primary and secondary results, respectively, for changes associated with MCB-E; Tables 8 and 9 show the primary and secondary results for changes associated

with MCB-F; Tables 10 and 11 show the primary and secondary results for changes associated with MCB-G. Tables for the overall results are presented in Appendix A and the comparison of high values by rank are presented in Appendix B.

The assessment tool outputs a minimum and maximum percent difference for the overall results and results normalized by high value. For the primary assessment (Tables 6, 8, and 10), both the minimum and maximum values are presented. For the secondary assessments (Tables 7, 9, and 11), the larger of the absolute value of the minimum percent difference (a negative value) and maximum percent difference (a positive value) is shown. In the appendices, the minimum and maximum values are shown for the secondary assessments.

The following are used in the tables:

nd	no difference
< 1	percent difference between 0.1% and 1.0%
< -1	percent difference between -0.1% and -1.0%
<< 1	percent difference less than 0.1%
<< -1	absolute value of the percent difference less than 0.1%
-100	base value is nonzero and the beta value is zero
∞	base value is zero and beta value is nonzero, resulting in a divide by zero
0/0	both values are zero
-99.9	a difference when both beta value and base value are nonzero (actual value rounded is 100%); used to distinguish differences when beta value is zero
999	a difference between base and beta values that is greater than 10000%

Overall, for most scenarios and source types, there was no difference, denoted by 'nd' in the tables, or almost no difference, denoted by "< 1", "< -1", "<< 1", or "<< -1". Larger differences are generally in the tens of percent. No analyses have been conducted to determine which code changes have contributed to specific changes in modeled concentrations.

REFERENCES

EPA, 2008. Protocol for Updating the CALPUFF Modeling System (Draft).

Table 4. Description of the CALPUFF Assessment Scenarios

Scenario	Description
1	Large scale, Pacific Northwest - NWS data only
2	Large scale, Pacific Northwest – NOOBS
3	Medium scale, Pacific Northwest - NWS Data + MM5 initialize wind field
4	Medium scale, Class I area, Shenandoah NP, VA
5	Small scale, Wenatchee - Columbia River Gorge, Jumpoff Joe Ridge
6	Small scale, idealized hill, steady state meteorology, similarity theory, stable atmosphere
7	Small scale, idealized hill, steady state meteorology, PG dispersion, stable atmosphere
8	Small scale, flat terrain, steady state meteorology, similarity theory, stable atmosphere
9	Small scale, flat terrain, steady state meteorology, PG dispersion, stable atmosphere
10	Small scale, idealized hill, steady state meteorology with shear, similarity theory - stable atmosphere, CTDMPLUS-type SURFACE and PROFILE meteorology
11	Medium scale, Pacific Northwest - NWS Data + MM5 initialize wind field, dry and wet deposition with chemistry

Table 5. Source Types used in the CALPUFF Assessment Scenarios

Source Name	Scenario	Description
ARE1	1,2,4	200m by 20m Area Source – Salem Group
P301	1,2,4	30m Point Source – Salem Group
P651	1,2,4	65m Point Source – Salem Group
VOL1	1,2,4	Volume Source – Salem Group
ARE2	1,2,4	200m by 20m Area Source – Jordan Group
P302	1,2,4	30m Point Source – Jordan Group
P652	1,2,4	65m Point Source – Jordan Group
VOL2	1,2,4	Volume Source – Jordan Group
ARE	3,4,11	200m by 20m Area Source – Salem Group
P30	3,4,11	30m Point Source – Salem Group
P65	3,4,11	65m Point Source – Salem Group
P99	3,11	99m Point Source – Tillamook, OR
VOL	3,4,11	Volume Source – Salem Group
BAR	4	1000m by 1000m Buoyant Area Source
1ARE	6,7,8,9,10	200m by 20 m Area Source, Stable
1D1	6,7	Downwash, 35-m Point Source, FMFAC = 0.0, Stable
1D2	6,7	Downwash, 35-m Point Source, FMFAC = 1.0, Stable
1D3	6,7	Downwash, 50-m Point Source, FMFAC = 1.0, Stable
1P30	6,7,8,9,10	30-m Point Source, Stable
1P65	6,7,8,9,10	65-m Point Source, Stable
1VOL	6,7,8,9,10	Volume Source, Stable
2ARE	6,7,8,9,10	200 m by 20 m Area Source, Neutral
2D1	6,7	Downwash, 35-m Point Source, FMFAC = 0.0, Neutral
2D2	6,7	Downwash, 35-m Point Source, FMFAC = 1.0, Neutral
2D3	6,7	Downwash, 50-m Point Source, FMFAC = 1.0, Neutral
2P30	6,7,8,9,10	30-m Point Source, Neutral
2P65	6,7,8,9,10	65-m Point Source, Neutral
2VOL	6,7,8,9,10	Volume Source, Neutral
3ARE	6,7,8,9,10	200 m by 20m Area Source, Convective
3D1	6,7	Downwash, 35-m Point Source, FMFAC = 0.0, Convective
3D2	6,7	Downwash, 35-m Point Source, FMFAC = 1.0, Convective
3D3	6,7	Downwash, 50-m Point Source, FMFAC = 1.0, Convective
3P30	6,7,8,9,10	30-m Point Source, Convective
3P65	6,7,8,9,10	65-m Point Source, Convective
3VOL	6,7,8,9,10	Volume Source, Convective

In Table 5, FMFAC is a vertical momentum flux factor (0. or 1.) used to represent the effect of physical configurations that reduce momentum rise, such as a rain cap, associated with the actual exit velocity (default = 1.0 -- full momentum)

Table 6. CALPUFF Modeling System – Primary Assessment: Normalized Results Percent Difference - MCB-D (EPA-approved version) to MCB-E

	SCENARIO													
	1		2		3		4		5		6		7	
Source	min	max	min	max	min	max	min	max	min	max	min	max	min	max
ARE1	<< -1	nd	<< -1	<< 1					<< -1	nd				
P301	-2	3	-1	4					-5	9				
P651	<< -1	nd	< -1	< 1					< -1	< 1				
VOL1	<< -1	nd	<< -1	<< 1					< -1	<< 1				
ARE2	<< -1	nd	<< -1	<< 1					<< -1	nd				
P302	-3	8	< -1	6					-30	18				
P652	<< -1	0/0	< -1	< 1					-1	2				
VOL2	<< -1	0/0	<< -1	<< 1					<< -1	nd				
ARE					<< -1	nd	<< -1	nd						
P30					-12	8	-10	14						
P65					<< -1	nd	<< -1	nd						
P99					<< -1	<< 1								
VOL					<< -1	nd	<< -1	nd						
BAR							<< -1	nd						
1ARE											nd	nd	nd	nd
1D1											-6	< 1	-6	∞
1D2											-32	2	-6	2
1D3											nd	nd	nd	nd
1P30											nd	nd	nd	nd
1P65											nd	nd	nd	nd
1VOL											nd	nd	nd	nd
2ARE											nd	nd	nd	nd
2D1											< -1	< 1	< -1	1
2D2											< -1	4	< -1	4
2D3											-10	18	-6	13
2P30											< -1	2	< -1	3
2P65											nd	nd	nd	nd
2VOL											nd	nd	nd	nd
3ARE											nd	nd	nd	nd
3D1											< -1	3	< -1	2
3D2											< -1	4	-2	2
3D3											nd	nd	nd	nd
3P30											<< -1	< 1	< -1	2
3P65											nd	nd	nd	nd
3VOL											nd	nd	nd	nd

nd – no difference

Table 6. CALPUFF Modeling System – Primary Assessment: Normalized Results Percent Difference - MCB-D (EPA-approved version) to MCB-E

	SCENARIO											
	min	max	min	max	min	max	min	max	min	max	min	max
Source	8		9		10		11C		11D		11W	
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE							<< -1	nd	<< -1	nd	< -1	< 1
P30							-12	8	-27	4	-3	5
P65							<< -1	nd	<< -1	nd	-1	1
P99							<< -1	<< 1	<< -1	<< 1	-11	25
VOL							<< -1	nd	<< -1	nd	< -1	2
BAR												
1ARE	nd	nd	nd		nd	nd						
1D1												
1D2												
1D3												
1P30	nd	nd	nd		-2	3						
1P65	nd	nd	nd		nd	nd						
1VOL	nd	nd	nd		nd	nd						
2ARE	nd	nd	nd		nd	nd						
2D1												
2D2												
2D3												
2P30	< -1	2	< -1	3	-14	42						
2P65	nd	nd	nd		nd	nd						
2VOL	nd	nd	nd		nd	nd						
3ARE	nd	nd	nd									
3D1												
3D2												
3D3												
3P30	<< -1	< 1	< -1	2								
3P65	nd	nd	nd									
3VOL	nd	nd	nd									

nd – no difference
Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Table 7. CALPUFF Modeling System – Secondary Assessment: Normalized Results Percent Difference - MCB-D (EPA-approved version) to MCB-E

	SCENARIO									
Source	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b
ARE1	nd	<<1 (P)	<<1	<<1 (B)					nd	<<1 (P)
P301	nd	3 (P)	<<1	4 (B)					nd	9 (P)
P651	nd	<<1 (P)	<1	<<1 (B)					nd	<1 (P)
VOL1	nd	<<1 (P)	<<1	<<1 (B)					nd	<1 (P)
ARE2	nd	<<1 (P)	<<1	<<1 (B)					nd	<<1 (P)
P302	nd	8 (P)	<<1	6 (B)					nd	-30 (P)
P652	nd	<<1 (P)	<1	<<1 (B)					nd	2 (P)
VOL2	nd	<<1 (P)	<<1	<<1 (B)					nd	<<1 (P)
ARE					nd	<<1 (P)	nd	<<1 (P)		
P30					nd	-12 (P)	nd	14 (P)		
P65					nd	<<1 (P)	nd	<<1 (P)		
P99					nd	<<1 (P)				
VOL					nd	<<1 (P)	nd	<<1 (P)		
BAR							nd	<1 (P)		
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

nd – no difference

(P) – difference due to CALPUFF; (M) difference due to CALMET; (B) difference due to both

Negative value indicates “min % diff”; positive value indicates “max % diff”

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET

(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table 7, continued

	SCENARIO							
Source	6a	6b	7a	7b	8a	8b	9a	9b
ARE1								
P301								
P651								
VOL1								
ARE2								
P302								
P652								
VOL2								
ARE								
P30								
P65								
P99								
VOL								
BAR								
1ARE	nd	nd	nd	nd	nd	nd	nd	nd
1D1	nd	-6 (P)	nd	-6 (P)				
1D2	nd	-32 (P)	nd	-6 (P)				
1D3	nd	nd	nd	nd				
1P30	nd	nd	nd	nd	nd	nd	nd	nd
1P65	nd	nd	nd	nd	nd	nd	nd	nd
1VOL	nd	nd	nd	nd	nd	nd	nd	nd
2ARE	nd	nd	nd	nd	nd	nd	nd	nd
2D1	nd	<1 (P)	nd	<1 (P)				
2D2	nd	4 (P)	nd	4 (P)				
2D3	nd	18 (P)	nd	13 (P)				
2P30	nd	2 (P)	nd	3 (P)	nd	2 (P)	nd	3 (P)
2P65	nd	nd	nd	nd	nd	nd	nd	nd
2VOL	nd	nd	nd	nd	nd	nd	nd	nd
3ARE	nd	nd	nd	nd	nd	nd	nd	nd
3D1	nd	3 (P)	nd	2 (P)				
3D2	nd	4 (P)	nd	-2 (P)				
3D3	nd	nd	nd	nd				
3P30	nd	<1 (P)	nd	2 (P)	nd	<1 (P)	nd	2 (P)
3P65	nd	nd	nd	nd	nd	nd	nd	nd
3VOL	nd	nd	nd	nd	nd	nd	nd	nd

nd – no difference

(P) – difference due to CALPUFF; (M) difference due to CALMET

Negative value indicates “min % diff”; positive value indicates “max % diff”

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET

(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table 7, concluded

	SCENARIO							
Source	10a	10b	11C a	11C b	11D a	11D b	11W a	11W b
ARE1								
P301								
P651								
VOL1								
ARE2								
P302								
P652								
VOL2								
ARE			nd	<<1 (P)	nd	<<1 (P)	nd	<1 (P)
P30			nd	-12 (P)	nd	-27 (P)	nd	5 (P)
P65			nd	<<1 (P)	nd	<<1 (P)	nd	1 (P)
P99			nd	<<1 (P)	nd	<<1 (P)	nd	25(P)
VOL			nd	<<1 (P)	nd	<<1 (P)	nd	2 (P)
BAR								
1ARE	NA	NA						
1D1								
1D2								
1D3								
1P30	NA	NA						
1P65	NA	NA						
1VOL	NA	NA						
2ARE	NA	NA						
2D1								
2D2								
2D3								
2P30	NA	NA						
2P65	NA	NA						
2VOL	NA	NA						
3ARE								
3D1								
3D2								
3D3								
3P30								
3P65								
3VOL								

NA – The secondary assessment was not performed because the scenario was not available

nd – no difference

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

(P) – difference due to CALPUFF; (M) difference due to CALMET

Negative value indicates “min % diff”; positive value indicates “max % diff

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET

(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table 8. CALPUFF Modeling System – Primary Assessment: Normalized Results Percent Difference - MCB-E to MCB-F

	SCENARIO													
	1		2		3		4		5		6		7	
Source	min	max	min	max	min	max	min	max	min	max	min	max	min	max
ARE1	<< -1	<< 1	<< -1	<< 1					< -1	6				
P301	< -1	< 1	-2	< 1					-5	6				
P651	-48	194	-86	26					-98	27				
VOL1	nd	nd	nd	nd					< -1	1				
ARE2	<< -1	<< 1	<< -1	<< 1					-2	11				
P302	< -1	< 1	-7	< 1					-13	27				
P652	-27	33	-37	11					-96	69				
VOL2	nd	nd	nd	nd					-3	5				
ARE					<< -1	<< 1	<< -1	<< 1						
P30					-6	< 1	<< -1	< 1						
P65					-52	20	-15	38						
P99					-4	13								
VOL					nd	nd	nd	nd						
BAR							<< -1	<< 1						
1ARE											<< -1	<< 1	nd	nd
1D1											nd	nd	nd	nd
1D2											nd	nd	nd	nd
1D3											-7	81	<< -1	103
1P30											nd	nd	nd	nd
1P65											-2	61	<< -1	52
1VOL											nd	nd	nd	nd
2ARE											<< -1	<< 1	<< -1	<< 1
2D1											nd	nd	nd	nd
2D2											nd	nd	nd	nd
2D3											nd	nd	nd	nd
2P30											nd	nd	nd	nd
2P65											<< -1	<< 1	0/0	<< 1
2VOL											nd	nd	nd	nd
3ARE											<< -1	<< 1	<< -1	<< 1
3D1											nd	nd	nd	nd
3D2											nd	nd	nd	nd
3D3											< -1	37	<< -1	34
3P30											nd	nd	nd	nd
3P65											< -1	20	< -1	20
3VOL											nd	nd	nd	nd

nd – no difference

Table 8. CALPUFF Modeling System – Primary Assessment: Normalized Results Percent Difference - MCB-E to MCB-F

	SCENARIO											
	8		9		10		11C		11D		11W	
Source	min	max	min	max	min	max	min	max	min	max	min	max
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE							<< -1	<< 1	<< -1	<< 1	<< -1	<< 1
P30							-3	< 1	-3	1	<< -1	<< 1
P65							-52	20	-6	20	< -1	55
P99							-4	12	-6	7	-8	4
VOL							nd	nd	nd	nd	nd	nd
BAR												
1ARE	<< -1	<< 1	nd	nd	<< -1	<< 1						
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd	nd	nd						
1P65	-42	0/0	-5	42	-5	391						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	<< -1	<< 1	<< -1	<< 1	<< -1	<< 1						
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd	nd	nd						
2P65	<< -1	<< 1	0/0	<< 1	-4	8						
2VOL	nd		nd	nd	nd	nd						
3ARE	<< -1	<< 1	<< -1	<< 1								
3D1												
3D2												
3D3												
3P30	nd	nd	nd	nd								
3P65	<< -1	20	< -1	19								
3VOL	nd	nd	nd	nd								

nd – no difference

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Table 9. CALPUFF Modeling System – Secondary Assessment: Normalized Results Percent Difference - MCB-E to MCB-F

	SCENARIO									
Source	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b
ARE1	nd	<<1 (P)	nd	<<1 (P)					nd	6 (P)
P301	nd	<1 (P)	nd	-2 (P)					nd	6 (P)
P651	nd	194 (P)	nd	-86 (P)					nd	-98 (P)
VOL1	nd	nd	nd	nd					nd	<1 (P)
ARE2	nd	<<1 (P)	nd	<<1 (P)					nd	11 (P)
P302	nd	<1 (P)	nd	-7 (P)					nd	27 (P)
P652	nd	33 (P)	nd	-37 (P)					nd	-96 (P)
VOL2	nd	nd	nd	nd					nd	5 (P)
ARE					nd	<<1 (P)	nd	<<1 (P)		
P30					nd	-6 (P)	nd	<1 (P)		
P65					nd	52 (P)	nd	38 (P)		
P99					nd	13 (P)				
VOL					nd	nd	nd	nd		
BAR							nd	<<1 (P)		
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

nd – no difference

(P) – difference due to CALPUFF; (M) difference due to CALMET

Negative value indicates “min % diff”; positive value indicates “max % diff”

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET

(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table 9, continued

	SCENARIO							
Source	6a	6b	7a	7b	8a	8b	9a	9b
ARE1								
P301								
P651								
VOL1								
ARE2								
P302								
P652								
VOL2								
ARE								
P30								
P65								
P99								
VOL								
BAR								
1ARE	nd	<<1 (P)	nd	nd	nd	<<1 (P)	nd	nd
1D1	nd	nd	nd	nd				
1D2	nd	nd	nd	nd				
1D3	nd	81 (P)	nd	103 (P)				
1P30	nd	nd	nd	nd	nd	nd	nd	nd
1P65	nd	61 (P)	nd	52 (P)	nd	-42 (P)	nd	42 (P)
1VOL	nd	nd	nd	nd	nd	nd	nd	nd
2ARE	nd	<<1 (P)	nd	<<1 (P)	nd	<<1 (P)	nd	<<1 (P)
2D1	nd	nd	nd	nd				
2D2	nd	nd	nd	nd				
2D3	nd	nd	nd	nd				
2P30	nd	nd	nd	nd	nd	nd	nd	nd
2P65	nd	<<1 (P)	nd	<<1 (P)	nd	<<1 (P)	nd	<<1 (P)
2VOL	nd	nd	nd	nd	nd	nd	nd	nd
3ARE	nd	<<1 (P)	nd	<<1 (P)	nd	<<1 (P)	nd	<<1 (P)
3D1	nd	nd	nd	nd				
3D2	nd	nd	nd	nd				
3D3	nd	37 (P)	nd	34 (P)				
3P30	nd	nd	nd	nd	nd	nd	nd	nd
3P65	nd	20 (P)	nd	20 (P)	nd	20 (P)	nd	19 (P)
3VOL	nd	nd	nd	nd	nd	nd	nd	nd

nd – no difference

(P) – difference due to CALPUFF; (M) difference due to CALMET

Negative value indicates “min % diff”; positive value indicates “max % diff”

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET

(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table 9, concluded

	SCENARIO							
Source	10a	10b	11C a	11C b	11D a	11D b	11W a	11W b
ARE1								
P301								
P651								
VOL1								
ARE2								
P302								
P652								
VOL2								
ARE			nd	<<1 (P)	nd	<<1 (P)	nd	<<1 (P)
P30			nd	-3 (P)	nd	-3 (P)	nd	<<1 (P)
P65			nd	-52 (P)	nd	20 (P)	nd	55 (P)
P99			nd	12 (P)	nd	7 (P)	nd	-8 (P)
VOL			nd	nd	nd	nd	nd	nd
BAR								
1ARE	NA	NA						
1D1								
1D2								
1D3								
1P30	NA	NA						
1P65	NA	NA						
1VOL	NA	NA						
2ARE	NA	NA						
2D1								
2D2								
2D3								
2P30	NA	NA						
2P65	NA	NA						
2VOL	NA	NA						
3ARE								
3D1								
3D2								
3D3								
3P30								
3P65								
3VOL								

NA – The secondary assessment was not performed since the scenario was not available

nd – no difference

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

(P) – difference due to CALPUFF; (M) difference due to CALMET

Negative value indicates “min % diff”; positive value indicates “max % diff”

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET

(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table 10. CALPUFF Modeling System - Primary Assessment: Normalized Results Percent Difference - MCB-F to MCB-G

	SCENARIO													
	1		2		3		4		5		6		7	
Source	min	max	min	max	min	max	min	max	min	max	min	max	min	max
ARE1	<< -1	<< 1	<< -1	<< 1					nd	nd				
P301	<< -1	<< 1	-1	< 1					nd	nd				
P651	-4	4	-3	2					nd	nd				
VOL1	<< -1	<< 1	< -1	< 1					nd	nd				
ARE2	-3	4	<< -1	<< 1					nd	nd				
P302	-1	4	<< -1	<< 1					nd	nd				
P652	-30	62	<< -1	<< 1					nd	nd				
VOL2	-1	2	<< -1	<< 1					nd	nd				
ARE					nd	nd	-4	21						
P30					nd	nd	-5	28						
P65					nd	nd	-4	25						
P99					nd	nd								
VOL					nd	nd	-3	23						
BAR							<< -1	<< 1						
1ARE											nd	nd	nd	nd
1D1											nd	nd	nd	nd
1D2											nd	nd	nd	nd
1D3											nd	nd	nd	nd
1P30											nd	nd	nd	nd
1P65											nd	nd	nd	nd
1VOL											nd	nd	nd	nd
2ARE											nd	nd	nd	nd
2D1											nd	nd	nd	nd
2D2											nd	nd	nd	nd
2D3											nd	nd	nd	nd
2P30											nd	nd	nd	nd
2P65											nd	nd	nd	nd
2VOL											nd	nd	nd	nd
3ARE											nd	nd	nd	nd
3D1											nd	nd	nd	nd
3D2											nd	nd	nd	nd
3D3											nd	nd	nd	nd
3P30											nd	nd	nd	nd
3P65											nd	nd	nd	nd
3VOL											nd	nd	nd	nd

nd – no difference

Table 10. CALPUFF Modeling System - Primary Assessment: Normalized Results Percent Difference - MCB-F to MCB-G

	SCENARIO											
	8		9		10		11C		11D		11W	
Source	min	max	min	max	min	max	min	max	min	max	min	max
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE							nd	nd	nd	nd	nd	nd
P30							nd	nd	nd	nd	nd	nd
P65							nd	nd	nd	nd	nd	nd
P99							nd	nd	nd	nd	nd	nd
VOL							nd	nd	nd	nd	nd	nd
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	nd	nd	nd						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd	nd	nd						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd								
3D1												
3D2												
3D3												
3P30	nd	nd	nd	nd								
3P65	nd	nd	nd	nd								
3VOL	nd	nd	nd	nd								

nd – no difference

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Table 11. CALPUFF Modeling System - Secondary Assessment: Normalized Results Percent Difference - MCB-F to MCB-G

	SCENARIO									
Source	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b
ARE1	<<1 (M)	nd	<<1	nd					nd	nd
P301	<<1 (M)	nd	1	nd					nd	nd
P651	-4 (M)	nd	3	nd					nd	nd
VOL1	<<1 (M)	nd	<1	nd					nd	nd
ARE2	-4 (M)	nd	<<1	nd					nd	nd
P302	-4 (M)	nd	<<1	nd					nd	nd
P652	-41 (M)	nd	<<1	nd					nd	nd
VOL2	-2 (M)	nd	<<1	nd					nd	nd
ARE					nd	nd	-19 (M)	nd		
P30					nd	nd	-23 (M)	nd		
P65					nd	nd	-21 (M)	nd		
P99					nd	nd				
VOL					nd	nd	-22 (M)	nd		
BAR							<<1 (M)	nd		
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

nd – no difference

(P) – difference due to CALPUFF; (M) difference due to CALMET

Negative value indicates “min % diff”; positive value indicates “max % diff”

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET

(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table 11, continued

	SCENARIO							
Source	6a	6b	7a	7b	8a	8b	9a	9b
ARE1								
P301								
P651								
VOL1								
ARE2								
P302								
P652								
VOL2								
ARE								
P30								
P65								
P99								
VOL								
BAR								
1ARE	nd	nd	nd	nd	nd	nd	nd	nd
1D1	nd	nd	nd	nd				
1D2	nd	nd	nd	nd				
1D3	nd	nd	nd	nd				
1P30	nd	nd	nd	nd	nd	nd	nd	nd
1P65	nd	nd	nd	nd	nd	nd	nd	nd
1VOL	nd	nd	nd	nd	nd	nd	nd	nd
2ARE	nd	nd	nd	nd	nd	nd	nd	nd
2D1	nd	nd	nd	nd				
2D2	nd	nd	nd	nd				
2D3	nd	nd	nd	nd				
2P30	nd	nd	nd	nd	nd	nd	nd	nd
2P65	nd	nd	nd	nd	nd	nd	nd	nd
2VOL	nd	nd	nd	nd	nd	nd	nd	nd
3ARE	nd	nd	nd	nd	nd	nd	nd	nd
3D1	nd	nd	nd	nd				
3D2	nd	nd	nd	nd				
3D3	nd	nd	nd	nd				
3P30	nd	nd	nd	nd	nd	nd	nd	nd
3P65	nd	nd	nd	nd	nd	nd	nd	nd
3VOL	nd	nd	nd	nd	nd	nd	nd	nd

nd – no difference

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET

(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table 11, concluded

	SCENARIO							
Source	10a	10b	11C a	11C b	11D a	11D b	11W a	11W b
ARE1								
P301								
P651								
VOL1								
ARE2								
P302								
P652								
VOL2								
ARE			nd	nd	nd	nd	nd	nd
P30			nd	nd	nd	nd	nd	nd
P65			nd	nd	nd	nd	nd	nd
P99			nd	nd	nd	nd	nd	nd
VOL			nd	nd	nd	nd	nd	nd
BAR								
1ARE	NA	NA						
1D1								
1D2								
1D3								
1P30	NA	NA						
1P65	NA	NA						
1VOL	NA	NA						
2ARE	NA	NA						
2D1								
2D2								
2D3								
2P30	NA	NA						
2P65	NA	NA						
2VOL	NA	NA						
3ARE								
3D1								
3D2								
3D3								
3P30								
3P65								
3VOL								

NA – The secondary assessment was not performed since the scenarios were not available for this assessment

nd – no difference

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET

(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

APPENDIX A
OVERALL RESULTS

Appendix A contains tables of the overall results. Tables A-1 shows the percent difference for the primary assessment for the code modifcations associated with bug fixes, as identified in Table 1, for Model Change Bulletin E. The minimum and maximum percent difference is ahown for each scenario. Table A-3 is for code modifcations associated with bug fixes, as identified in Table 1, for Model Change Bulletin F, and Tables A-5 is for code modifcations associated with bug fixes, as identified in Table 1, for Model Change Bulletin G.

In the tables A1, A3, and A5, the following applies:

nd	no difference
< 1	percent difference between 0.1% and 1.0%
< -1	percent difference between -0.1% and -1.0%
<< 1	percent difference less than 0.1%
<< -1	absolute value of the percent difference less than 0.1%
-100	base value is nonzero and beta value is zero
∞	base value is zero and beta value is nonzero, resulting in a divide by zero
0/0	both values are zero
-99.9	a difference when both beta value and base value are nonzero (actual value rounded is 100%); used to distinguish differences when beta value is zero
999	a difference between base and beta values that is greater than 10000%

Table A-2 shows the percent difference for the secondary assessment for the code modifcations associated with bug fixes, as identified in Table 1, for Model Change Bulletin E. Table A-4 is for code modifcations associated with bug fixes, as identified in Table 1, for Model Change Bulletin F, and Tables A-6 is for code modifcations associated with bug fixes, as identified in Table 1, for Model Change Bulletin G. Note that there is no scenario 10 for the secondary assessments.

In the tables A2, A4, and A6, the following applies:

nd	no difference
< 1	percent difference between 0.1% and 1.0%
< -1	percent difference between -0.1% and -1.0%
<< 1	percent difference less than 0.1%
<< -1	absolute value of the percent difference less than 0.1%
-100	first value is nonzero and second value is zero
∞	first value is zero and second value is nonzero, resulting in a divide by zero
-99.9	a difference when both firtst and second values are nonzero (actual value rounded is 100%); used to distinguish differences when beta value is zero
0/0	both values are zero
999	a difference between first and second values that is greater than 10000%

Table A-1. CALPUFF Modeling System – Primary Assessment: Overall Results Percent Difference - MCB-D (EPA-approved version) to MCB-E

	SCENARIO													
	1	1	2	2	3	3	4	4	5	5	6	6	7	7
Source	min	max	min	max	min	max	min	max	min	max	min	max	min	max
ARE1	<< -1	nd	-7	17					<< -1	nd				
P301	-100	∞	-100	∞					-43	79				
P651	<< -1	nd	-3	3					-5	3				
VOL1	<< -1	nd	-3	3					-2	<< 1				
ARE2	<< -1	nd	-22	43					<< -1	nd				
P302	-100	∞	-100	∞					-87	136				
P652	<< -1	nd	-28	57					-8	12				
VOL2	<< -1	nd	-30	70					<< -1	nd				
ARE					<< -1	nd	<< -1	nd						
P30					-100	∞	-17	31						
P65					<< -1	nd	<< -1	nd						
P99					<< -1	<< 1								
VOL					<< -1	nd	<< -1	nd						
BAR							< -1	<< 1						
1ARE											nd	nd	nd	nd
1D1											-100	∞	-100	∞
1D2											-100	∞	-88	54
1D3											nd	nd	nd	nd
1P30											nd	nd	nd	nd
1P65											nd	nd	nd	nd
1VOL											nd	nd	nd	nd
2ARE											nd	nd	nd	nd
2D1											-100	∞	-100	∞
2D2											-100	∞	-100	∞
2D3											-100	∞	-100	∞
2P30											-100	∞	-100	∞
2P65											nd	nd	nd	nd
2VOL											nd	nd	nd	nd
3ARE											nd	nd	nd	nd
3D1											-100	∞	-100	∞
3D2											-100	∞	-100	∞
3D3											nd	nd	nd	nd
3P30											-40	999	-100	∞
3P65											nd	nd	nd	nd
3VOL											nd	nd	nd	nd

Table A-1. CALPUFF Modeling System – Primary Assessment: Overall Results
Percent Difference - MCB-D (EPA-approved version) to MCB-E

	SCENARIO													
	8	8	9	9	10	10	11C	11C	!!D	11D	11W	11W		
Source	min	max	min	max	min	max	min	max	min	max	min	max	min	max
ARE1														
P301														
P651														
VOL1														
ARE2														
P302														
P652														
VOL2														
ARE							<< -1	nd	<< -1	nd	-64	∞		
P30							-100	∞	-100	∞	-100	∞		
P65							<< -1	nd	<< -1	nd	-27	∞		
P99							<< -1	<< 1	<< -1	<< 1	-30	57		
VOL							<< -1	nd	<< -1	nd	-59	∞		
BAR														
1ARE	nd	nd	nd	nd	nd	nd								
1D1														
1D2														
1D3														
1P30	nd	nd	nd	nd	-100	∞								
1P65	nd	nd	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd	nd	nd								
2D1														
2D2														
2D3														
2P30	-100	∞	-100	999	-100	999								
2P65	nd	nd	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd										
3D1														
3D2														
3D3														
3P30	-90	∞	-99.9	∞										
3P65	nd	nd	nd	nd										
3VOL	nd	nd	nd	nd										

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Table A-2. CALPUFF Modeling System – Secondary Assessment: Overall Results Percent Difference - MCB-D (EPA-approved version) to MCB-E

	SCENARIO									
	1a	1a	1b	1b		2a	2a	2b	2b	
Source	min	max	min	max		min	max	min	max	
ARE1	nd	nd	<< -1	nd		-14	8	<< -1	nd	
P301	nd	nd	-100	∞		-2	2	-100	∞	
P651	nd	nd	<< -1	nd		-3	3	<< -1	<< 1	
VOL1	nd	nd	<< -1	nd		-3	3	<< -1	0	
ARE2	nd	nd	<< -1	nd		-30	29	<< -1	0	
P302	nd	nd	-100	∞		-39	34	-100	∞	
P652	nd	nd	<< -1	0/0		-36	40	<< -1	<< -1	
VOL2	nd	nd	<< -1	0/0		-41	44	<< -1	nd	
ARE										
P30										
P65										
P99										
VOL										
BAR										
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-2. continued

	SCENARIO									
	3a	3a	3b	3b		4a	4a	4b	4b	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE	nd	nd	<< -1	nd		nd	nd	<< -1	nd	
P30	nd	nd	-100	∞		nd	nd	-17	31	
P65	nd	nd	<< -1	nd		nd	nd	<< -1	nd	
P99	nd	nd	<< -1	<< 1						
VOL	nd	nd	<< -1	nd		nd	nd	<< -1	nd	
BAR						nd	nd	< -1	<< 1	
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-2. continued

	SCENARIO									
	5a	5a	5b	5b		6a	6a	6b	6b	
Source	min	max	min	max		min	max	min	max	
ARE1	nd	nd	<< -1	nd						
P301	nd	nd	-43	79						
P651	nd	nd	-5	3						
VOL1	nd	nd	-2	<< 1						
ARE2	nd	nd	<< -1	nd						
P302	nd	nd	-87	136						
P652	nd	nd	-7	12						
VOL2	nd	nd	<< -1	nd						
ARE										
P30										
P65										
P99										
VOL										
BAR										
1ARE						nd	nd	nd	nd	
1D1						nd	nd	-100	∞	
1D2						nd	nd	-100	∞	
1D3						nd	nd	nd	nd	
1P30						nd	nd	nd	nd	
1P65						nd	nd	nd	nd	
1VOL						nd	nd	nd	nd	
2ARE						nd	nd	nd	nd	
2D1						nd	nd	-100	∞	
2D2						nd	nd	-100	∞	
2D3						nd	nd	-100	∞	
2P30						nd	nd	-100	∞	
2P65						nd	nd	nd	nd	
2VOL						nd	nd	nd	nd	
3ARE						nd	nd	nd	nd	
3D1						nd	nd	-100	∞	
3D2						nd	nd	-100	∞	
3D3						nd	nd	nd	nd	
3P30						nd	nd	-40	999	
3P65						nd	nd	nd	nd	
3VOL						nd	nd	nd	nd	

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-2. continued

	SCENARIO									
	7a	7a	7b	7b		8a	8a	8b	8b	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE										
P30										
P65										
P99										
VOL										
BAR										
1ARE	nd	nd	nd	nd		nd	nd	nd	nd	
1D1	nd	nd	-100	∞						
1D2	nd	nd	-88	54						
1D3	nd	nd	nd	nd						
1P30	nd	nd	nd	nd		nd	nd	nd	nd	
1P65	nd	nd	nd	nd		nd	nd	nd	nd	
1VOL	nd	nd	nd	nd		nd	nd	nd	nd	
2ARE	nd	nd	nd	nd		nd	nd	nd	nd	
2D1	nd	nd	-100	∞						
2D2	nd	nd	-100	∞						
2D3	nd	nd	-100	∞						
2P30	nd	nd	-100	999		nd	nd	-100	∞	
2P65	nd	nd	nd	nd		nd	nd	nd	nd	
2VOL	nd	nd	nd	nd		nd	nd	nd	nd	
3ARE	nd	nd	nd	nd		nd	nd	nd	nd	
3D1	nd	nd	-100	∞						
3D2	nd	nd	-100	∞						
3D3	nd	nd	nd	nd						
3P30	nd	nd	-100	∞		nd	nd	-90	999	
3P65	nd	nd	nd	nd		nd	nd	nd	nd	
3VOL	nd	nd	nd	nd		nd	nd	nd	nd	

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-2. continued

	SCENARIO									
	9a	9a	9b	9b		11a-C	11a-C	11b-C	11b-C	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE						nd	nd	<< -1	nd	
P30						nd	nd	-100	∞	
P65						nd	nd	<< -1	nd	
P99						nd	nd	<< -1	<< -1	
VOL						nd	nd	<< -1	nd	
BAR										
1ARE	nd	nd	nd	nd						
1D1										
1D2										
1D3										
1P30	nd	nd	nd	nd						
1P65	nd	nd	nd	nd						
1VOL	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd						
2D1										
2D2										
2D3										
2P30	nd	nd	-100	999						
2P65	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd						
3D1										
3D2										
3D3										
3P30	nd	nd	-99.9	999						
3P65	nd	nd	nd	nd						
3VOL	nd	nd	nd	nd						

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-2. concluded

	SCENARIO									
	11a-D	11a-D	11b-D	11b-D		11a-W	11a-W	11b-W	11b-W	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE	nd	nd	<< -1	nd		nd	nd	-64	999	
P30	nd	nd	-100	∞		nd	nd	-100	∞	
P65	nd	nd	<< -1	nd		nd	nd	-27	999	
P99	nd	nd	<< -1	<< 1		nd	nd	-30	57	
VOL	nd	nd	<< -1	nd		nd	nd	-59	999	
BAR										
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-3. CALPUFF Modeling System – Primary Assessment: Overall Results
Percent Difference - MCB-E to MCB-F

	SCENARIO													
	1	1	2	2	3	3	4	4	5	5	6	6	7	7
Source	min	max	min	max	min	max	min	max	min	max	min	max	min	max
ARE1	-17	< 1	-48	< 1					-59	1032				
P301	-142	617	-6	9					-66	488				
P651	-100	∞	-100	∞					-98	410				
VOL1	nd	nd	nd	nd					-59	394				
ARE2	-99.9	2	-53	4					-70	340				
P302	-37	543	-63	1087					-74	193				
P652	-100	∞	-100	∞					-97	412				
VOL2	nd	nd	nd	nd					-68	193				
ARE					-21	< 1	< -1	<< 1						
P30					-165	118	< -1	< 1						
P65					-100	∞	-36	75						
P99					-100	84								
VOL					nd	nd	nd	nd						
BAR							< -1	<< 1						
1ARE											< -1	< 1	nd	nd
1D1											nd	nd	nd	nd
1D2											nd	nd	nd	nd
1D3											-100	∞	-100	123
1P30											nd	nd	nd	nd
1P65											-100	∞	-100	64
1VOL											nd	nd	nd	nd
2ARE											<< -1	3	<< -1	<< 1
2D1											nd	nd	nd	nd
2D2											nd	nd	nd	nd
2D3											nd	nd	nd	nd
2P30											nd	nd	nd	nd
2P65											<< -1	1	0/0	<< 1
2VOL											nd	nd	nd	nd
3ARE											< -1	< 1	<< -1	2
3D1											nd	nd	nd	nd
3D2											nd	nd	nd	nd
3D3											-100	∞	-100	∞
3P30											nd	nd	nd	nd
3P65											-100	∞	-100	∞
3VOL											nd	nd	nd	nd

Table A-3. CALPUFF Modeling System – Primary Assessment: Overall Results
Percent Difference - MCB-E to MCB-F

	SCENARIO													
	8	8	9	9	10	10	11C	11C	11D	11D	11W	11W		
Source	min	max	min	max	min	max	min	max	min	max	min	max	min	max
ARE1														
P301														
P651														
VOL1														
ARE2														
P302														
P652														
VOL2														
ARE							-27	< 1	-6	< 1	-100	∞		
P30							-46	174	-75	84	-4	< 1		
P65							-100	∞	-100	∞	-100	∞		
P99							-100	108	-100	96	-100	∞		
VOL							nd	nd	nd	nd	nd	nd		
BAR														
1ARE	<< -1	<< 1	nd	nd	-100	<< 1								
1D1														
1D2														
1D3														
1P30	nd	nd	nd	nd	nd	nd								
1P65	-93	0/0	-100	42	-100	∞								
1VOL	nd	nd	nd	nd	nd	nd								
2ARE	<< -1	4	<< -1	17	<< -1	<< 1								
2D1														
2D2														
2D3														
2P30	nd	nd	nd	nd	nd	nd								
2P65	<< -1	1	0/0	<< 1	-100	∞								
2VOL	nd	nd	nd	nd	nd	nd								
3ARE	< -1	< 1	<< -1	2										
3D1														
3D2														
3D3														
3P30	nd	nd	nd	nd										
3P65	-100	∞	-100	∞										
3VOL	nd	nd	nd	nd										

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Table A-4. CALPUFF Modeling System – Secondary Assessment: Overall Results Percent Difference - MCB-E to MCB-F

	SCENARIO									
	1a	1a	1b	1b		2a	2a	2b	2b	
Source	min	max	min	max		min	max	min	max	
ARE1	nd	nd	-17	1		nd	nd	-48	< 1	
P301	nd	nd	-42	62		nd	nd	4	9	
P651	nd	nd	-100	∞		nd	nd	-100	∞	
VOL1	nd	nd	nd	nd		nd	nd	nd	nd	
ARE2	nd	nd	-99.9	2		nd	nd	-52	4	
P302	nd	nd	-137	54		nd	nd	-63	1087	
P652	nd	nd	-100	∞		nd	nd	-100	∞	
VOL2	nd	nd	nd	nd		nd	nd	nd	nd	
ARE										
P30										
P65										
P99										
VOL										
BAR										
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-4. continued

	SCENARIO									
	3a	3a	3b	3b		4a	4a	4b	4b	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE	nd	nd	-21	1		nd	nd	< -1	< 1	
P30	nd	nd	-65	118		nd	nd	< -1	< 1	
P65	nd	nd	-100	∞		nd	nd	-36	75	
P99	nd	nd	-100	84						
VOL	nd	nd	nd	nd		nd	nd	nd	nd	
BAR						nd	nd	< -1	<< 1	
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-4. continued

	SCENARIO									
	5a	5a	5b	5b		6a	6a	6b	6b	
Source	min	max	min	max		min	max	min	max	
ARE1	nd	nd	-59	1032						
P301	nd	nd	-66	488						
P651	nd	nd	-98	410						
VOL1	nd	nd	-59	394						
ARE2	nd	nd	-70	340						
P302	nd	nd	-74	193						
P652	nd	nd	-97	412						
VOL2	nd	nd	-68	193						
ARE										
P30										
P65										
P99										
VOL										
BAR										
1ARE						nd	nd	< -1	< 1	
1D1						nd	nd	nd	nd	
1D2						nd	nd	nd	nd	
1D3						nd	nd	-100	∞	
1P30						nd	nd	nd	nd	
1P65						nd	nd	-100	∞	
1VOL						nd	nd	nd	nd	
2ARE						nd	nd	<< -1	3	
2D1						nd	nd	nd	nd	
2D2						nd	nd	nd	nd	
2D3						nd	nd	nd	nd	
2P30						nd	nd	nd	nd	
2P65						nd	nd	<< -1	1	
2VOL						nd	nd	nd	nd	
3ARE						nd	nd	< -1	< 1	
3D1						nd	nd	nd	nd	
3D2						nd	nd	nd	nd	
3D3						nd	nd	-100	∞	
3P30						nd	nd	nd	nd	
3P65						nd	nd	-100	∞	
3VOL						nd	nd	nd	nd	

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-4. continued

	SCENARIO									
	7a	7a	7b	7b		8a	8a	8b	8b	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE										
P30										
P65										
P99										
VOL										
BAR										
1ARE	nd	nd	nd	nd		nd	nd	<< -1	<< 1	
1D1	nd	nd	-100	∞						
1D2	nd	nd	-88	54						
1D3	nd	nd	nd	nd						
1P30	nd	nd	nd	nd		nd	nd	nd	nd	
1P65	nd	nd	nd	nd		nd	nd	-93	0/0	
1VOL	nd	nd	nd	nd		nd	nd	nd	nd	
2ARE	nd	nd	nd	nd		nd	nd	<< -1	4	
2D1	nd	nd	-100	∞						
2D2	nd	nd	-100	∞						
2D3	nd	nd	-100	∞						
2P30	nd	nd	-100	999		nd	nd	nd	nd	
2P65	nd	nd	nd	nd		nd	nd	<< -1	1	
2VOL	nd	nd	nd	nd		nd	nd	nd	nd	
3ARE	nd	nd	nd	nd		nd	nd	< -1	< 1	
3D1	nd	nd	-100	∞						
3D2	nd	nd	-100	∞						
3D3	nd	nd	nd	nd						
3P30	nd	nd	-100	∞		nd	nd	nd	nd	
3P65	nd	nd	nd	nd		nd	nd	-100	∞	
3VOL	nd	nd	nd	nd		nd	nd	nd	nd	

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-4. continued

	SCENARIO									
	9a	9a	9b	9b		11a-C	11a-C	11b-C	11b-C	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE						nd	nd	-27	1	
P30						nd	nd	-46	174	
P65						nd	nd	-100	∞	
P99						nd	nd	-100	108	
VOL						nd	nd	nd	nd	
BAR										
1ARE	nd	nd	nd	nd						
1D1										
1D2										
1D3										
1P30	nd	nd	nd	nd						
1P65	nd	nd	-100	42						
1VOL	nd	nd	nd	nd						
2ARE	nd	nd	<< -1	17						
2D1										
2D2										
2D3										
2P30	nd	nd	nd	nd						
2P65	nd	nd	0/0	<< 1						
2VOL	nd	nd	nd	nd						
3ARE	nd	nd	<< -1	2						
3D1										
3D2										
3D3										
3P30	nd	nd	nd	nd						
3P65	nd	nd	-100	∞						
3VOL	nd	nd	nd	nd						

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-4. concluded

	SCENARIO									
	11a-D	11a-D	11b-D	11b-D		11a-W	11a-W	11b-W	11b-W	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE	nd	nd	-6	1		nd	nd	-100	∞	
P30	nd	nd	-75	84		nd	nd	-4	< 1	
P65	nd	nd	-100	∞		nd	nd	-100	∞	
P99	nd	nd	-100	96		nd	nd	-100	∞	
VOL	nd	nd	nd	nd		nd	nd	nd	nd	
BAR										
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-5. CALPUFF Modeling System – Primary Assessment: Overall Results
Percent Difference - MCB-F to MCB-G

	SCENARIO													
	1	1	2	2	3	3	4	4	5	5	6	6	7	7
Source	min	max	min	max	min	max	min	max	min	max	min	max	min	max
ARE1	-97	999	-34	780					nd	nd				
P301	-100	∞	-100	790					nd	nd				
P651	-100	∞	-100	∞					nd	nd				
VOL1	-100	∞	-55	76					nd	nd				
ARE2	-99.9	999	-2	< 1					nd	nd				
P302	-100	∞	< -1	< 1					nd	nd				
P652	-100	∞	-7	97					nd	nd				
VOL2	-100	∞	-2	2					nd	nd				
ARE					nd	nd	-7	85						
P30					nd	nd	-6	147						
P65					nd	nd	-15	75						
P99					nd	nd								
VOL					nd	nd	-6	148						
BAR							<< -1	<< 1						
1ARE											nd	nd	nd	nd
1D1											nd	nd	nd	nd
1D2											nd	nd	nd	nd
1D3											nd	nd	nd	nd
1P30											nd	nd	nd	nd
1P65											nd	nd	nd	nd
1VOL											nd	nd	nd	nd
2ARE											nd	nd	nd	nd
2D1											nd	nd	nd	nd
2D2											nd	nd	nd	nd
2D3											nd	nd	nd	nd
2P30											nd	nd	nd	nd
2P65											nd	nd	nd	nd
2VOL											nd	nd	nd	nd
3ARE											nd	nd	nd	nd
3D1											nd	nd	nd	nd
3D2											nd	nd	nd	nd
3D3											nd	nd	nd	nd
3P30											nd	nd	nd	nd
3P65											nd	nd	nd	nd
3VOL											nd	nd	nd	nd

Table A-5. CALPUFF Modeling System – Primary Assessment: Overall Results
Percent Difference - MCB-F to MCB-G, continued

	SCENARIO													
	8	8	9	9	10	10	11C	11C	!!D	11D	11W	11W		
Source	min	max	min	max	min	max	min	max	min	max	min	max	min	max
ARE1														
P301														
P651														
VOL1														
ARE2														
P302														
P652														
VOL2														
ARE							nd	nd	nd	nd	nd	nd		
P30							nd	nd	nd	nd	nd	nd		
P65							nd	nd	nd	nd	nd	nd		
P99							nd	nd	nd	nd	nd	nd		
VOL							nd	nd	nd	nd	nd	nd		
BAR														
1ARE	nd	nd	nd	nd	nd	nd								
1D1														
1D2														
1D3														
1P30	nd	nd	nd	nd	nd	nd								
1P65	nd	nd	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd	nd	nd								
2D1														
2D2														
2D3														
2P30	nd	nd	nd	nd	nd	nd								
2P65	nd	nd	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd										
3D1														
3D2														
3D3														
3P30	nd	nd	nd	nd										
3P65	nd	nd	nd	nd										
3VOL	nd	nd	nd	nd										

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Table A-6. CALPUFF Modeling System – Secondary Assessment: Overall Results
Percent Difference MCB-F to MCB-G

	SCENARIO									
	1a	1a	1b	1b		2a	2a	2b	2b	
Source	min	max	min	max		min	max	min	max	
ARE1	-99.9	3512	nd	nd		-89	52	nd	nd	
P301	-100	∞	nd	nd		-89	999	nd	nd	
P651	-100	∞	nd	nd		-100	∞	nd	nd	
VOL1	-100	∞	nd	nd		-43	123	nd	nd	
ARE2	-100	999	nd	nd		< -1	2	nd	nd	
P302	-100	∞	nd	nd		< -1	< 1	nd	nd	
P652	-100	∞	nd	nd		-49	8	nd	nd	
VOL2	-100	∞	nd	nd		-2	2	nd	nd	
ARE										
P30										
P65										
P99										
VOL										
BAR										
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-6. continued

	SCENARIO									
	3a	3a	3b	3b		4a	4a	4b	4b	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE	nd	nd	nd	nd		-46	8	nd	nd	
P30	nd	nd	nd	nd		-59	6	nd	nd	
P65	nd	nd	nd	nd		-43	19	nd	nd	
P99	nd	nd	nd	nd						
VOL	nd	nd	nd	nd		-60	7	nd	nd	
BAR						<< -1	<< 1	nd	nd	
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-6. continued

	SCENARIO									
	5a	5a	5b	5b		6a	6a	6b	6b	
Source	min	max	min	max		min	max	min	max	
ARE1	nd	nd	nd	nd						
P301	nd	nd	nd	nd						
P651	nd	nd	nd	nd						
VOL1	nd	nd	nd	nd						
ARE2	nd	nd	nd	nd						
P302	nd	nd	nd	nd						
P652	nd	nd	nd	nd						
VOL2	nd	nd	nd	nd						
ARE										
P30										
P65										
P99										
VOL										
BAR										
1ARE						nd	nd	nd	nd	
1D1						nd	nd	nd	nd	
1D2						nd	nd	nd	nd	
1D3						nd	nd	nd	nd	
1P30						nd	nd	nd	nd	
1P65						nd	nd	nd	nd	
1VOL						nd	nd	nd	nd	
2ARE						nd	nd	nd	nd	
2D1						nd	nd	nd	nd	
2D2						nd	nd	nd	nd	
2D3						nd	nd	nd	nd	
2P30						nd	nd	nd	nd	
2P65						nd	nd	nd	nd	
2VOL						nd	nd	nd	nd	
3ARE						nd	nd	nd	nd	
3D1						nd	nd	nd	nd	
3D2						nd	nd	nd	nd	
3D3						nd	nd	nd	nd	
3P30						nd	nd	nd	nd	
3P65						nd	nd	nd	nd	
3VOL						nd	nd	nd	nd	

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-6. continued

	SCENARIO									
	7a	7a	7b	7b		8a	8a	8b	8b	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE										
P30										
P65										
P99										
VOL										
BAR										
1ARE	nd	nd	nd	nd		nd	nd	nd	nd	
1D1	nd	nd	nd	nd						
1D2	nd	nd	nd	nd						
1D3	nd	nd	nd	nd						
1P30	nd	nd	nd	nd		nd	nd	nd	nd	
1P65	nd	nd	nd	nd		nd	nd	nd	nd	
1VOL	nd	nd	nd	nd		nd	nd	nd	nd	
2ARE	nd	nd	nd	nd		nd	nd	nd	nd	
2D1	nd	nd	nd	nd						
2D2	nd	nd	nd	nd						
2D3	nd	nd	nd	nd						
2P30	nd	nd	nd	nd		nd	nd	nd	nd	
2P65	nd	nd	nd	nd		nd	nd	nd	nd	
2VOL	nd	nd	nd	nd		nd	nd	nd	nd	
3ARE	nd	nd	nd	nd		nd	nd	nd	nd	
3D1	nd	nd	nd	nd						
3D2	nd	nd	nd	nd						
3D3	nd	nd	nd	nd						
3P30	nd	nd	nd	nd		nd	nd	nd	nd	
3P65	nd	nd	nd	nd		nd	nd	nd	nd	
3VOL	nd	nd	nd	nd		nd	nd	nd	nd	

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-6. continued

	SCENARIO									
	9a	9a	9b	9b		11a-C	11b-C	11b-C	11b-C	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE						nd	nd	nd	nd	
P30						nd	nd	nd	nd	
P65						nd	nd	nd	nd	
P99						nd	nd	nd	nd	
VOL						nd	nd	nd	nd	
BAR										
1ARE	nd	nd	nd	nd						
1D1										
1D2										
1D3										
1P30	nd	nd	nd	nd						
1P65	nd	nd	nd	nd						
1VOL	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd						
2D1										
2D2										
2D3										
2P30	nd	nd	nd	nd						
2P65	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd						
3D1										
3D2										
3D3										
3P30	nd	nd	nd	nd						
3P65	nd	nd	nd	nd						
3VOL	nd	nd	nd	nd						

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table A-6. concluded

	SCENARIO									
	11a-D	11b-D	11b-D	11b-D		11a-W	11b-W	11b-W	11b-W	
Source	min	max	min	max		min	max	min	max	
ARE1										
P301										
P651										
VOL1										
ARE2										
P302										
P652										
VOL2										
ARE	nd	nd	nd	nd		nd	nd	nd	nd	
P30	nd	nd	nd	nd		nd	nd	nd	nd	
P65	nd	nd	nd	nd		nd	nd	nd	nd	
P99	nd	nd	nd	nd		nd	nd	nd	nd	
VOL	nd	nd	nd	nd		nd	nd	nd	nd	
BAR										
1ARE										
1D1										
1D2										
1D3										
1P30										
1P65										
1VOL										
2ARE										
2D1										
2D2										
2D3										
2P30										
2P65										
2VOL										
3ARE										
3D1										
3D2										
3D3										
3P30										
3P65										
3VOL										

Scenario 11 – concentration (C), dry deposition (D), wet deposition (W)

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

APPENDIX B
HIGH VALUES BY RANK

Appendix B contains tables of the high values by rank. Tables B-1a through B-1m show the percent difference for the primary assessment for the code modifcations associated with bug fixes, as identified in Table 1, for Model Change Bulletin E. Each scenario is in a separate table. The percent difference for the 1-hr, 3-hr and 24-hr averaging periods for the 1st, 2nd, 4th, and 8th ranks are shown. Tables B-3a through B-3m are for code modifcations associated with bug fixes for Model Change Bulletin F, and Tables B-5a through B-5m are for code modifcations associated with bug fixes for Model Change Bulletin G. The modeling in scenario 4 included gridded and discrete receptors and the results for each receptor type are identified by the letters 'G' and 'D' in the column following the source, respectively.

In the tables B1, B3, and B5, the following applies:

nd	no difference
< 1	percent difference between 0.1% and 1.0%
< -1	percent difference between -0.1% and -1.0%
<< 1	percent difference less than 0.1%
<< -1	absolute value of the percent difference less than 0.1%
-100	beta value is zero and base value is nonzero
∞	base value is zero and beta value is nonzero, resulting in a divide by zero
0/0	both values are zero
-99.9	a difference when both beta value and base value are nonzero (actual value rounded is 100%); used to distinguish differences when beta value is zero
999	a difference between base and beta values that is greater than 10000%

Tables B-2a through B-2l show the percent difference for the secondary assessment for the code modifcations associated with bug fixes, as identified in Table 1, for Model Change Bulletin E. Each scenario is in a separate table. The percent difference for the 1-hr and 24-hr averaging periods for the 1st, 4th, and 8th ranks are shown. The number of averaging periods and ranks are reduced compared to the primary assessment due to space limitations. Tables B-4a through B-4l are for code modifcations associated with bug fixes, as identified in Table 1, for Model Change Bulletin F, and Tables B-6a through B-6l are for code modifcations associated with bug fixes, as identified in Table 1, for Model Change Bulletin G. Note that there is no scenario 10 for the secondary assessments.

In the tables B2, B4, and B6, the following applies:

nd	no difference
< 1	percent difference between 0.1% and 1.0%
< -1	percent difference between -0.1% and -1.0%
<< 1	percent difference less than 0.1%
<< -1	absolute value of the percent difference less than 0.1%
-100	first value is nonzero and second value is zero
∞	first value is zero and second value is nonzero, resulting in a divide by zero
0/0	both values are zero
-99.9	a difference when both firtst and second values are nonzero (actual value rounded is 100%); used to distinguish differences when beta value is zero
999	a difference between first and second values that is greater than 10000%

Table B-1a. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 1

	SCENARIO 1											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1	nd	nd	nd	nd	<< -1	nd	nd	nd	nd	nd	nd	nd
P301	nd	<< 1	<< 1	nd	<< -1	<< 1	<< 1	nd	<< 1	nd	<< 1	< -1
P651	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	nd	6	<< 1	3	nd	<< -1
P652	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-1b. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 2

	SCENARIO 2											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< -1	<<1	nd
P651	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	1	nd	nd	nd	nd	nd	nd	nd	<< 1	nd	nd	nd
P652	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-1c. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 3

	SCENARIO 3											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	1	<< 1	< -1	6	<< 1
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-1d. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 4

		SCENARIO 4											
Avg Period		1-hr				3-hr				24-hr			
Rank		1	2	4	8	1	2	4	8	1	2	4	8
Source													
ARE1													
P301													
P651													
VOL1													
ARE2													
P302													
P652													
VOL2													
ARE	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	G	-1	-4	6	< -1	-3	10	< 1	< 1	2	<< -1	< 1	< -1
	D	nd	nd	< 1	2	nd	< 1	< 1	-4	< 1	< 1	-2	< -1
P65	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99													
VOL	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	<< -1	nd	nd	nd
1ARE													
1D1													
1D2													
1D3													
1P30													
1P65													
1VOL													
2ARE													
2D1													
2D2													
2D3													
2P30													
2P65													
2VOL													
3ARE													
3D1													
3D2													
3D3													
3P30													
3P65													
3VOL													

Table B-1e. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 5

	SCENARIO 5											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	4	3	3	<< 1	7	<< 1	5	<< -1	1	< 1	<< 1	6
P651	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	< 1	5	5	2	nd	nd	<< 1	<< -1	< 1	4	3	8
P652	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-1f. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 6

	SCENARIO 6											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1	-6	-6	-6	-6								
1D2	-31	-31	-31	-31								
1D3	nd	nd	nd	nd								
1P30	nd	nd	nd	nd								
1P65	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1	5	5	6	6								
2D2	4	4	3	3								
2D3	< 1	-2	-6	-6								
2P30	2	2	1	< 1								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1	3	3	3	3								
3D2	4	4	3	4								
3D3	nd	nd	nd	nd								
3P30	< 1	< 1	< 1	< 1								
3P65	nd	nd	nd	nd								
3VOL	nd	nd	nd	nd								

Table B-1g. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 7

	SCENARIO 7											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1	-6	-6	-6	-6								
1D2	-2	-2	-2	-2								
1D3	nd	nd	nd	nd								
1P30	nd	nd	nd	nd								
1P65	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1	< 1	< 1	< 1	< 1								
2D2	3	3	3	3								
2D3	< 1	1	2	2								
2P30	3	3	3	3								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1	2	2	2	2								
3D2	-1	-1	-1	< 1								
3D3	nd	nd	nd	nd								
3P30	< 1	< 1	< 1	< 1								
3P65	nd	nd	nd	nd								
3VOL	nd	nd	nd	nd								

Table B-1h. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 8

	SCENARIO 8											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1												
1D2												
1D3												
1P30	2	2	1	< 1								
1P65	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1												
2D2												
2D3												
2P30	< 1	< 1	< 1	< 1								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1												
3D2												
3D3												
3P30	< 1	< 1	< 1	< 1								
3P65	nd	nd	nd	nd								
3VOL	nd	nd	nd	nd								

Table B-1i. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 9

	SCENARIO 9											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd								
1P65	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1												
2D2												
2D3												
2P30	3	3	3	3								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1												
3D2												
3D3												
3P30	< 1	< 1	< 1	< 1								
3P65	nd	nd	nd	nd								
3VOL	nd	nd	nd	nd								

Table B-1j. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 10

	SCENARIO 10											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1												
1D2												
1D3												
1P30	< -1	< -1	< -1	< -1								
1P65	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1												
2D2												
2D3												
2P30	2	2	2	2								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-1k. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 11C

	SCENARIO 11C											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	1	1	<< 1	< -1	6	< -1
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< -1
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-1l. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 11D

	SCENARIO 11D											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	<< 1	<< -1	-3	<< -1	<< -1	< 1	1	< 1	< -1	2	< 1
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-1m. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 11W

	SCENARIO 11W											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	< 1	nd	nd	<< 1	< 1	nd	<< 1	nd	< 1
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-2a. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 1

	SCENARIO 1											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	nd	nd	nd	nd	<< 1	nd	nd	nd	nd	<< 1	<< 1	< -1
P651	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< 1	nd	<< -1
P652	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-2b. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 2

	SCENARIO 2											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< -1	<< 1
P651	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	1	nd	nd	nd	nd	nd	nd	nd	nd	<< 1	nd	nd
P652	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-2c. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 3

	SCENARIO 3											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< 1	6	<< 1
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-2d. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 4

		SCENARIO 4											
Avg Period		1-hr						24-hr					
		(a)			(b)			(a)			(b)		
Rank		1	4	8	1	4	8	1	4	8	1	4	8
Source													
ARE1													
P301													
P651													
VOL1													
ARE2													
P302													
P652													
VOL2													
ARE	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	G	nd	nd	nd	-1	6	< -1	nd	nd	nd	2	< 1	< -1
	D	nd	nd	nd	nd	< 1	2	nd	nd	nd	< 1	-2	< -1
P65	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99													
VOL	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< -1	nd	nd
1ARE													
1D1													
1D2													
1D3													
1P30													
1P65													
1VOL													
2ARE													
2D1													
2D2													
2D3													
2P30													
2P65													
2VOL													
3ARE													
3D1													
3D2													
3D3													
3P30													
3P65													
3VOL													

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-2e. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 5

	SCENARIO 5											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	nd	nd	nd	4	3	<< 1	nd	nd	nd	1	<< 1	6
P651	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	< 1	5	2	nd	nd	nd	< 1	3	8
P652	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-2f. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 6

	SCENARIO 6											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1	nd	nd	nd	-6	-6	-6						
1D2	nd	nd	nd	-32	-32	-32						
1D3	nd	nd	nd	nd	nd	nd						
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	nd	nd	nd						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1	nd	nd	nd	< 1	< 1	< 1						
2D2	nd	nd	nd	4	3	3						
2D3	nd	nd	nd	< 1	-6	-6						
2P30	nd	nd	nd	2	1	< 1						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1	nd	nd	nd	3	3	3						
3D2	nd	nd	nd	4	3	4						
3D3	nd	nd	nd	nd	nd	nd						
3P30	nd	nd	nd	< 1	< 1	< 1						
3P65	nd	nd	nd	nd	nd	nd						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-2g. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 7

	SCENARIO 7											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1	nd	nd	nd	-6	-6	-6						
1D2	nd	nd	nd	-2	-2	-2						
1D3	nd	nd	nd	nd	nd	nd						
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	nd	nd	nd						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1	nd	nd	nd	< 1	< 1	< 1						
2D2	nd	nd	nd	3	3	3						
2D3	nd	nd	nd	< 1	2	2						
2P30	nd	nd	nd	3	3	3						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1	nd	nd	nd	2	2	2						
3D2	nd	nd	nd	-1	-1	< -1						
3D3	nd	nd	nd	nd	nd	nd						
3P30	nd	nd	nd	< 1	< 1	< 1						
3P65	nd	nd	nd	nd	nd	nd						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-2h. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 8

	SCENARIO 8											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	nd	nd	nd						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1												
2D2												
2D3												
2P30	nd	nd	nd	2	1	< 1						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1												
3D2												
3D3												
3P30	nd	nd	nd	< 1	< 1	< 1						
3P65	nd	nd	nd	nd	nd	nd						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-2i. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 9

	SCENARIO 9											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	nd	nd	nd						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1												
2D2												
2D3												
2P30	nd	nd	nd	3	3	3						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1												
3D2												
3D3												
3P30	nd	nd	nd	< 1	< 1	< 1						
3P65	nd	nd	nd	nd	nd	nd						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-2j. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 11C

	SCENARIO 11C											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< 1	6	< -1
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< -1
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-2k. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 11D

	SCENARIO 11D											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	<< -1	-3	nd	nd	nd	< 1	2	< 1
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-2l. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-D (EPA-approved version) to MCB-E: Scenario 11W

	SCENARIO 11W											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	< 1	nd	nd	nd	nd	nd	< 1
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-3a. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 1

	SCENARIO 1											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1	<< 1	<< 1	<< 1	<< 1	<< 1	<< 1	<< 1	<< 1	<< 1	<< 1	<< 1	<< 1
P301	nd	< -1	< -1	<< -1	< -1	< -1	< -1	< -1	< -1	< -1	<< -1	< 1
P651	195	98	77	-20	191	46	-17	-21	37	52	-3	10
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	nd	<< -1	nd	nd	nd	< 1
P652	nd	.12	7	< 1	<<-1	-11	2	33	11	< 1	3	7
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-3b. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB- E to MCB-F: Scenario 2

	SCENARIO 2											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	-1	-2	nd	nd	-1	-2	nd	<< -1	-1	-2	nd	nd
P651	< 1	nd	nd	< -1	3	< -1	10	< 1	2	<< -1	19	-3
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< 1
P652	< 1	< -1	<< -1	< -1	2	< -1	< -1	< -1	2	< -1	< 1	< 1
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-3c. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 3

	SCENARIO 3											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	<< 1	<< 1	<< 1	nd	nd	<< 1	nd	nd	<< 1	nd	<< 1	nd
P30	<< -1	-3	nd	nd	nd	-3	nd	nd	<< -1	<< 1	nd	-6
P65	-40	-50	< -1	-16	-52	-24	13	6	-6	7	-3	nd
P99	nd	nd	-3	5	nd	1	-2	4	< -1	4	7	2
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-3d. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 4

		SCENARIO 4											
Avg Period		1-hr				3-hr				24-hr			
Rank		1	2	4	8	1	2	4	8	1	2	4	8
Source													
ARE1													
P301													
P651													
VOL1													
ARE2													
P302													
P652													
VOL2													
ARE	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	G	nd	nd	nd	nd	nd	nd	nd	<< -1	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< -1	nd	nd
P65	G	2	1	< -1	5	< 1	1	3	< -1	2	12	3	< -1
	D	3	< 1	4	1	3	5	7	2	2	5	< -1	< 1
P99													
VOL	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR	G	nd	<< 1	nd	nd	<< 1	nd	nd	nd	<< 1	nd	nd	nd
	D	nd	nd	<< -1	nd	nd	nd	nd	nd	nd	nd	<< -1	nd
1ARE													
1D1													
1D2													
1D3													
1P30													
1P65													
1VOL													
2ARE													
2D1													
2D2													
2D3													
2P30													
2P65													
2VOL													
3ARE													
3D1													
3D2													
3D3													
3P30													
3P65													
3VOL													

Table B-3e. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 5

	SCENARIO 5											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1	nd	nd	<< -1	nd	<< -1	<< -1	nd	<< -1	<< -1	nd	<< -1	<< -1
P301	nd	nd	< -1	-1	nd	< -1	nd	-3	-1	-2	-3	-2
P651	-72	-73	-77	-80	-59	-77	-74	-74	-66	-58	-74	-63
VOL1	nd	<< -1	nd	<< -1	nd	<< -1	<< -1	nd	<< -1	<< -1	<< -1	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	-3	-2	-1	< -1	-1	nd	-3	< -1
P652	nd	-25	-43	-35	-21	-33	-47	-36	-31	-15	-30	< -1
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-3f. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 6

	SCENARIO 6											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1	nd	nd	nd	nd								
1D2	nd	nd	nd	nd								
1D3	80	80	80	80								
1P30	nd	nd	nd	nd								
1P65	61	61	61	61								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1	nd	nd	nd	nd								
2D2	nd	nd	nd	nd								
2D3	nd	nd	nd	nd								
2P30	nd	nd	nd	nd								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1	nd	nd	nd	nd								
3D2	nd	nd	nd	nd								
3D3	23	24	24	37								
3P30	nd	nd	nd	nd								
3P65	10	10	10	16								
3VOL	nd	nd	nd	nd								

Table B-3g. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 7

	SCENARIO 7											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1	nd	nd	nd	nd								
1D2	nd	nd	nd	nd								
1D3	91	91	91	91								
1P30	nd	nd	nd	nd								
1P65	38	38	38	38								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1	nd	nd	nd	nd								
2D2	nd	nd	nd	nd								
2D3	nd	nd	nd	nd								
2P30	nd	nd	nd	nd								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1	nd	nd	nd	nd								
3D2	nd	nd	nd	nd								
3D3	18	18	18	26								
3P30	nd	nd	nd	nd								
3P65	13	13	13	10								
3VOL	nd	nd	nd	nd								

Table B-3h. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 8

	SCENARIO 8											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd								
1P65	-42	-42	-42	-42								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1												
3D2												
3D3												
3P30	nd	nd	nd	nd								
3P65	10	10	10	16								
3VOL	nd	nd	nd	nd								

Table B-3i. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 9

	SCENARIO 9											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd								
1P65	42	42	42	42								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1												
3D2												
3D3												
3P30	nd	nd	nd	nd								
3P65	13	13	13	15								
3VOL	nd	nd	nd	nd								

Table B-3j. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 10

	SCENARIO 10											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd								
1P65	356	356	356	356								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd								
2P65	3	3	3	3								
2VOL	nd	nd	nd	nd								
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-3k. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 11C

	SCENARIO 11C											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	<< 1	nd	nd	nd	<< 1	nd	nd	<< 1	nd	<< 1	<< -1
P30	<< -1	-3	nd	-3	nd	<< -1	nd	nd	<< -1	<< 1	nd	< -1
P65	-39	-51	-2	-16	-52	-24	13	6	-6	8	-3	< -1
P99	nd	nd	-3	5	nd	2	-2	4	< -1	4	7	2
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-3l. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 11D

	SCENARIO 11D											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	<< 1	nd	nd	<< 1	nd	nd	nd	<< 1	<< 1	nd	<< 1
P30	<< -1	3	nd	nd	nd	nd	<< 1	nd	<< -1	<< 1	nd	nd
P65	nd	nd	nd	nd	nd	nd	< -1	nd	nd	<< 1	< -1	20
P99	nd	nd	nd	4	nd	nd	6	-2	<< 1	1	6	< -1
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-3m. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 11W

	SCENARIO 11W											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	-5	<< 1	< 1	55	-5	< 1	<< 1	nd	-5	< 1	nd	-10
P99	nd	nd	<< 1	-5	<< -1	< -1	<< -1	1	<< -1	< -1	< 1	< -1
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-4a. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 1

	SCENARIO 1											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1	nd	nd	nd	<< 1	<< 1	<< 1	nd	nd	nd	<< 1	<< 1	<< 1
P301	nd	nd	nd	nd	< -1	<< -1	nd	nd	nd	< -1	< -1	< 1
P651	nd	nd	nd	194	77	-20	nd	nd	nd	37	-3	10
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	< 1
P652	nd	nd	nd	nd	7	< 1	nd	nd	nd	11	< 1	7
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-4b. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 2

	SCENARIO 2											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	nd	nd	nd	-1	nd	nd	nd	nd	nd	-1	-2	nd
P651	nd	nd	nd	< 1	nd	< -1	nd	nd	nd	2	19	-3
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< 1
P652	nd	nd	nd	< 1	<< -1	< -1	nd	nd	nd	2	< 1	< 1
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET

(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-4c. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 3

	SCENARIO 3											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	<< 1	<< 1	nd	nd	nd	nd	<< 1	<< 1	nd
P30	nd	nd	nd	<< -1	nd	nd	nd	nd	nd	<< -1	nd	-6
P65	nd	nd	nd	-39	< -1	-16	nd	nd	nd	-6	-3	nd
P99	nd	nd	nd	nd	-3	5	nd	nd	nd	< -1	7	2
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-4d. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 4

		SCENARIO 4											
Avg Period		1-hr						24-hr					
		(a)			(b)			(a)			(b)		
Rank		1	4	8	1	4	8	1	4	8	1	4	8
Source													
ARE1													
P301													
P651													
VOL1													
ARE2													
P302													
P652													
VOL2													
ARE	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	G	nd	nd	nd	2	< -1	5	nd	nd	nd	2	3	< -1
	D	nd	nd	nd	3	4	1	nd	nd	nd	2	< -1	< 1
P99													
VOL	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< -1	nd	nd
	D	nd	nd	nd	nd	<< -1	nd	nd	nd	nd	nd	<< -1	nd
1ARE													
1D1													
1D2													
1D3													
1P30													
1P65													
1VOL													
2ARE													
2D1													
2D2													
2D3													
2P30													
2P65													
2VOL													
3ARE													
3D1													
3D2													
3D3													
3P30													
3P65													
3VOL													

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-4e. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 5

	SCENARIO 5											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1	nd	nd	nd	nd	<< -1	nd	nd	nd	nd	<< -1	<< -1	<< -1
P301	nd	nd	nd	nd	< -1	-1	nd	nd	nd	-1	-3	-1
P651	nd	nd	nd	--73	-77	-80	nd	nd	nd	-66	-74	-63
VOL1	nd	nd	nd	nd	nd	<< -1	nd	nd	nd	<< -1	<< -1	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	nd	nd	nd	-1	-3	< -1
P652	nd	nd	nd	nd	-43	-35	nd	nd	nd	-31	-30	< -1
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-4f. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 6

	SCENARIO 6											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1	nd	nd	nd	nd	nd	nd						
1D2	nd	nd	nd	nd	nd	nd						
1D3	nd	nd	nd	80	80	80						
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	61	61	61						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1	nd	nd	nd	nd	nd	nd						
2D2	nd	nd	nd	nd	nd	nd						
2D3	nd	nd	nd	nd	nd	nd						
2P30	nd	nd	nd	nd	nd	nd						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1	nd	nd	nd	nd	nd	nd						
3D2	nd	nd	nd	nd	nd	nd						
3D3	nd	nd	nd	23	24	37						
3P30	nd	nd	nd	nd	nd	nd						
3P65	nd	nd	nd	10	10	16						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-4g. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 7

	SCENARIO 7											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1	nd	nd	nd	nd	nd	nd						
1D2	nd	nd	nd	nd	nd	nd						
1D3	nd	nd	nd	91	91	91						
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	38	38	38						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1	nd	nd	nd	nd	nd	nd						
2D2	nd	nd	nd	nd	nd	nd						
2D3	nd	nd	nd	nd	nd	nd						
2P30	nd	nd	nd	nd	nd	nd						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1	nd	nd	nd	nd	nd	nd						
3D2	nd	nd	nd	nd	nd	nd						
3D3	nd	nd	nd	18	18	26						
3P30	nd	nd	nd	nd	nd	nd						
3P65	nd	nd	nd	13	13	10						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-4h. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 8

	SCENARIO 8											
Avg Period	1-hr						24-hr					
	v			beta (b)			base (a)			beta (b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	-42	-42	-42						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd	nd	nd						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1												
3D2												
3D3												
3P30	nd	nd	nd	nd	nd	nd						
3P65	nd	nd	nd	10	10	16						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-4i. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 9

	SCENARIO 9											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	42	42	42						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd	nd	nd						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1												
3D2												
3D3												
3P30	nd	nd	nd	nd	nd	nd						
3P65	nd	nd	nd	13	13	15						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-4j. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 11C

	SCENARIO 11C											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< 1	<< 1	<< -1
P30	nd	nd	nd	<< -1	nd	nd	nd	nd	nd	<< -1	nd	< -1
P65	nd	nd	nd	-39	-51	-16	nd	nd	nd	-5	-3	< -1
P99	nd	nd	nd	nd	-3	5	nd	nd	nd	< -1	7	2
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-4k. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 11D

	SCENARIO 11D											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< 1	nd	<< 1
P30	nd	nd	nd	nd	<< -1	-3	nd	nd	nd	< 1	<< 1	nd
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	< -1	20
P99	nd	nd	nd	nd	nd	4	nd	nd	nd	<< 1	6	< -1
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-4l. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-E to MCB-F: Scenario 11W

	SCENARIO 11W											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	nd	nd	nd	-5	< 1	55	nd	nd	nd	-5	nd	-9
P99	nd	nd	nd	nd	<< 1	-5	nd	nd	nd	<< -1	< 1	< -1
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-5a. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 1

	SCENARIO 1											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< -1	nd
P651	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< -1	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	<< 1	<< 1	<< 1	nd	nd	nd	1	<1	<< 1	< 1
P302	nd	nd	nd	nd	nd	nd	nd	nd	< 1	< 1	< 1	< 1
P652	-24	17	29	22	-28	nd	13	<< 1	-22	7	28	48
VOL2	<< 1	<< 1	<< 1	<< 1	<< 1	<< 1	nd	nd	1	1	< 1	< 1
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-5b. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 2

	SCENARIO 2											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< -1
P651	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	nd	nd	nd	<< -1	nd	nd
P652	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-5c. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 3

	SCENARIO 3											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-5d. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 4

		SCENARIO 4											
Avg Period		1-hr				3-hr				24-hr			
Rank		1	2	4	8	1	2	4	8	1	2	4	8
Source													
ARE1													
P301													
P651													
VOL1													
ARE2													
P302													
P652													
VOL2													
ARE	G	nd	<< -1	nd	nd	nd	nd	nd	< 1	<< 1	< 1	10	nd
	D	nd	nd	nd	nd	nd	nd	3	3	< -1	6	< 1	14
P30	G	nd	<< -1	< 1	< 1	nd	<< 1	nd	4	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	<< 1	<< -1	4	nd	nd	nd	nd
P65	G	nd	<< 1	nd	nd	nd	nd	nd	nd	<< 1	< -1	< -1	nd
	D	nd	nd	nd	nd	nd	nd	nd	< -1	< 1	< 1	nd	17
P99													
VOL	G	nd	nd	nd	nd	nd	nd	nd	2	< 1	< 1	15	nd
	D	nd	nd	nd	nd	nd	nd	4	7	< -1	< 1	nd	5
BAR	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1ARE													
1D1													
1D2													
1D3													
1P30													
1P65													
1VOL													
2ARE													
2D1													
2D2													
2D3													
2P30													
2P65													
2VOL													
3ARE													
3D1													
3D2													
3D3													
3P30													
3P65													
3VOL													

Table B-5e. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 5

	SCENARIO 5											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P651	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P652	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-5f. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 6

	SCENARIO 6											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1	nd	nd	nd	nd								
1D2	nd	nd	nd	nd								
1D3	nd	nd	nd	nd								
1P30	nd	nd	nd	nd								
1P65	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1	nd	nd	nd	nd								
2D2	nd	nd	nd	nd								
2D3	nd	nd	nd	nd								
2P30	nd	nd	nd	nd								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1	nd	nd	nd	nd								
3D2	nd	nd	nd	nd								
3D3	nd	nd	nd	nd								
3P30	nd	nd	nd	nd								
3P65	nd	nd	nd	nd								
3VOL	nd	nd	nd	nd								

Table B-5g. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 7

	SCENARIO 7											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1	nd	nd	nd	nd								
1D2	nd	nd	nd	nd								
1D3	nd	nd	nd	nd								
1P30	nd	nd	nd	nd								
1P65	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1	nd	nd	nd	nd								
2D2	nd	nd	nd	nd								
2D3	nd	nd	nd	nd								
2P30	nd	nd	nd	nd								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1	nd	nd	nd	nd								
3D2	nd	nd	nd	nd								
3D3	nd	nd	nd	nd								
3P30	nd	nd	nd	nd								
3P65	nd	nd	nd	nd								
3VOL	nd	nd	nd	nd								

Table B-5h. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 8

	SCENARIO 8											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd								
1P65	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1												
3D2												
3D3												
3P30	nd	nd	nd	nd								
3P65	nd	nd	nd	nd								
3VOL	nd	nd	nd	nd								

Table B-5i. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 9

	SCENARIO 9											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd								
1P65	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE	nd	nd	nd	nd								
3D1												
3D2												
3D3												
3P30	nd	nd	nd	nd								
3P65	nd	nd	nd	nd								
3VOL	nd	nd	nd	nd								

Table B-5j. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 10

	SCENARIO 10											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	3	4	1	2	3	4	1	2	3	4
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd								
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd								
1P65	nd	nd	nd	nd								
1VOL	nd	nd	nd	nd								
2ARE	nd	nd	nd	nd								
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd								
2P65	nd	nd	nd	nd								
2VOL	nd	nd	nd	nd								
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-5k. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 11C

	SCENARIO 11C											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-5l. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 11D

	SCENARIO 11D											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-5m. CALPUFF Modeling System – Primary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 11W

	SCENARIO 11W											
Avg Period	1-hr				3-hr				24-hr			
Rank	1	2	4	8	1	2	4	8	1	2	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Table B-6a. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 1

	SCENARIO 1											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P651	nd	nd	<< -1	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	<< -1	<< -1	nd	nd	nd	-1	<< -1	< -1	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	< -1	< -1	< -1	nd	nd	nd
P652	33	-23	-18	nd	nd	nd	28	-22	-33	nd	nd	nd
VOL2	<< -1	<< -1	<< -1	nd	nd	nd	-1	< -1	< -1	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-6b. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 2

	SCENARIO 2											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	nd	nd	nd	nd	nd	nd	nd	nd	<< 1	nd	nd	nd
P651	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P652	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-6c. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 3

	SCENARIO 3											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-6d. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 4

		SCENARIO 4											
Avg Period		1-hr						24-hr					
		(a)			(b)			(a)			(b)		
Rank		1	4	8	1	4	8	1	4	8	1	4	8
Source													
ARE1													
P301													
P651													
VOL1													
ARE2													
P302													
P652													
VOL2													
ARE	G	nd	nd	nd	nd	nd	nd	<< -1	-9	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	< 1	< -1	-12	nd	nd	nd
P30	G	nd	< -1	< -1	nd	nd	nd	< -1	-16	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	G	nd	nd	nd	nd	nd	nd	<< -1	< 1	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	<< -	nd	-14	nd	nd	nd
P99													
VOL	G	nd	nd	nd	nd	nd	nd	< -1	-13	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	< 1	nd	-5	nd	nd	nd
BAR	G	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	D	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1ARE													
1D1													
1D2													
1D3													
1P30													
1P65													
1VOL													
2ARE													
2D1													
2D2													
2D3													
2P30													
2P65													
2VOL													
3ARE													
3D1													
3D2													
3D3													
3P30													
3P65													
3VOL													

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-6e. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 5

	SCENARIO 5											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P301	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P651	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P302	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P652	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-6f. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 6

	SCENARIO 6											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1	nd	nd	nd	nd	nd	nd						
1D2	nd	nd	nd	nd	nd	nd						
1D3	nd	nd	nd	nd	nd	nd						
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	nd	nd	nd						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1	nd	nd	nd	nd	nd	nd						
2D2	nd	nd	nd	nd	nd	nd						
2D3	nd	nd	nd	nd	nd	nd						
2P30	nd	nd	nd	nd	nd	nd						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1	nd	nd	nd	nd	nd	nd						
3D2	nd	nd	nd	nd	nd	nd						
3D3	nd	nd	nd	nd	nd	nd						
3P30	nd	nd	nd	nd	nd	nd						
3P65	nd	nd	nd	nd	nd	nd						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-6g. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 7

	SCENARIO 7											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1	nd	nd	nd	nd	nd	nd						
1D2	nd	nd	nd	nd	nd	nd						
1D3	nd	nd	nd	nd	nd	nd						
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	nd	nd	nd						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1	nd	nd	nd	nd	nd	nd						
2D2	nd	nd	nd	nd	nd	nd						
2D3	nd	nd	nd	nd	nd	nd						
2P30	nd	nd	nd	nd	nd	nd						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1	nd	nd	nd	nd	nd	nd						
3D2	nd	nd	nd	nd	nd	nd						
3D3	nd	nd	nd	nd	nd	nd						
3P30	nd	nd	nd	nd	nd	nd						
3P65	nd	nd	nd	nd	nd	nd						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-6h. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 8

	SCENARIO 8											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	nd	nd	nd						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd	nd	nd						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1												
3D2												
3D3												
3P30	nd	nd	nd	nd	nd	nd						
3P65	nd	nd	nd	nd	nd	nd						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-6i. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 9

	SCENARIO 9											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE												
P30												
P65												
P99												
VOL												
BAR												
1ARE	nd	nd	nd	nd	nd	nd						
1D1												
1D2												
1D3												
1P30	nd	nd	nd	nd	nd	nd						
1P65	nd	nd	nd	nd	nd	nd						
1VOL	nd	nd	nd	nd	nd	nd						
2ARE	nd	nd	nd	nd	nd	nd						
2D1												
2D2												
2D3												
2P30	nd	nd	nd	nd	nd	nd						
2P65	nd	nd	nd	nd	nd	nd						
2VOL	nd	nd	nd	nd	nd	nd						
3ARE	nd	nd	nd	nd	nd	nd						
3D1												
3D2												
3D3												
3P30	nd	nd	nd	nd	nd	nd						
3P65	nd	nd	nd	nd	nd	nd						
3VOL	nd	nd	nd	nd	nd	nd						

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-6j. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 11C

	SCENARIO 11C											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-6k. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 11D

	SCENARIO 11D											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET

Table B-6l. CALPUFF Modeling System – Secondary Assessment: High Values by Rank Percent Difference - MCB-F to MCB-G: Scenario 11W

	SCENARIO 11W											
Avg Period	1-hr						24-hr					
	(a)			(b)			(a)			(b)		
Rank	1	4	8	1	4	8	1	4	8	1	4	8
Source												
ARE1												
P301												
P651												
VOL1												
ARE2												
P302												
P652												
VOL2												
ARE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P65	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
P99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
VOL	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAR												
1ARE												
1D1												
1D2												
1D3												
1P30												
1P65												
1VOL												
2ARE												
2D1												
2D2												
2D3												
2P30												
2P65												
2VOL												
3ARE												
3D1												
3D2												
3D3												
3P30												
3P65												
3VOL												

Each scenario for the secondary assessment has two sets of results:

(a) Base-CALPUFF/Base-CALMET compared to Base-CALPUFF/Beta-CALMET
(b) Beta-CALPUFF/Beta-CALMET compared to Base-CALPUFF/Beta-CALMET