Rosemont Copper Company

REVISED CALPUFF Modeling Report to Assess Impacts In Class I Areas

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April 4, 2011

ROSEMONT COPPER
Resourceful.

Memorandum

To: Bev Everson

Cc: Tom Furgason

From: Kathy Arnold

Doc #: 038/11 – 15.3.2

Subject: **Air Modeling Reports and Dark Skies Reports**

Date: April 14, 2011

Rosemont is pleased to transmit the following reports regarding air modeling for the Rosemont Project electronically:

- *VISCREEN: Visibility Impacts Analysis at Saguaro East NP,* prepared by Applied Environmental Consultants, April 4, 2011
- *Revised AERMOD Modeling Report to Assess Ambient Air Quality Impacts,* prepared by Applied Environmental Consultants, April 4, 2011
- *Amendment to: Emission Inventory Information Years 1, 5, 10, 15 and 20, Volume I: Calculation Methodology and Appendices A-G*, prepared by Applied Environmental Consultants, April 4, 2011
- *Amendment to: Emission Inventory Information Years 1, 5, 10, 15 and 20, Volume II: Calculation Methodology and Appendices H*, prepared by Applied Environmental Consultants, April 4, 2011
- *Revised CALPUFF Modeling Report to Assess Impacts in Class I Areas (including model files),* prepared by Applied Environmental Consultants, April 4, 2011
- *Review of Draft Assessment Report,* prepared by M3, Revised January 28, 2011
- *Rosemont Mine Outdoor Lighting & Pima County Outdoor Lighting Code Technical Memo,* prepared by M3, January 2011

The reports on air were transmitted electronically on April 4. These are the hardcopy and electronic copy of each report. The dark skies reports were submitted in February directly to the Forest Service from our consultants, these are hardcopy transmittals of each report. I am transmitting three copies to the Forest Service and two copies to SWCA of each of the above referenced documents.

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1. INTRODUCTION

The proposed Rosemont Copper Company Project (Rosemont Project) is a new open pit copper mine that will be located in the Santa Rita Mountains approximately 30 miles southeast of Tucson, Arizona in Pima County (Figure 1.1). The *Rosemont Project, Mine Plan of Operations* was submitted to the Coronado National Forest in July 2007 (complete document available at www.rosemontcopper.com). The Coronado National Forest represents the Federal Land Manager for purposes of the Environmental Impact Statement (EIS) that will be prepared for the Rosemont Project.

The Federal Land Manager (FLM) requested an air impact analysis to be submitted as part of the EIS to demonstrate the protection of the National Ambient Air Quality Standards (NAAQS) and Class I Prevention of Significant Deterioration (PSD) Increments. Additionally the U.S. Forest Service evaluation requires an Air Quality Related Values (AQRV) impact analysis to ensure that Class I area resources (i.e., visibility, flora, fauna, etc.) are not adversely affected by the projected emissions. Thus, the objective of this dispersion modeling report will be to quantify the maximum predicted ambient impacts due to criteria pollutant emissions for comparison with applicable NAAQS and PSD Class I Increments and to evaluate the potential impact of these on the AQRVs. The Rosemont Project submitted a modeling protocol titled "CALPUFF *Modeling Protocol to Asses Ambient Air Quality Impacts from the Rosemont Copper Project*" to the FLM in October, 2009. A draft modeling report was provided to the FLM in July, 2010. Based on comments received from the FLM, revised modeling simulations were developed. In order to provide documentation on the revised modeling effort, this modeling report has been developed.

The modeling presented herein is based upon the initial modeling protocol referenced above; all FLM comments and discussion as well as all applicable portions of the U.S. Environmental Protection Agency (EPA) guidance document: *Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report And Recommendations for Modeling Long Range Transport Impacts*, December 1998 and Draft May 27, 2009; *Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report - Revised*, October 2010 and the *Western Regional Air Partnership BART protocol,* August 2006. The remaining sections of this report present the CALPUFF air dispersion modeling methodology and modeling results for the Rosemont Project.

1.1 Facility Description

The Rosemont Project will include an open-pit mine; and ore processing operations comprised of milling, a concentrator, leaching and solvent extraction/electrowinning. The production schedule developed from mining sequence plans indicates a project operating life of approximately 20-25 years using only proven and probable mineral reserves. Peak mining rates were initially estimated at approximately 378,000 tpd of total material (ore and waste) to be realized in Year 1. This mining rate included a 20% capacity factor above the average capacity. During this year of operation, however, operations would still be in development stages more typical of 316,000 tpd mining rate. Mining rates during Year 2 are estimated at 376,000 tpd and for Years 3-12 at approximately 360,000 tpd of total material. These rates include the additional 20% capacity factor. These rates will taper off toward the final years of the project.

Mining of the ore will be through conventional open-pit mining techniques including drilling, blasting, loading, hauling and unloading. Waste rock will be transported by haul truck to the waste rock storage areas. Ore will be either transported by haul truck to the leach pad (oxide ore), or crushed and loaded onto a conveyor for transport to the mill (sulfide ore). The copper and molybdenum concentrates from the milling and flotation operations will be shipped off site for further processing. Oxide ore will be placed on the lined leach pad. Pregnant leach solution (PLS) from the pad will be collected in a solution pond and then processed through the SX/EW plant. Copper cathodes generated from the SX/EW plant will be transported off site for further processing.

1.2 Site Description and Relevant Class I Areas

The Rosemont Project will be located in Pima County, approximately 30 miles southeast of Tucson, Arizona as shown in Figure 1.1. Regionally, the facility location is in the Sonoran Desert Section of the Basin and Range Physiographic Province which is characterized by northerly trending fault block mountains separated by broad, down-faulted valleys. The site is at an elevation of approximately 5,350 feet.

Figure 1.2 shows the proposed Rosemont Mine site and all the Class I areas present in Arizona. The distance from the Rosemont Project to the center of the Saguaro National Monument East and Saguaro National Monument West are approximately 44 KM and 66 KM respectively. The Galiuro Wilderness is approximately 95 KM, the Chiricahua National Monument and Wilderness are approximately 140 KM and 145 KM respectively and the Superstition Wilderness Area is approximately 195 KM from the Rosemont Project site. This report will address impacts at each of these Class I areas with the exception of Saguaro National Monument East which will be addressed in the near-field modeling analysis.

Figure 1.1 General location map of the Rosemont Project and surrounding area.

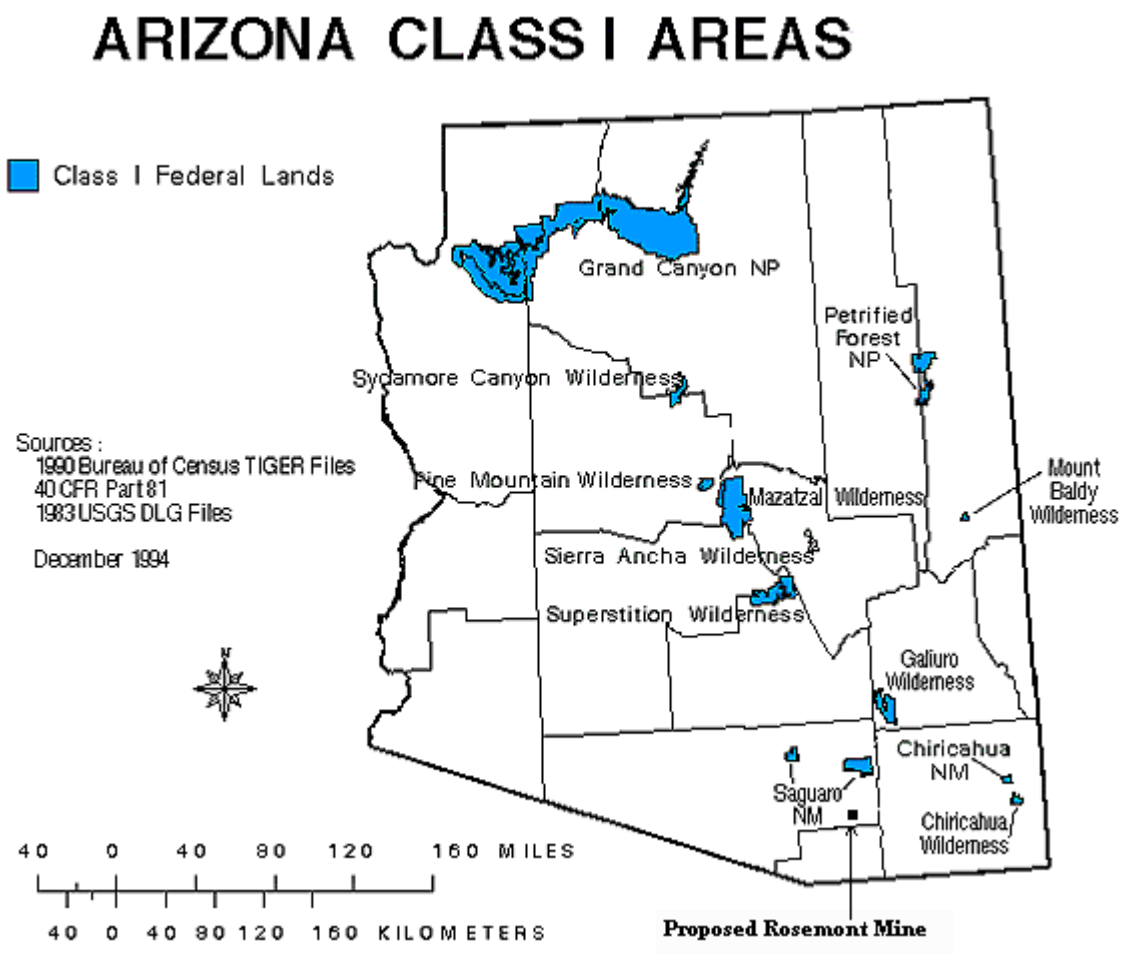

Figure 1.2 Proposed Rosemont Mine and Class I Areas.

2. REGULATORY STATUS

2.1 Source Designation

The Rosemont Project will be a non-categorical stationary source. Criteria pollutant emissions from the facility will be below the New Source Review major source threshold of 250 tons/year. Therefore, the facility will not be subject to PSD regulations. Additionally, the potential to emit hazardous air pollutants (HAPs) will be less than 10 tons/year for any individual (HAP), and less than 25 tons/year for all HAPs combined and therefore, the facility will not be a major HAP source. Point source emissions of criteria pollutants from the facility will be less than the Title V source threshold of 100 tons per year. Consequently, the facility will operate under a Class II Permit issued by the Pima County Department of Environmental Quality (PCDEQ).

2.2 Area Classifications

The Rosemont Project area is classified as "attainment" (better than national standards) or non-classifiable/attainment for total suspended particulates (TSP), particulate matter less than 10 microns nominal aerodynamic diameter (PM_{10}), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and ozone (O_3) (see 40 CFR Part 81.303).

2.3 Baseline Area

The Rosemont Project will be located within the Pima Intrastate Air Quality Control Region (AQCR) which encompasses Pima County. This AQCR represents the "baseline area" for PSD purposes. The Rosemont Project, however, will not be subject to PSD regulations.

3. CALPUFF MODELING SYSTEM

The CALPUFF Modeling System includes three main components: CALMET, CALPUFF, and CALPOST and a large set of preprocessing programs designed to interface the model with standard, routinely available meteorological and geophysical datasets. In the simplest terms, CALMET is a meteorological model that develops hourly wind and temperature fields on a three-dimensional gridded modeling domain. Associated two-dimensional fields such as mixing heights, surface characteristics, and dispersion properties are also included in the file produced by CALMET.

CALPUFF is a transport and dispersion model that advects “puffs” of material emitted from modeled sources, simulating dispersion and transformation processes along the way. In doing so it typically uses the fields generated by CALMET, or as an option, it may use simpler non-gridded meteorological fields explicitly incorporated in the resulting distribution of puffs throughout a simulation period. The primary output files from CALPUFF contain either hourly concentrations or hourly deposition fluxes evaluated at selected receptor locations.

CALPOST is used to process these files, producing tabulations that summarize the results of the simulation, identifying the highest and second highest 3-hour average concentrations at each receptor, for example. When performing visibility related modeling, CALPOST uses concentration from CALPUFF to compute extinction coefficients and related measures of visibility, reporting these for selected averaging times and locations.

4. MODELING METEOROLOGICAL DATA

According to 40 CFR Part 51 Appendix W, the length of the modeled meteorological period should be long enough to ensure that the worst-case meteorological conditions are adequately represented in the model results. The number of years of data needed to obtain a stable distribution of conditions depends on the variable of interest. U.S. EPA recommends that consecutive years from the most recent, readily available 5-year period are preferred. However, "less than five, but at least three, years of meteorological data (need not be consecutive) may be used if mesoscale meteorological fields are available. These mesoscale meteorological fields should be used in conjunction with available standard NWS or comparable meteorological observations within and near the modeling domain. Therefore this modeling analysis was conducted using 3 years of mesoscale meteorological model output data coupled with observational data from nearby surface, upper air and precipitation stations.

4.1 Prognostic Data

Prognostic meteorological model data for the years 2001 (36 km EPA), 2002 (12 km WRAP) and 2003 (36 km MRPO) was used for developing the Initial Guess Wind Fields in the CALMET model. This data was developed utilizing the PSU/NCAR mesoscale model (MM5) run in prognostic mode. The CALMM5 preprocessing program was utilized to convert the MM5 model data into a format compatible with the CALMET processing framework. The CalMM5 extractions from the prognostic data were supplied by BEE-Line Software (now Oris-Solutions). The 2001 and 2003 data cover the conterminous United States at a spacing of 36 km. The 2002 data cover the western portion of the conterminous United States at a spacing of 12 km.

4.2 Surface Stations

Surface data for the years 2001, 2002 and 2003 was used as observations in developing the Step 2 Wind Fields in the CALMET model. The processed surface data, obtained from the National Climatic Data Center (NCDC) in Asheville, North Carolina, was provided by BEE-Line Software. Data from the following four surface stations was used:

1. Nogales Airport (WBAN – 92728)
2. Douglas Bisbee Airport (WBAN – 93026)
3. Tucson Airport (WBAN – 23160)
4. Davis Monthan Air Force Base (WBAN – 23109)

4.3 Upper Air Stations

Upper air data for the years 2001, 2002 and 2003 from the NWS Tucson Airport Station (WBAN – 23160) was used as observations in developing the Step 2 Wind Fields in the CALMET model. The processed upper air data, obtained from the National Oceanic and Atmospheric Administration (NOAA) Forecast Systems Laboratory web site, was provided by BEE-Line Software. Missing data periods were filled with data from other years for the same time period or data from previous days during the same year where appropriate. This replacement was done for a limited number of missing data periods and was internally reviewed on a case by case basis.

4.4 Precipitation Stations

Precipitation data for the years 2001, 2002 and 2003 was used as observations in developing the Step 2 Wind Fields in the CALMET model. The precipitation data, obtained from the NCDC, was provided by BEE-Line Software. Data from the following seven precipitation stations was used.

1. Bisbee 2 WNW (WBAN – 20775)
2. Cochise 4 SSE (WBAN – 21870)
3. Nogales 6 N (WBAN – 25924)
4. Oracle 2 SE (WBAN – 26119)
5. Santa Rita Experimental Range (WBAN – 27593)
6. Tucson International Airport (WBAN – 28820)
7. Vail (WBAN – 28995)

4.5 CALMET: Meteorological Data Processing

CALMET is based on the Diagnostic Wind Model (Douglass, S. and R. Kessler, 1988). It has been significantly enhanced by Earth Tech, Inc (Scire, 2000). CALMET uses a two step approach to calculate wind fields. In the first step, an initial guess field is adjusted for slope flows and terrain blocking effects.. In the second step, an objective analysis is performed to introduce observational data into the Step 1 wind field. The meteorological fields developed by CALMET depend on the following parameter settings:

1. R1MAX – Maximum radius of influence of the observation over land in the surface layer.
2. R2MAX – Maximum radius of influence of the observation over land in the layers aloft.
3. R3MAX – Maximum radius influence of the observation over water.
4. R1 – Controls weighting of the surface layer. For example, it is the distance from the observational station at which the observation and first guess field are equally weighted.
5. R2 - Controls weighting of the layers aloft.
6. ZIMAX – Maximum mixing height.
7. TERRAD – Radius of influence of Terrain Features.

In defining the above parameters as well as all additional CALMET input variables in the CALMET input file, the EPA-FLM guidance found in Appendix A of the Draft Reassessment of the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report Revisions to Phase 2 Recommendations release May 27, 2009. Table 4.1 on the following page presents the settings used for this revised modeling analysis.

Table 4.1 CALMET Parameter Settings		
Parameter	**EPA-FLM Setting**	**Proposed Setting**
R1MAX	100 KM	100 KM
R2MAX	200 KM	200 KM
R3MAX	200 KM	200 KM
R1	50 KM	50 KM
R2	100 KM	100 KM
ZIMAX	3000 m AGL	3000 m AGL
TERRAD	15 KM	15 KM

4.6 Analysis Domain

The modeling domain is shown in Figure 4.1. It is based on UTM coordinates and includes five analyzed Class I areas, the Saguaro West National Monument, Galiuro Wilderness Area, Chiricahua Wilderness Area and National Monument and the Superstition Wilderness Area. The domain is about 320KM x 350KM in the Easterly and Northerly directions respectively, with 5 KM grid cells.

4.7 Terrain

Gridded terrain elevations for the modeling domain were derived from GTOPO30 digital elevation models (DEMs) data produced by the United States Geological Survey (USGS).

4.8 Land Use

The land use data was obtained from USGS in the form of NA Global Azimuthal land use data files. Data for missing quads was substituted using National Land Cover Data (NLCD).

4.9 Receptors

The receptors used for the Class I areas were based on the National Park Service database of Class I receptors. The receptors were downloaded from the National Park Service database and processed into local domain coordinates for use in this analysis. Based on discussions with the FLM it was decided that although additional Class I areas' existed within 300km of the project location, impacts for farther afield Class I's would be minimal. As a result, receptors and associated impacts were calculated for five Class I areas including Saguaro West National Monument, the Galiuro Wilderness Area, the Chiricahua National Monument and Wilderness Area and the Superstition Wilderness Area. See Figure 4.1.

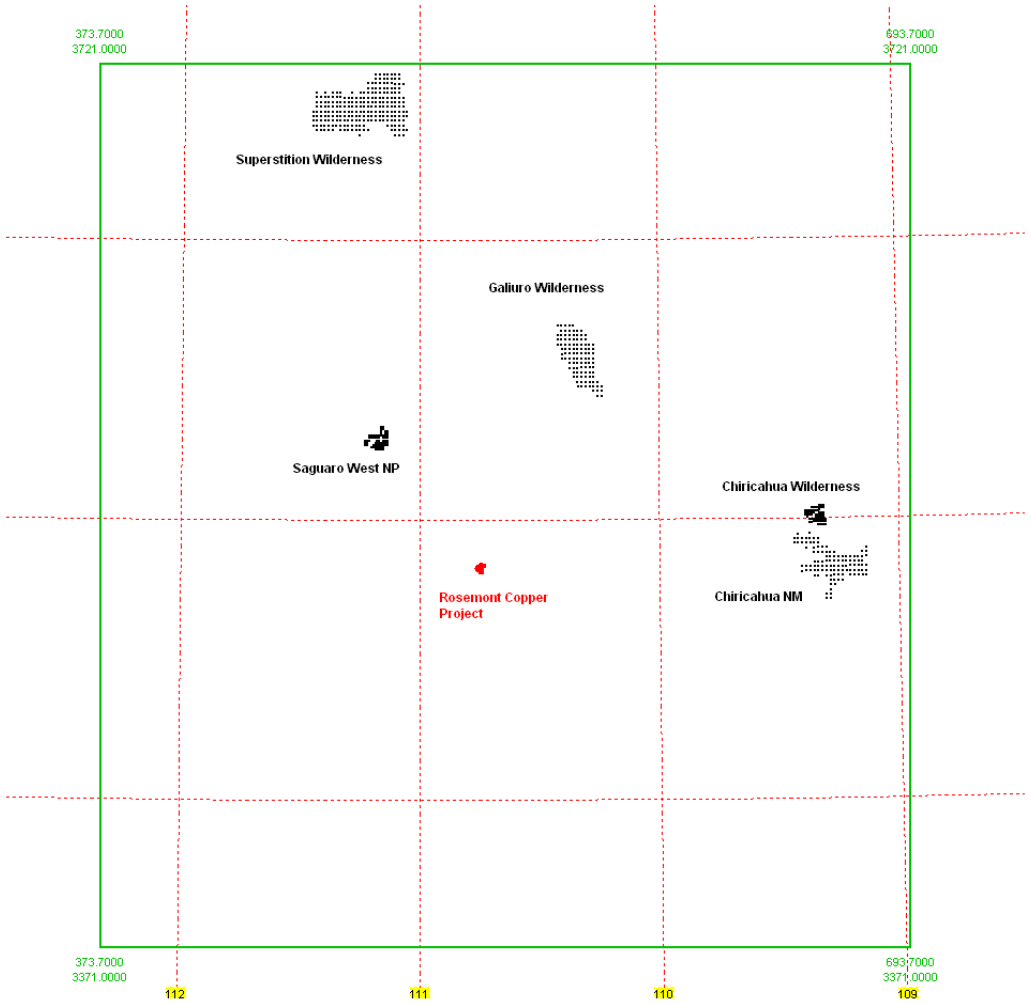

Figure 4.1 Modeling Domain Size and Class I Area Receptors.

5. CALPUFF MODELING

This section provides a summary of the modeling procedures that were used for the CALPUFF analysis conducted for the Rosemont Mine.

5.1 Model Version

Based on discussion with the FLM after the conclusion of initial modeling simulations, CALPUFF Version 5.8 was used to conduct the modeling analysis. Version 5.8 represents the EPA recommended version of CALPUFF, a conclusion supported by the FLM in the FLAG 2010 guidance.

5.2 Technical Options Used in Modeling

For CALPUFF model technical options, inputs and processing steps, the WRAP common BART protocol, EPA and FLAG guidance was followed. Due to the large distance to the nearest Class I area, building downwash effects were not included in the CALPUFF modeling.

5.2.1 Ozone Assumption

Monthly background ozone values were calculated using data from the Clean Air Status and Trends Network (CASTNET) station located at the Chiricahua National Monument site. The Chiricahua NM station is the closest and most representative ozone data collection station to the project location. Monthly averages were calculated using the available hourly data and used as input to the CALPUFF model. The monthly averages used are listed in Table 5.1.

Table 5.1 Monthly Background Ozone Values

YEAR	2001 Ozone (ppb)	2002 Ozone (ppb)	2003 Ozone (ppb)
JAN	36.75	40.71	40.19
FEB	38.52	41.28	41.82
MAR	44.30	46.45	48.88
APR	47.65	47.21	52.04
MAY	50.01	49.30	54.32
JUN	46.36	49.04	47.69
JUL	40.18	45.49	49.14
AUG	40.61	43.15	49.69
SEP	35.76	45.30	46.51
OCT	37.34	41.34	42.83
NOV	35.46	43.94	36.71
DEC	36.81	38.63	37.98

5.2.2 Ammonia Assumption

Ammonia is not simulated by CALPUFF, but rather a background value is specified. Ammonia is important because the level of particulate nitrate (NO_3) can depend on the amount of ammonia present. The partitioning of total nitrate between gaseous HNO_3 and particulate NO_3 depends on the amount of ammonia present and other parameters (e.g., SO_4, temperature and RH). In the CALPUFF simulation, one value of background is assumed across the region and each puff uses the full background value in its equilibrium calculation. The IWAQM Phase II report contains the following recommendations for background ammonia: "typical (within a factor of 2) background values of ammonia are: 10 ppb for grasslands, 0.5 ppb for forest, and 1 ppb for arid lands at 20 C" (IWAQM, 1998). Based on the fact that the all of the reviewed Class I areas lie in an arid region, a background ammonia value of 1 ppb was used.

5.2.3 Natural Conditions and Monthly Relative Humidity Factors f(RH) at Class I Areas

For these Class I areas, natural background conditions must be established in order to determine a change in natural conditions related to a source's emissions. The EPA lists three types of Natural Conditions (natural background conditions) in their guidance document, Annual Average, Best 20% Days and Worst 20% Days (EPA, 2003a). Based on the FLAG 2010 guidance as well as ongoing FLM discussion, Annual Average Natural Visibility Conditions were used for this analysis. These EPA estimates were taken from the *Federal Land Managers Air Quality Related Values Workgroup (FLAG) Phase 1 Report Revised Table 6* (2010).

The EPA, in its BART Guidelines (2005), concluded that by using monthly average Relative Humidity Adjustment Factors f(RH) the likelihood that the highest modeled visibility impacts that were caused by short-term and geographically different meteorological phenomena (e.g., weather events) would be minimized. The FLAG (2010) report agrees with the EPA, therefore the visibility analysis was conducted using monthly average f(RH) values for large hygroscopic particles, small hygroscopic particles and sea salt, rather than hourly values.

5.2.4 Light Extinction and Haze Impact Calculations

In keeping with FLM guidance, the CALPOST version 6.221 postprocessor was used for the calculation of the impact from the modeled source's primary and secondary particulate matter concentrations on light extinction. The formula that is used is the existing IMPROVE/EPA formula, which is applied to determine a change in light extinction due to increases in the particulate matter component concentrations. Using the notation of CALPOST, the formula is the following:

$$
\begin{aligned}
B_{ext} = {} & 2.2 \times f_S(RH) \times [\text{Small Sulfates}] + 4.8 \times f_L(RH) \times [\text{Large Sulfate}] \\
& + 2.4 \times f_S(RH) \times [\text{Small Nitrates}] + 5.1 \times f_L(RH) \times [\text{Large Nitrates}] \\
& + 2.8 \times [\text{Small Organic Mass}] + 6.1 \times [\text{Large Organic Mass}] \\
& + 10 \times [\text{Elemental Carbon}] \\
& + 1 \times [\text{Fine Soil}] \\
& + 0.6 \times [\text{Coarse Mass}] \\
& + 1.7 \times f_{SS}(RH) \times [\text{Sea Salt}]
\end{aligned}
$$

+ [Rayleigh Scattering]

+ 0.33 x [NO_2 (ppb)]

The concentrations, in square brackets, are in $\mu g/m^3$ and b_{ext} is in units of Mm^{-1}.

For each Class I areas analyzed, values for fs(RH), fl(RH), fss(RH) and the Rayleigh scattering term were acquired from the *Federal Land Managers Air Quality Related Values Workgroup (FLAG) Phase 1 Report Revised Tables 6, 7, 8 and 9.* (2010).

The assessment of visibility impacts at the Class I areas were conducted using CALPOST Method 8 sub-mode 5. In Method 8_5, each hour's source-caused extinction is calculated by first using the hygroscopic components of the source-caused concentrations, due to ammonium sulfate and nitrate, and monthly Class I area-specific f(RH) values. The contribution to the total source-caused extinction from ammonium sulfate and nitrate is then added to the other, non-hygroscopic components of the particulate concentration (from coarse and fine soil, secondary organic aerosols, and from elemental carbon) to yield the total hourly source-caused extinction.

5.2.5 Deposition Calculations

In addition to visibility, modeled deposition values for the project were requested by the FLM. As a result, total deposition fluxes have been calculated as part of the revised CALPUFF modeling. After primary CALPUFF simulations were complete, POSTUTIL was utilized to summarize total dry and wet deposition fluxes for Sulfur and Nitrogen species. Specifically, total Nitrogen and Sulfur deposition was assumed to be comprised of the following composition of modeled species:

Table 5.2 Deposition Compositions

Total Nitrogen Flux	Total Sulfur Flux
SO4 * 0.291667 NOX * 0.304348 HNO3 * 0.222222 NO3 * 0.451613	SO2 * 0.500000 SO4 * 0.333333

After total Nitrogen and Sulfur deposition was calculated in POSTUTIL, CALPOST was utilized to determine the average annual deposition, averaged over each receptor in each Class I area.

6. SOURCE CHARACTERIZATION

A detailed listing of all emission sources and their corresponding modeling input release parameters and emission rates is listed in Appendix A1 of this report. A general description of how each source type was treated is presented below.

6.1 Point Sources

Point sources at the Rosemont Project include dust collectors, hot water heaters, and emergency generator(s). Emissions from these sources were modeled as individual point sources. The baghouses are likely to have ambient exit temperatures and therefore, were modeled using a stack temperature of 0°K per ADEQ guidance, which forces the model to use the ambient temperature as the exit temperature. Stack parameters for the point sources were based on design parameters and/or conservative estimated values. Particulate emissions from emergency generators were not included as all other operations would likely be shut down if the generators are needed.

6.2 Volume Sources

6.2.1 Road Sources

A refined road network was developed to depict the anticipated haul truck routes and truck discharge locations during the year 1 of the mine operations, since the Year 1 emissions were estimated to have the greatest impact on ambient air. Emissions due to haul road and general plant traffic on the unpaved road network were modeled as volume sources. The model volume source parameter for the haul roads initially utilized Arizona Department of Environmental Quality Guidance. However, based on further discussions with the FLM, the haul road sources have been revised. The revised haul road sources utilized source to source spacing of 35 meters along the simulated haul roads. The initial lateral dimension of the sources were set to 16.3m based on guidance and FLM concurrence. The final simulations utilized 221 haul road sources to simulate the haul truck travel. .

6.2.2 Other Fugitive Particulate Sources

Other fugitive particulate emission sources that were modeled as volume sources include the following:

- Fugitive emissions from trucks unloading at the primary crusher were represented by a single volume source. The release height was set to 0 meters (dump pocket is at grade level).

- Fugitive emissions due to wind erosion from the sulfide ore stockpile were represented by a single volume source. The release height was set to 6 meters (half the height of the stockpile).

- Fugitive emissions from conveyor transfer points were represented by single volume sources. The release heights for these sources were set to the actual height of the conveyor transfer process.

6.2.3 Particulate and Gaseous Emissions Due to Blasting

The emissions due to blasting in the pit were modeled as volume sources. Based on the Rosemont Projects decisions to limit normal operational blasting to between the hours of 12 and 4pm local time the variable emission rate option was utilized and blasting emissions were averaged over the four hours likely to experience blasting. Additionally, when simulating modeling runs which calculated 1-hr impacts, blasting emissions were concentrated into a total emission rate and emitted at the maximum rate on an hourly basis rather than being average over the proposed 4 hour blasting window.

6.2.4 Open Pit Source

Fugitive particulate emissions from the open pit at the Rosemont Project were modeled as an area source. The majority of the emission inside the pit will be from Haul Truck travel on the unpaved roads.

6.2.5 Tail Pipe Emissions

Tail pipe emissions from Haul Trucks and support vehicles were distributed among road emission sources and the open pit source. The amount of emissions assigned to each individual road segment and to the pit was based upon an evaluation of the vehicle miles travelled (VMT) estimates for each vehicle type along each road segment and inside the pit.

7. EMISSIONS INVENTORY

Emissions from Rosemont operations will result from process equipment and mining operations. Process equipment was modeled at maximum capacity. Emissions from mining were based upon the mining rate and haul truck travel necessary to transport the ore and waste from the pit to the primary crusher and the waste rock storage area. The emission inventories for various years of the mine are provided in Appendix H of the document titled "*Emission Inventory Information for Years 1, 5, 10, 15 and 20*" being submitted along with this report. As stated in the modeling protocol submitted in Oct 2009, Year 1 and Year 5 emission inventories were modeled. Year 5 projects the highest particulate emissions.

8. CLASS I IMPACT ASSESSMENT - INCREMENT AND NAAQS

Demonstration of protection of the NAAQS and Class I Increments is accomplished by comparison of the maximum impacts to the applicable standards. For all modeled standards, maximum short term emissions rates were utilized in assessing NAAQS and increment compliance. The highest model impact at any receptor within each Class I area was determined and has been tabulated for review. Modeling results were developed for each of the modeled years (2001, 2002 and 2003) and for each of the modeled emission inventories (Year 1 and Year 5). The maximum impacts from all simulations have been summarized in Tables 8.1 through Table 8.5 on the following pages.

The results are listed separately for each Class I area and for emissions from Year 1 and Year 5 of the mine operations. The impacts are listed for source only impacts for comparison with the Class I increments as well with the inclusion of a regionally representative background for the NAAQS comparison. At each of the Class I areas analyzed, the maximum modeled impacts are considerably below both the NAAQS and the appropriate Class I increment level.

Table 8.1 Modeled Impacts at Saguaro National Monument - West

Maximum Impact		Year 1 Emissions	Year 5 Emissions	Maximum Impacts	Class I Increment	Background (ug/m^2)	Total Impact (ug/m^2)	NAAQS (ug/m2)
NOx	*1-hr (ug/m^2)*	5.34	5.81	5.81	N/A	24.50	30.31	188
	Ann (ug/m^2)	0.16	0.15	0.16	2.50	4.00	4.16	100
SOx	*1-hr (ug/m^2)*	0.40	0.40	0.40	N/A	17.20	17.60	195
	3-hr (ug/m^2)	0.05	0.05	0.05	25.00	43.00	43.05	1300
	24-hr (ug/m^2)	0.01	0.01	0.01	5.00	14.00	14.01	365
	Ann (ug/m^2)	0.00	0.00	0.00	2.00	3.00	3.00	80
PM25	*24-hr (ug/m^2)*	0.15	0.23	0.23	2.00	11.40	11.63	35
	Ann (ug/m^2)	0.03	0.05	0.05	1.00	5.10	5.15	15
PM10	*24-hr (ug/m^2)*	0.70	0.89	0.89	8.00	47.60	48.49	150
	Ann (ug/m^2)	0.15	0.19	0.19	4.00	12.60	12.79	50

Table 8.2 Modeled Impacts at Chiricahua Wilderness Area.

Maximum Impact		Year 1 Emissions	Year 5 Emissions	Maximum Impacts	Class I Increment	Background (ug/m^2)	Total Impact (ug/m^2)	NAAQS (ug/m2)
NOx	*1-hr (ug/m^2)*	6.86	12.32	12.32	N/A	24.50	36.82	188
	Ann (ug/m^2)	0.00	0.01	0.01	2.50	4.00	4.01	100
SOx	*1-hr (ug/m^2)*	0.15	0.15	0.15	N/A	17.20	17.35	195
	3-hr (ug/m^2)	0.02	0.05	0.05	25.00	43.00	43.05	1300
	24-hr (ug/m^2)	0.00	0.01	0.01	5.00	14.00	14.01	365
	Ann (ug/m^2)	0.00	0.00	0.00	2.00	3.00	3.00	80
PM25	*24-hr (ug/m^2)*	0.05	0.16	0.16	2.00	11.40	11.56	35
	Ann (ug/m^2)	0.00	0.05	0.05	1.00	5.10	5.15	15
PM10	*24-hr (ug/m^2)*	0.29	0.60	0.60	8.00	47.60	48.20	150
	Ann (ug/m^2)	0.01	0.01	0.01	4.00	12.60	12.61	50

Table 8.3 Modeled Impacts at Chiricahua National Monument

Maximum Impact		Year 1 Emissions	Year 5 Emissions	Maximum Impacts	Class I Increment	Background (ug/m^2)	Total Impact (ug/m^2)	NAAQS (ug/m2)
NOx	*1-hr (ug/m^2)*	13.56	26.28	26.28	N/A	24.50	50.78	188
	Ann (ug/m^2)	0.01	0.01	0.01	2.50	4.00	4.01	100
SOx	*1-hr (ug/m^2)*	0.19	0.19	0.19	N/A	17.20	17.39	195
	3-hr (ug/m^2)	0.03	0.04	0.04	25.00	43.00	43.04	1300
	24-hr (ug/m^2)	0.00	0.01	0.01	5.00	14.00	14.01	365
	Ann (ug/m^2)	0.00	0.00	0.00	2.00	3.00	3.00	80
PM25	*24-hr (ug/m^2)*	0.11	0.31	0.31	2.00	11.40	11.71	35
	Ann (ug/m^2)	0.00	0.00	0.00	1.00	5.10	5.10	15
PM10	*24-hr (ug/m^2)*	0.53	1.26	1.26	8.00	47.60	48.86	150
	Ann (ug/m^2)	0.01	0.01	0.01	4.00	12.60	12.61	50

Table 8.4 Modeled Impacts at Galiuro Wilderness Area

Maximum Impact		Year 1 Emissions	Year 5 Emissions	Maximum Impacts	Class I Increment	Background (ug/m^2)	Total Impact (ug/m^2)	NAAQS (ug/m2)
NOx	*1-hr (ug/m^2)*	54.96	87.72	87.72	N/A	24.50	112.22	188
	Ann (ug/m^2)	0.03	0.05	0.05	2.50	4.00	4.05	100
SOx	*1-hr (ug/m^2)*	0.42	0.43	0.43	N/A	17.20	17.63	195
	3-hr (ug/m^2)	0.11	0.14	0.14	25.00	43.00	43.14	1300
	24-hr (ug/m^2)	0.01	0.02	0.02	5.00	14.00	14.02	365
	Ann (ug/m^2)	0.00	0.00	0.00	2.00	3.00	3.00	80
PM25	*24-hr (ug/m^2)*	0.39	0.92	0.92	2.00	11.40	12.32	35
	Ann (ug/m^2)	0.01	0.02	0.02	1.00	5.10	5.12	15
PM10	*24-hr (ug/m^2)*	2.23	4.40	4.40	8.00	47.60	52.00	150
	Ann (ug/m^2)	0.04	0.06	0.06	4.00	12.60	12.66	50

Table 8.5 Modeled Impacts ar Superstition Wilderness Area

Maximum Impact		Year 1 Emissions	Year 5 Emissions	Maximum Impacts	Class I Increment	Background (ug/m^2)	Total Impact (ug/m^2)	NAAQS (ug/m2)
NOx	*1-hr (ug/m^2)*	1.44	2.29	2.29	N/A	24.50	26.79	188
	Ann (ug/m^2)	0.00	0.00	0.00	2.50	4.00	4.00	100
SOx	*1-hr (ug/m^2)*	0.03	0.03	0.03	N/A	17.20	17.23	195
	3-hr (ug/m^2)	0.01	0.01	0.01	25.00	43.00	43.01	1300
	24-hr (ug/m^2)	0.00	0.00	0.00	5.00	14.00	14.00	365
	Ann (ug/m^2)	0.00	0.00	0.00	2.00	3.00	3.00	80
PM25	*24-hr (ug/m^2)*	0.03	0.05	0.05	2.00	11.40	11.45	35
	Ann (ug/m^2)	0.00	0.00	0.00	1.00	5.10	5.10	15
PM10	*24-hr (ug/m^2)*	0.10	0.18	0.18	8.00	47.60	47.78	150
	Ann (ug/m^2)	0.00	0.01	0.01	4.00	12.60	12.61	50

9. CLASS I IMPACT ASSESMENT - VISIBILITY

Potential visual impacts predicted by the CALPUFF Model at the nearby Class I areas, Saguaro National Monument West, Galiuro Wilderness Area, Superstition Wilderness Area and the Chiricahua National Monument and Wilderness Area using hourly emissions for both Year 1 and Year 5 of operations are presented in Table 9.1. Visibility impacts were evaluated using Annual Average Natural Conditions for each of the Class I area and assume maximum short term emissions rates for conservatism. Visibility impacts are predicted utilizing the maximum modeled reduction is light transmission, stated in delta-deciview. The model provides data regarding the number of days during the year during which any modeled receptor within the Class I area predicts a change in delta-deciview of over 5% or 10% from natural background conditions. The results in the following tables provide the total number of data predicted to exceed the 5 and 10 percent delta-deciview threshold as well as the maximum predicted change during any one day.

The significance of visual impacts are determined by the Federal Land Manager. With regards to evaluating the significance of these impacts, it should be noted that the Tucson urban area is located at a closer proximity to some of the Class I Areas and will have a much greater emissions. An inventory of emissions from the Tucson urban area is not available. EPA's National Emissions Inventory, however, maintains a data base of emissions for criteria pollutants on a national, state, and county basis. Table 9.2 provides annual Pima County emissions for these pollutants for Calendar Year 2005 and corresponding annual emissions predicted for Rosemont Year 5. Based upon this comparison, the effect of Rosemont emissions will be very small relative to urban impacts on the Class I Area.

Table 9.1 Potential Visibility Impacts			
	Criteria	**Year 1 Emissions**	**Year 5 Emissions**
Maximum Impact	**Saguaro National Monument - West**		
	Days Above 0.5dv	21	24
	Days Above 1.0dv	1	1
	Max dV Impact	1.31	1.43
	Chiricahua Wilderness Area		
	Days Above 0.5dv	1	1
	Days Above 1.0dv	0	0
	Max dV Impact	0.504	0.938
	Chiricahua National Monument		
	Days Above 0.5dv	0	2
	Days Above 1.0dv	0	1
	Max dV Impact	0.456	1.119
	Galiuro Wilderness Area		
	Days Above 0.5dv	9	20
	Days Above 1.0dv	3	8
	Max dV Impact	2.69	4.354
	Superstition Wilderness Area		
	Days Above 0.5dv	0	0
	Days Above 1.0dv	0	0
	Max dV Impact	0.34	0.366

Table 9.2 Comparison of Pima County Emissions Data (tons/year) per EPA's National Emissions Inventory (Calendar year 2005) and Rosemont Emissions.

Emissions Source Type	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO_2[a]
On-Road Vehicles	17,338	128,269	370	467	311	15,128	-
Non-Road Equipment	5,864	59,104	596	527	497	4,962	-
Industrial Processes	3,321	4,814	75	2,155	1,081	166	-
Electricity Generation	2,247	152	3,714	127	110	25	-
Fossil Fuel Combustion	1,515	726	1,359	463	112	52	-
Fires	60	2,093	26	240	204	502	-
Residential Wood Combustion	51	3,986	8	556	556	855	-
Waste Disposal	12	35	8	11	8	200	-
Miscellaneous	1	54	-	10,528	1,107	3,315	-
Road Dust	-	-	-	9,589	832	-	-
Solvent Use	-	-	-	-	-	5,939	-
TOTAL	**30,409**	**199,233**	**6,156**	**24,663**	**4,818**	**31,144**	**17,426,666**
Rosemont (Year 5)	1,506	1,388	20	992	173	105	194,843
Percent Additional (%)	4.95%	0.70%	0.32%	4.02%	3.59%	0.34%	1.12%

[a] EPA's National Emissions Inventory does not include CO_2 emissions. Data is from *Regional Greenhouse Gas Inventory,* Pima Association of Governments, November 2008, encompassing the Eastern Pima County Area comprised of a rectangular area with the northern line stopping at the Pima County Line; the southern line stopping at the southern edge of Sahuarita; the eastern line stopping at Vail; and the western line stopping at Three Points.

10. CLASS I IMPACT ASSESSMENT - DEPOSITION

Deposition impacts were calculated for each of the Class I areas within the modeling domain. Deposition was calculated to include both dry and wet deposition flux and the total deposition impacts were tabulated on a per Class I area basis. Specifically, deposition was calculated for each of the receptors within an individual Class I area and then each of these values were averaged to develop an impact for the entire Class I area. The impacts, detailed in Table 10.1 below indicate the maximum annual average deposition for both Nitrogen and Sulfur for each Class I area. The values are also compared to the Deposition Screening threshold for the western United States for reference. The impacts suggest that Sulfur deposition from the project is limited for all Class I areas. However, there does appear to be the potential for Nitrogen deposition impacts that exceed the screen threshold at the two nearest Class I areas. While above the screening threshold, these values remain quite low when compared to other regional emissions sources.

Table 10.1 Deposition Impacts for Each Class I Area

Maximum Impact	Units	Year 1 Emissions	Year 5 Emissions	Maximum Impacts	Western FLAG DAT
Deposition	**Saguaro National Monument - West**				
	S(kg/hectar)	0.0003	0.0003	0.0003	0.005
	N(kg/hectar)	0.0245	0.0234	0.0245	0.005
	Chiricahua Wilderness Area				
	S(kg/hectar)	0.0001	0.0001	0.0001	0.005
	N(kg/hectar)	0.002	0.0024	0.0024	0.005
	Chiricahua National Monument				
	S(kg/hectar)	0.0001	0.0001	0.0001	0.005
	N(kg/hectar)	0.0023	0.0029	0.0029	0.005
	Galiuro Wilderness Area				
	S(kg/hectar)	0.0002	0.002	0.002	0.005
	N(kg/hectar)	0.0076	0.0106	0.0106	0.005
	Superstition Wilderness area				
	S(kg/hectar)	0	0	0	0.005
	N(kg/hectar)	0.0017	0.0017	0.0017	0.005

APPENDIX A

CALPUFF MODELING INVENTORY

Table A.1 Year 1 Emissions - Point Sources															
Source ID	**UTM Easting (X)** (km)	**UTM Northing (Y)** (km)	**Zone**	**Stack Height** (m)	**Base Elevation** (m)	**Stack Diameter** (m)	**Exit Velocity** (m/s)	**Exit Temp.** (K)	**Init. Sigma-y** (m)	**Init. Sigma-z** (m)	**Momentum Flux**	**SO2** (lb/hr)	**NOX** (lb/hr)	**PM25** (lb/hr)	**PM10** (lb/hr)
PCL01	524.08	3521.78	12	7.32	1540.61	1.52	4.66	316.48	0	0	1	0.0000	0.0000	0.8064	1.2800
PCL02	523.86	3522.54	12	6.10	1555.98	1.83	6.56	316.48	0	0	1	0.0000	0.0000	0.9324	2.5900
PCL03	523.86	3522.67	12	6.10	1549.64	1.83	3.88	316.48	0	0	1	0.0000	0.0000	0.3852	1.0700
PCL04	523.9	3522.88	12	7.32	1542.95	1.52	5.69	316.48	0	0	1	0.0000	0.0000	0.6864	1.5600
PCL05	524.03	3522.99	12	7.32	1526.57	1.83	8.99	316.48	0	0	1	0.0000	0.0000	1.2780	3.5500
PCL06	524.04	3522.99	12	7.32	1526.85	1.83	8.99	316.48	0	0	1	0.0000	0.0000	1.2780	3.5500
PCL07	524.11	3522.94	12	16.76	1540.76	0.30	3.24	533.15	0	0	1	0.0000	0.0000	0.0190	0.0200
PCL08	524.03	3523	12	6.10	1525.30	0.30	9.71	366.48	0	0	1	0.0000	0.0000	0.0160	0.1066
PCL09	523.99	3522.57	12	6.10	1542.52	0.51	23.20	316.48	0	0	1	0.0000	0.0000	0.2345	0.3553
PCL10	524.01	3522.57	12	6.10	1542.95	0.51	23.20	316.48	0	0	1	0.0000	0.0000	0.2345	0.3553
PCL11	524.03	3522.57	12	6.10	1543.62	0.51	23.20	316.48	0	0	1	0.0000	0.0000	0.2345	0.3553
FB01	524.24	3522.39	12	3.66	1527.49	0.09	39.69	810.93	0	0	1	0.0093	0.8759	0.0173	0.0723

Table A.2 Year 1 Emissions - Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
BLST1	522.51763	3521.97863	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
BLST2	522.75338	3521.97863	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
BLST3	522.51013	3521.78838	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
BLST5	522.51013	3521.57538	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
BLST4	522.75125	3521.78409	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
BLST6	522.75125	3521.57634	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
UNLP1	524.51438	3520.93363	12	6.50	1522.15	4.00	6.05	0.0025	0.9440	0.0643	0.2531
UNLP2	524.52388	3520.72138	12	6.50	1513.32	4.00	6.05	0.0025	0.9440	0.0643	0.2531
UNLP3	524.25513	3520.71663	12	6.50	1545.24	4.00	6.05	0.0025	0.9440	0.0643	0.2531
UNLP4	524.25038	3520.93363	12	6.50	1537.09	4.00	6.05	0.0025	0.9440	0.0643	0.2531
UNLP5	523.74088	3520.75438	12	6.50	1569.95	4.00	6.05	0.0025	0.9440	0.0643	0.2531
UNLP6	523.78338	3520.52313	12	6.50	1575.25	4.00	6.05	0.0025	0.9440	0.0643	0.2531
UNSUL1	523.94588	3521.70988	12	6.50	1560.13	4.00	6.05	0.0025	0.9440	0.0829	0.3760
UNSUL2	523.87813	3521.73013	12	6.50	1549.18	4.00	6.05	0.0025	0.9440	0.0829	0.3760
UNSUL3	523.90613	3521.80588	12	6.50	1549.02	4.00	6.05	0.0025	0.9440	0.0829	0.3760
UNSUL4	523.96338	3521.78863	12	6.50	1545.06	4.00	6.05	0.0025	0.9440	0.0829	0.3760
PC01	523.92413	3521.76013	12	6.00	1552.65	74.00	5.60	0.0000	0.0000	0.0930	0.6200
PC02	524.07788	3521.77388	12	0.00	1540.82	2.79	0.47	0.0000	0.0000	0.1035	0.6836
MD04	524.03375	3522.98234	12	3.00	1528.46	0.47	0.70	0.0000	0.0000	0.0000	0.0003
TDS04	524.603	3522.35009	12	3.00	1515.35	0.47	0.70	0.0000	0.0000	0.0188	0.1241
TDS05	524.80125	3522.46509	12	3.00	1546.06	0.47	0.70	0.0000	0.0000	0.0188	0.1241
TDS06	524.82438	3522.47588	12	3.00	1540.20	0.47	0.70	0.0000	0.0000	0.0188	0.1241
TDS07	524.90388	3522.51163	12	3.00	1526.18	0.47	0.70	0.0000	0.0000	0.1434	0.9471
TDS08	524.97313	3522.54538	12	3.00	1506.61	0.47	0.70	0.0000	0.0000	0.1434	0.9471

Table A.2 Year 1 Emissions - Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
TDS09	525.05388	3522.58113	12	3.00	1486.08	0.47	0.70	0.0000	0.0000	0.1434	0.9471
TDS10	525.0982	3522.63125	12	6.00	1478.37	573.00	5.60	0.0000	0.0000	0.5176	3.4508
MS01	523.8915	3522.88584	12	3.00	1542.03	0.47	0.70	0.0000	0.0000	0.3159	0.3159
MS03	524.05075	3522.87134	12	3.00	1539.53	0.47	0.70	0.0000	0.0000	0.0031	0.0203
MS04	524.07869	3522.86162	12	3.00	1534.11	0.47	0.70	0.0000	0.0000	0.1579	0.1579
MS0506	524.12338	3522.86938	12	3.00	1530.90	0.47	0.70	0.0000	0.0000	0.0001	0.0008
MS0708	524.198	3522.36809	12	3.00	1536.94	0.47	0.70	0.0000	0.0000	0.0000	0.0001
Haul1	522.47037	3521.19301	12	6.50	1701.14	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul2	522.48437	3521.15626	12	6.50	1711.09	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul3	522.49862	3521.12051	12	6.50	1702.84	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul4	522.51237	3521.08426	12	6.50	1687.57	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul5	522.52587	3521.04751	12	6.50	1675.32	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul6	522.54037	3521.01126	12	6.50	1674.80	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul7	522.55412	3520.97476	12	6.50	1667.98	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul8	522.56787	3520.93826	12	6.50	1677.34	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul9	522.58212	3520.90251	12	6.50	1677.14	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul10	522.59562	3520.86601	12	6.50	1669.18	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul11	522.61012	3520.82901	12	6.50	1664.37	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul12	522.63437	3520.79926	12	6.50	1660.56	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul13	522.66887	3520.78276	12	6.50	1654.88	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul14	522.70612	3520.77026	12	6.50	1645.67	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul15	522.74312	3520.75726	12	6.50	1636.13	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul16	522.78037	3520.74451	12	6.50	1627.43	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul17	522.81162	3520.72001	12	6.50	1624.26	16.30	6.05	0.0025	0.9440	0.1003	0.6749

Table A.2 Year 1 Emissions - Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul18	522.84287	3520.69576	12	6.50	1622.83	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul19	522.87337	3520.67051	12	6.50	1622.23	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul20	522.90512	3520.64926	12	6.50	1622.98	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul21	522.94237	3520.64051	12	6.50	1616.49	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul22	522.98062	3520.63401	12	6.50	1609.52	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul23	523.01987	3520.62726	12	6.50	1601.23	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul24	523.05812	3520.62126	12	6.50	1596.81	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul25	523.09537	3520.62926	12	6.50	1592.59	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul26	523.13187	3520.64301	12	6.50	1587.95	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul27	523.16837	3520.65676	12	6.50	1587.24	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul28	523.20537	3520.67026	12	6.50	1585.02	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul29	523.24137	3520.68401	12	6.50	1584.53	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul30	523.27787	3520.69776	12	6.50	1585.29	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul31	523.31412	3520.71126	12	6.50	1587.05	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul32	523.35087	3520.72476	12	6.50	1588.08	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul33	523.38737	3520.73851	12	6.50	1587.97	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul34	523.42437	3520.75226	12	6.50	1589.01	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul35	523.45787	3520.77226	12	6.50	1586.85	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul36	523.49212	3520.79076	12	6.50	1585.11	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul37	523.52587	3520.80901	12	6.50	1578.40	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul38	523.56062	3520.82776	12	6.50	1573.23	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul39	523.59487	3520.84701	12	6.50	1567.41	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul40	523.62837	3520.86826	12	6.50	1564.57	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul41	523.66237	3520.88851	12	6.50	1563.88	16.30	6.05	0.0025	0.9440	0.1003	0.6749

Table A.2 Year 1 Emissions - Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul42	523.69662	3520.90776	12	6.50	1564.30	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul43	523.73037	3520.92651	12	6.50	1564.43	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul44	523.76512	3520.94501	12	6.50	1562.51	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul45	523.79862	3520.96426	12	6.50	1553.25	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul46	523.83312	3520.98301	12	6.50	1547.88	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul47	523.86662	3521.00226	12	6.50	1545.38	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul48	523.90112	3521.02126	12	6.50	1542.89	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul49	523.92012	3520.98601	12	6.50	1543.13	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul50	523.93137	3520.94751	12	6.50	1545.34	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul51	523.94187	3520.91076	12	6.50	1547.01	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul52	523.95262	3520.87301	12	6.50	1549.64	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul53	523.96312	3520.83476	12	6.50	1551.97	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul54	523.97337	3520.79751	12	6.50	1551.74	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul55	523.98387	3520.76051	12	6.50	1551.16	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul56	523.99537	3520.72226	12	6.50	1558.09	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul57	524.00637	3520.68401	12	6.50	1561.65	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul58	524.02387	3520.64926	12	6.50	1561.50	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul59	524.04212	3520.61351	12	6.50	1563.05	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul60	524.06112	3520.58026	12	6.50	1570.27	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul61	524.07937	3520.54526	12	6.50	1573.77	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul62	524.09887	3520.51126	12	6.50	1563.14	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul63	524.11662	3520.47526	12	6.50	1557.45	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul64	524.13412	3520.44101	12	6.50	1557.22	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul65	524.14937	3520.40426	12	6.50	1552.86	16.30	6.05	0.0025	0.9440	0.1003	0.6749

Table A.2 Year 1 Emissions - Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul66	524.16487	3520.36851	12	6.50	1549.12	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul67	524.18237	3520.33501	12	6.50	1558.78	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul68	524.19962	3520.30001	12	6.50	1559.01	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul69	523.90812	3521.05951	12	6.50	1540.53	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul70	523.91537	3521.09751	12	6.50	1547.07	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul71	523.92637	3521.13576	12	6.50	1551.91	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul72	523.94037	3521.17151	12	6.50	1561.37	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul73	523.95287	3521.20926	12	6.50	1564.73	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul74	523.96587	3521.24576	12	6.50	1564.23	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul75	523.97787	3521.28251	12	6.50	1554.56	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul76	523.99162	3521.31901	12	6.50	1540.74	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul77	524.00412	3521.35551	12	6.50	1530.35	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul78	524.03712	3521.33176	12	6.50	1540.49	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul79	524.06287	3521.30401	12	6.50	1549.92	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul80	524.08737	3521.27551	12	6.50	1546.12	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul81	524.11387	3521.24551	12	6.50	1539.36	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul82	524.14237	3521.21876	12	6.50	1537.92	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul83	524.01012	3521.39326	12	6.50	1525.32	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul84	524.01737	3521.43176	12	6.50	1525.19	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul85	524.02387	3521.47076	12	6.50	1524.23	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul86	524.03062	3521.50951	12	6.50	1530.80	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul87	524.03687	3521.54701	12	6.50	1540.27	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul88	524.04812	3521.58376	12	6.50	1548.86	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul89	524.06037	3521.62151	12	6.50	1551.00	16.30	6.05	0.0025	0.9440	0.1003	0.6749

Table A.2 Year 1 Emissions - Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul90	524.07212	3521.65951	12	6.50	1540.66	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul91	524.08387	3521.69701	12	6.50	1533.76	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul92	524.09587	3521.73326	12	6.50	1537.70	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul93	524.13162	3521.69901	12	6.50	1527.86	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul94	524.16812	3521.71451	12	6.50	1528.10	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul95	524.20237	3521.73226	12	6.50	1526.78	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul96	524.23637	3521.75326	12	6.50	1520.35	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul97	524.25837	3521.78551	12	6.50	1508.28	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul98	524.27937	3521.81976	12	6.50	1510.50	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul99	524.29887	3521.85326	12	6.50	1521.28	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul100	524.31862	3521.88876	12	6.50	1532.84	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul101	522.48512	3521.19751	12	6.50	1698.03	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul102	522.49937	3521.16176	12	6.50	1707.17	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul103	522.51437	3521.12551	12	6.50	1697.45	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul104	522.52887	3521.09051	12	6.50	1681.77	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul105	522.54262	3521.05251	12	6.50	1669.96	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul106	522.55637	3521.01651	12	6.50	1668.38	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul107	522.57062	3520.97926	12	6.50	1663.62	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul108	522.58512	3520.94426	12	6.50	1669.30	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul109	522.59812	3520.90801	12	6.50	1671.86	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul110	522.61312	3520.87201	12	6.50	1663.64	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul111	522.62637	3520.83426	12	6.50	1658.10	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul112	522.63962	3520.81076	12	6.50	1656.40	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul113	522.67612	3520.79776	12	6.50	1650.40	16.30	6.05	0.0025	0.9440	0.1003	0.6749

Table A.2 Year 1 Emissions - Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul114	522.71337	3520.78551	12	6.50	1642.14	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul115	522.74987	3520.77351	12	6.50	1633.44	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul116	522.78662	3520.76051	12	6.50	1625.01	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul117	522.81987	3520.73476	12	6.50	1622.56	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul118	522.85087	3520.71026	12	6.50	1620.44	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul119	522.88137	3520.68651	12	6.50	1618.85	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul120	522.91187	3520.66226	12	6.50	1619.47	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul121	522.94462	3520.65401	12	6.50	1614.23	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul122	522.98262	3520.64726	12	6.50	1607.47	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul123	523.02112	3520.64101	12	6.50	1600.66	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul124	523.05987	3520.63426	12	6.50	1596.21	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul125	523.08862	3520.64376	12	6.50	1592.66	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul126	523.12587	3520.65676	12	6.50	1586.86	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul127	523.16212	3520.67201	12	6.50	1586.28	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul128	523.19787	3520.68476	12	6.50	1584.99	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul129	523.23487	3520.69851	12	6.50	1583.18	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul130	523.27087	3520.71276	12	6.50	1583.75	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul131	523.30887	3520.72576	12	6.50	1585.17	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul132	523.34537	3520.73901	12	6.50	1585.86	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul133	523.38237	3520.75326	12	6.50	1586.90	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul134	523.41812	3520.76676	12	6.50	1587.55	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul135	523.45237	3520.78651	12	6.50	1586.42	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul136	523.48662	3520.80576	12	6.50	1582.11	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul137	523.52012	3520.82451	12	6.50	1575.27	16.30	6.05	0.0025	0.9440	0.1003	0.6749

Table A.2 Year 1 Emissions - Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul138	523.55462	3520.84301	12	6.50	1570.92	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul139	523.58512	3520.86576	12	6.50	1565.97	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul140	523.61762	3520.88926	12	6.50	1564.94	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul141	523.64912	3520.91076	12	6.50	1564.56	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul142	523.68162	3520.93226	12	6.50	1564.11	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul143	523.71412	3520.95476	12	6.50	1563.29	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul144	523.74562	3520.97751	12	6.50	1553.63	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul145	523.77912	3520.99876	12	6.50	1549.81	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul146	523.81187	3521.01826	12	6.50	1549.41	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul147	523.84537	3521.03876	12	6.50	1549.23	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul148	523.87937	3521.05951	12	6.50	1544.51	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul149	523.94287	3520.99276	12	6.50	1541.30	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul150	523.95362	3520.95476	12	6.50	1546.17	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul151	523.96487	3520.91676	12	6.50	1550.38	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul152	523.97487	3520.87876	12	6.50	1550.22	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul153	523.98612	3520.84151	12	6.50	1551.64	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul154	523.99687	3520.80351	12	6.50	1553.24	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul155	524.00737	3520.76701	12	6.50	1554.59	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul156	524.01837	3520.72901	12	6.50	1561.04	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul157	524.02862	3520.69126	12	6.50	1563.36	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul158	524.04637	3520.65776	12	6.50	1565.36	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul159	524.06512	3520.62376	12	6.50	1568.05	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul160	524.08362	3520.58776	12	6.50	1573.20	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul161	524.10237	3520.55426	12	6.50	1573.77	16.30	6.05	0.0025	0.9440	0.1003	0.6749

Table A.2 Year 1 Emissions - Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul162	524.11987	3520.51901	12	6.50	1563.28	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul163	524.13737	3520.48476	12	6.50	1553.67	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul164	524.15562	3520.44976	12	6.50	1548.22	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul165	524.17387	3520.41501	12	6.50	1549.38	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul166	524.18962	3520.37926	12	6.50	1548.56	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul167	524.20737	3520.34526	12	6.50	1550.20	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul168	524.22487	3520.30976	12	6.50	1554.88	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul169	523.89312	3521.09751	12	6.50	1550.50	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul170	523.90787	3521.13401	12	6.50	1552.71	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul171	523.92112	3521.17126	12	6.50	1562.18	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul172	523.93312	3521.20726	12	6.50	1568.38	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul173	523.94712	3521.24351	12	6.50	1566.41	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul174	523.95987	3521.28076	12	6.50	1556.53	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul175	523.97312	3521.31726	12	6.50	1545.80	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul176	523.98687	3521.35351	12	6.50	1533.69	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul177	524.02787	3521.37476	12	6.50	1524.28	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul178	524.05212	3521.34376	12	6.50	1535.21	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul179	524.07662	3521.31326	12	6.50	1550.67	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul180	524.10112	3521.28451	12	6.50	1546.20	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul181	524.12712	3521.25476	12	6.50	1537.50	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul182	524.15237	3521.22851	12	6.50	1537.32	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul183	523.99237	3521.39401	12	6.50	1527.28	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul184	523.99862	3521.43351	12	6.50	1525.18	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul185	524.00612	3521.47126	12	6.50	1524.62	16.30	6.05	0.0025	0.9440	0.1003	0.6749

Table A.2 Year 1 Emissions - Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul186	524.01287	3521.50951	12	6.50	1530.41	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul187	524.02037	3521.54776	12	6.50	1540.06	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul188	524.02762	3521.58701	12	6.50	1548.34	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul189	524.03637	3521.62551	12	6.50	1551.62	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul190	524.04587	3521.66376	12	6.50	1547.11	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul191	524.05612	3521.70101	12	6.50	1540.31	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul192	524.06612	3521.74026	12	6.50	1537.05	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul193	524.12762	3521.70626	12	6.50	1530.09	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul194	524.16162	3521.72451	12	6.50	1529.35	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul195	524.19687	3521.74176	12	6.50	1525.80	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul196	524.22912	3521.76326	12	6.50	1518.23	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul197	524.24737	3521.79076	12	6.50	1509.04	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul198	524.26687	3521.82551	12	6.50	1509.89	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul199	524.28737	3521.85776	12	6.50	1519.20	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul200	524.30712	3521.89226	12	6.50	1533.02	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul201	524.01462	3520.88501	12	6.50	1556.47	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul202	524.05262	3520.89201	12	6.50	1549.54	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul203	524.09162	3520.89851	12	6.50	1548.28	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul204	524.12937	3520.90576	12	6.50	1542.16	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul205	524.16812	3520.91176	12	6.50	1537.48	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul206	524.20712	3520.91676	12	6.50	1535.90	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul207	524.21687	3520.70476	12	6.50	1551.80	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul208	524.17962	3520.69451	12	6.50	1555.69	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul209	524.14162	3520.68326	12	6.50	1560.32	16.30	6.05	0.0025	0.9440	0.1003	0.6749

Table A.2 Year 1 Emissions - Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul210	524.10537	3520.67101	12	6.50	1563.96	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul211	523.92312	3520.81901	12	6.50	1550.91	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul212	523.88662	3520.80526	12	6.50	1553.22	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul213	523.85012	3520.79201	12	6.50	1560.95	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul214	523.81437	3520.77826	12	6.50	1565.24	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul215	523.77737	3520.76476	12	6.50	1569.12	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul216	523.97212	3520.66076	12	6.50	1558.53	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul217	523.94187	3520.63776	12	6.50	1560.55	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul218	523.91087	3520.61476	12	6.50	1562.51	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul219	523.87862	3520.59076	12	6.50	1563.88	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul220	523.84687	3520.56801	12	6.50	1565.25	16.30	6.05	0.0025	0.9440	0.1003	0.6749
Haul221	523.81437	3520.54426	12	6.50	1568.29	16.30	6.05	0.0025	0.9440	0.1003	0.6749
UNWD1	524.11363	3520.25438	12	6.50	1574.41	4.00	6.05	0.0025	0.9440	0.1015	0.4990
UNWD2	524.18888	3520.11763	12	6.50	1554.71	4.00	6.05	0.0025	0.9440	0.1015	0.4990
UNWD3	524.24088	3519.97163	12	6.50	1553.64	4.00	6.05	0.0025	0.9440	0.1015	0.4990
UNWD4	523.96738	3520.21213	12	6.50	1578.15	4.00	6.05	0.0025	0.9440	0.1015	0.4990
UNWD5	524.02863	3520.05638	12	6.50	1588.50	4.00	6.05	0.0025	0.9440	0.1015	0.4990
UNWD6	524.09463	3519.89613	12	6.50	1561.50	4.00	6.05	0.0025	0.9440	0.1015	0.4990
UNWD7	523.88238	3519.99988	12	6.50	1588.32	4.00	6.05	0.0025	0.9440	0.1015	0.4990
UNWD8	523.94838	3519.84413	12	6.50	1593.74	4.00	6.05	0.0025	0.9440	0.1015	0.4990
UNWD9	523.78813	3519.79238	12	6.50	1567.33	4.00	6.05	0.0025	0.9440	0.1015	0.4990
UNWD10	523.63713	3519.87238	12	6.50	1590.97	4.00	6.05	0.0025	0.9440	0.1015	0.4990

Table A.3 Year 1 Emissions - Area Sources																
Source ID	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-z (m)**	**UTM Easting (X1) (km)**	**UTM Northing (Y1) (km)**	**UTM Easting (X2) (km)**	**UTM Northing (Y2) (km)**	**UTM Easting (X3) (km)**	**UTM Northing (Y3) (km)**	**UTM Easting (X4) (km)**	**UTM Northing (Y4) (km)**	**Zone**	**SO2 (tpy/m²)**	**NOX (tpy/m²)**	**PM25 (tpy/m²)**	**PM10 (tpy/m²)**
Pit	0	1667.60999	0	522.31	3521.27	523.01	3521.27	523.01	3522.27	522.31	3522.27	12	2.85E-06	0.0005444	5.86E-05	3.99E-04

Table A.4 Year 5 Emissions - Point Sources															
Source ID	**UTM Easting (X)** (km)	**UTM Northing (Y)** (km)	**Zone**	**Stack Height** (m)	**Base Elevation** (m)	**Stack Diameter** (m)	**Exit Velocity** (m/s)	**Exit Temp.** (K)	**Init. Sigma-y** (m)	**Init. Sigma-z** (m)	**Momentum Flux**	**SO2** (lb/hr)	**NOX** (lb/hr)	**PM25** (lb/hr)	**PM10** (lb/hr)
PCL01	524.08	3521.78	12	7.32	1540.61	1.52	4.66	316.48	0	0	1	0.0000	0.0000	0.8064	1.2800
PCL02	523.86	3522.54	12	6.10	1555.98	1.83	6.56	316.48	0	0	1	0.0000	0.0000	0.9324	2.5900
PCL03	523.86	3522.67	12	6.10	1549.64	1.83	3.88	316.48	0	0	1	0.0000	0.0000	0.3852	1.0700
PCL04	523.9	3522.88	12	7.32	1542.95	1.52	5.69	316.48	0	0	1	0.0000	0.0000	0.6864	1.5600
PCL05	524.03	3522.99	12	7.32	1526.57	1.83	8.99	316.48	0	0	1	0.0000	0.0000	1.2780	3.5500
PCL06	524.04	3522.99	12	7.32	1526.85	1.83	8.99	316.48	0	0	1	0.0000	0.0000	1.2780	3.5500
PCL07	524.11	3522.94	12	16.76	1540.76	0.30	3.24	533.15	0	0	1	0.0000	0.0000	0.0190	0.0200
PCL08	524.03	3523	12	6.10	1525.30	0.30	9.71	366.48	0	0	1	0.0000	0.0000	0.0160	0.1066
PCL09	523.99	3522.57	12	6.10	1542.52	0.51	23.20	316.48	0	0	1	0.0000	0.0000	0.2345	0.3553
PCL10	524.01	3522.57	12	6.10	1542.95	0.51	23.20	316.48	0	0	1	0.0000	0.0000	0.2345	0.3553
PCL11	524.03	3522.57	12	6.10	1543.62	0.51	23.20	316.48	0	0	1	0.0000	0.0000	0.2345	0.3553
FB01	524.24	3522.39	12	3.66	1527.49	0.09	39.69	810.93	0	0	1	0.0093	0.8759	0.0173	0.0723

Table A.5 Year 5 Emissions – Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
BLST1	522.51763	3521.9786	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
BLST2	522.75338	3521.9786	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
BLST3	522.51013	3521.7884	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
BLST5	522.51013	3521.5754	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
BLST4	522.75125	3521.7841	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
BLST6	522.75125	3521.5763	12	10.00	1558.00	14.19	9.30	4.3333	36.8333	0.4103	7.1122
UNSUL1	523.94588	3521.7099	12	6.50	1560.13	4.00	6.05	0.0023	0.7291	0.1071	0.5503
UNSUL2	523.87813	3521.7301	12	6.50	1549.18	4.00	6.05	0.0023	0.7291	0.1071	0.5503
UNSUL3	523.90613	3521.8059	12	6.50	1549.02	4.00	6.05	0.0023	0.7291	0.1071	0.5503
UNSUL4	523.96338	3521.7886	12	6.50	1545.06	4.00	6.05	0.0023	0.7291	0.1071	0.5503
PC01	523.92413	3521.7601	12	6.00	1552.65	74.00	5.60	0.0000	0.0000	0.6200	0.6200
PC02	524.07788	3521.7739	12	0.00	1540.82	2.79	0.47	0.0000	0.0000	0.6836	0.6836
MD04	524.03375	3522.9823	12	3.00	1528.46	0.47	0.70	0.0000	0.0000	0.0003	0.0003
TDS04	524.603	3522.3501	12	3.00	1515.35	0.47	0.70	0.0000	0.0000	0.1241	0.1241
TDS05	524.80125	3522.4651	12	3.00	1546.06	0.47	0.70	0.0000	0.0000	0.1241	0.1241
TDS06	524.82438	3522.4759	12	3.00	1540.20	0.47	0.70	0.0000	0.0000	0.1241	0.1241
TDS07	524.90388	3522.5116	12	3.00	1526.18	0.47	0.70	0.0000	0.0000	0.9471	0.9471
TDS08	524.97313	3522.5454	12	3.00	1506.61	0.47	0.70	0.0000	0.0000	0.9471	0.9471
TDS09	525.05388	3522.5811	12	3.00	1486.08	0.47	0.70	0.0000	0.0000	0.9471	0.9471
TDS10	525.0982	3522.6313	12	6.00	1478.37	573.00	5.60	0.0000	0.0000	3.4508	3.4508
MS01	523.8915	3522.8858	12	3.00	1542.03	0.47	0.70	0.0000	0.0000	0.3159	0.3159
MS03	524.05075	3522.8713	12	3.00	1539.53	0.47	0.70	0.0000	0.0000	0.0203	0.0203
MS04	524.07869	3522.8616	12	3.00	1534.11	0.47	0.70	0.0000	0.0000	0.1579	0.1579
MS0506	524.12338	3522.8694	12	3.00	1530.90	0.47	0.70	0.0000	0.0000	0.0008	0.0008

Table A.5 Year 5 Emissions – Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
MS0708	524.198	3522.3681	12	3.00	1536.94	0.47	0.70	0.0000	0.0000	0.0001	0.0001
Haul1	522.47037	3521.193	12	6.50	1701.14	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul2	522.48437	3521.1563	12	6.50	1711.09	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul3	522.49862	3521.1205	12	6.50	1702.84	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul4	522.51237	3521.0843	12	6.50	1687.57	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul5	522.52587	3521.0475	12	6.50	1675.32	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul6	522.54037	3521.0113	12	6.50	1674.80	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul7	522.55412	3520.9748	12	6.50	1667.98	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul8	522.56787	3520.9383	12	6.50	1677.34	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul9	522.58212	3520.9025	12	6.50	1677.14	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul10	522.59562	3520.866	12	6.50	1669.18	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul11	522.61012	3520.829	12	6.50	1664.37	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul12	522.63437	3520.7993	12	6.50	1660.56	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul13	522.66887	3520.7828	12	6.50	1654.88	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul14	522.70612	3520.7703	12	6.50	1645.67	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul15	522.74312	3520.7573	12	6.50	1636.13	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul16	522.78037	3520.7445	12	6.50	1627.43	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul17	522.81162	3520.72	12	6.50	1624.26	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul18	522.84287	3520.6958	12	6.50	1622.83	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul19	522.87337	3520.6705	12	6.50	1622.23	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul20	522.90512	3520.6493	12	6.50	1622.98	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul21	522.94237	3520.6405	12	6.50	1616.49	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul22	522.98062	3520.634	12	6.50	1609.52	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul23	523.01987	3520.6273	12	6.50	1601.23	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul24	523.05812	3520.6213	12	6.50	1596.81	16.30	6.05	0.0023	0.7291	0.0994	0.7046

Table A.5 Year 5 Emissions – Volume Sources											
Source ID	UTM Easting (X) (km)	UTM Northing (Y) (km)	Zone	Source Height (m)	Base Elevation (m)	Init. Sigma-y (m)	Init. Sigma-z (m)	SO2 (lb/hr)	NOX (lb/hr)	PM25 (lb/hr)	PM10 (lb/hr)
Haul25	523.09537	3520.6293	12	6.50	1592.59	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul26	523.13187	3520.643	12	6.50	1587.95	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul27	523.16837	3520.6568	12	6.50	1587.24	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul28	523.20537	3520.6703	12	6.50	1585.02	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul29	523.24137	3520.684	12	6.50	1584.53	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul30	523.27787	3520.6978	12	6.50	1585.29	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul31	523.31412	3520.7113	12	6.50	1587.05	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul32	523.35087	3520.7248	12	6.50	1588.08	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul33	523.38737	3520.7385	12	6.50	1587.97	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul34	523.42437	3520.7523	12	6.50	1589.01	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul35	523.45787	3520.7723	12	6.50	1586.85	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul36	523.49212	3520.7908	12	6.50	1585.11	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul37	523.52587	3520.809	12	6.50	1578.40	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul38	523.56062	3520.8278	12	6.50	1573.23	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul39	523.59487	3520.847	12	6.50	1567.41	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul40	523.62837	3520.8683	12	6.50	1564.57	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul41	523.66237	3520.8885	12	6.50	1563.88	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul42	523.69662	3520.9078	12	6.50	1564.30	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul43	523.73037	3520.9265	12	6.50	1564.43	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul44	523.76512	3520.945	12	6.50	1562.51	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul45	523.79862	3520.9643	12	6.50	1553.25	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul46	523.83312	3520.983	12	6.50	1547.88	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul47	523.86662	3521.0023	12	6.50	1545.38	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul48	523.90112	3521.0213	12	6.50	1542.89	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul49	523.90812	3521.0595	12	6.50	1543.13	16.30	6.05	0.0023	0.7291	0.0994	0.7046

Table A.5 Year 5 Emissions – Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul50	523.91537	3521.0975	12	6.50	1545.34	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul51	523.92637	3521.1358	12	6.50	1547.01	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul52	523.94037	3521.1715	12	6.50	1549.64	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul53	523.95287	3521.2093	12	6.50	1551.97	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul54	523.96587	3521.2458	12	6.50	1551.74	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul55	523.97787	3521.2825	12	6.50	1551.16	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul56	523.99162	3521.319	12	6.50	1558.09	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul57	524.00412	3521.3555	12	6.50	1561.65	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul58	524.03712	3521.3318	12	6.50	1561.50	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul59	524.06287	3521.304	12	6.50	1563.05	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul60	524.08737	3521.2755	12	6.50	1570.27	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul61	524.11387	3521.2455	12	6.50	1573.77	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul62	524.14237	3521.2188	12	6.50	1563.14	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul63	524.01012	3521.3933	12	6.50	1557.45	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul64	524.01737	3521.4318	12	6.50	1557.22	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul65	524.02387	3521.4708	12	6.50	1552.86	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul66	524.03062	3521.5095	12	6.50	1549.12	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul67	524.03687	3521.547	12	6.50	1558.78	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul68	524.04812	3521.5838	12	6.50	1559.01	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul69	524.06037	3521.6215	12	6.50	1540.53	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul70	524.07212	3521.6595	12	6.50	1547.07	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul71	524.08387	3521.697	12	6.50	1551.91	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul72	524.09587	3521.7333	12	6.50	1561.37	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul73	524.13162	3521.699	12	6.50	1564.73	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul74	524.16812	3521.7145	12	6.50	1564.23	16.30	6.05	0.0023	0.7291	0.0994	0.7046

Table A.5 Year 5 Emissions – Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul75	524.20237	3521.7323	12	6.50	1554.56	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul76	524.23637	3521.7533	12	6.50	1540.74	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul77	524.25837	3521.7855	12	6.50	1530.35	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul78	524.27937	3521.8198	12	6.50	1540.49	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul79	524.29887	3521.8533	12	6.50	1549.92	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul80	524.31862	3521.8888	12	6.50	1546.12	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul81	522.48512	3521.1975	12	6.50	1539.36	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul82	522.49937	3521.1618	12	6.50	1537.92	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul83	522.51437	3521.1255	12	6.50	1525.32	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul84	522.52887	3521.0905	12	6.50	1525.19	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul85	522.54262	3521.0525	12	6.50	1524.23	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul86	522.55637	3521.0165	12	6.50	1530.80	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul87	522.57062	3520.9793	12	6.50	1540.27	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul88	522.58512	3520.9443	12	6.50	1548.86	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul89	522.59812	3520.908	12	6.50	1551.00	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul90	522.61312	3520.872	12	6.50	1540.66	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul91	522.62637	3520.8343	12	6.50	1533.76	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul92	522.63962	3520.8108	12	6.50	1537.70	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul93	522.67612	3520.7978	12	6.50	1527.86	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul94	522.71337	3520.7855	12	6.50	1528.10	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul95	522.74987	3520.7735	12	6.50	1526.78	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul96	522.78662	3520.7605	12	6.50	1520.35	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul97	522.81987	3520.7348	12	6.50	1508.28	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul98	522.85087	3520.7103	12	6.50	1510.50	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul99	522.88137	3520.6865	12	6.50	1521.28	16.30	6.05	0.0023	0.7291	0.0994	0.7046

Table A.5 Year 5 Emissions – Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul100	522.91187	3520.6623	12	6.50	1532.84	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul101	522.94462	3520.654	12	6.50	1698.03	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul102	522.98262	3520.6473	12	6.50	1707.17	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul103	523.02112	3520.641	12	6.50	1697.45	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul104	523.05987	3520.6343	12	6.50	1681.77	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul105	523.08862	3520.6438	12	6.50	1669.96	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul106	523.12587	3520.6568	12	6.50	1668.38	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul107	523.16212	3520.672	12	6.50	1663.62	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul108	523.19787	3520.6848	12	6.50	1669.30	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul109	523.23487	3520.6985	12	6.50	1671.86	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul110	523.27087	3520.7128	12	6.50	1663.64	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul111	523.30887	3520.7258	12	6.50	1658.10	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul112	523.34537	3520.739	12	6.50	1656.40	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul113	523.38237	3520.7533	12	6.50	1650.40	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul114	523.41812	3520.7668	12	6.50	1642.14	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul115	523.45237	3520.7865	12	6.50	1633.44	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul116	523.48662	3520.8058	12	6.50	1625.01	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul117	523.52012	3520.8245	12	6.50	1622.56	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul118	523.55462	3520.843	12	6.50	1620.44	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul119	523.58512	3520.8658	12	6.50	1618.85	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul120	523.61762	3520.8893	12	6.50	1619.47	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul121	523.64912	3520.9108	12	6.50	1614.23	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul122	523.68162	3520.9323	12	6.50	1607.47	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul123	523.71412	3520.9548	12	6.50	1600.66	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul124	523.74562	3520.9775	12	6.50	1596.21	16.30	6.05	0.0023	0.7291	0.0994	0.7046

Table A.5 Year 5 Emissions – Volume Sources											
Source ID	UTM Easting (X) (km)	UTM Northing (Y) (km)	Zone	Source Height (m)	Base Elevation (m)	Init. Sigma-y (m)	Init. Sigma-z (m)	SO2 (lb/hr)	NOX (lb/hr)	PM25 (lb/hr)	PM10 (lb/hr)
Haul125	523.77912	3520.9988	12	6.50	1592.66	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul126	523.81187	3521.0183	12	6.50	1586.86	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul127	523.84537	3521.0388	12	6.50	1586.28	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul128	523.87937	3521.0595	12	6.50	1584.99	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul129	523.89312	3521.0975	12	6.50	1583.18	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul130	523.90787	3521.134	12	6.50	1583.75	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul131	523.92112	3521.1713	12	6.50	1585.17	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul132	523.93312	3521.2073	12	6.50	1585.86	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul133	523.94712	3521.2435	12	6.50	1586.90	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul134	523.95987	3521.2808	12	6.50	1587.55	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul135	523.97312	3521.3173	12	6.50	1586.42	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul136	523.98687	3521.3535	12	6.50	1582.11	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul137	524.02787	3521.3748	12	6.50	1575.27	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul138	524.05212	3521.3438	12	6.50	1570.92	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul139	524.07662	3521.3133	12	6.50	1565.97	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul140	524.10112	3521.2845	12	6.50	1564.94	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul141	524.12712	3521.2548	12	6.50	1564.56	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul142	524.15237	3521.2285	12	6.50	1564.11	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul143	523.99237	3521.394	12	6.50	1563.29	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul144	523.99862	3521.4335	12	6.50	1553.63	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul145	524.00612	3521.4713	12	6.50	1549.81	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul146	524.01287	3521.5095	12	6.50	1549.41	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul147	524.02037	3521.5478	12	6.50	1549.23	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul148	524.02762	3521.587	12	6.50	1544.51	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul149	524.03637	3521.6255	12	6.50	1541.30	16.30	6.05	0.0023	0.7291	0.0994	0.7046

Table A.5 Year 5 Emissions – Volume Sources											
Source ID	**UTM Easting (X) (km)**	**UTM Northing (Y) (km)**	**Zone**	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-y (m)**	**Init. Sigma-z (m)**	**SO2 (lb/hr)**	**NOX (lb/hr)**	**PM25 (lb/hr)**	**PM10 (lb/hr)**
Haul150	524.04587	3521.6638	12	6.50	1546.17	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul151	524.05612	3521.701	12	6.50	1550.38	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul152	524.06612	3521.7403	12	6.50	1550.22	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul153	524.12762	3521.7063	12	6.50	1551.64	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul154	524.16162	3521.7245	12	6.50	1553.24	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul155	524.19687	3521.7418	12	6.50	1554.59	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul156	524.22912	3521.7633	12	6.50	1561.04	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul157	524.24737	3521.7908	12	6.50	1563.36	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul158	524.26687	3521.8255	12	6.50	1565.36	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul159	524.28737	3521.8578	12	6.50	1568.05	16.30	6.05	0.0023	0.7291	0.0994	0.7046
Haul160	524.30712	3521.8923	12	6.50	1573.20	16.30	6.05	0.0023	0.7291	0.0994	0.7046

Table A.6 Year 5 Emissions - Area Sources																
Source ID	**Source Height (m)**	**Base Elevation (m)**	**Init. Sigma-z (m)**	**UTM Easting (X1) (km)**	**UTM Northing (Y1) (km)**	**UTM Easting (X2) (km)**	**UTM Northing (Y2) (km)**	**UTM Easting (X3) (km)**	**UTM Northing (Y3) (km)**	**UTM Easting (X4) (km)**	**UTM Northing (Y4) (km)**	**Zone**	**SO2 (tpy/m²)**	**NOX (tpy/m²)**	**PM25 (tpy/m²)**	**PM10 (tpy/m²)**
Pit	0	1665.930054	0	522.27	3521.22	523.02	3521.22	523.02	3522.27	522.27	3522.27	12	6.53E-07	1.77E-04	3.09E-05	1.59E-04
Pit2	0	1645.920044	0	523.16	3520.55	524.37	3521.25	524.97	3520.21	523.76	3519.51	12	1.03E-07	3.26E-05	4.60E-06	3.13E-05

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