Excerpt 5

SPI Anderson Updated Modeling and SUSD Analysis, dated May 30, 2012 ("May 2012 Modeling Submittal"), AR I.11

ENVIRON

May 30, 2012
Project No. 29-23586A

Mr. Gerardo Rios
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105

Subject: Updated Air Dispersion Modeling Analysis
Sierra Pacific Industries Biomass-Fired Cogeneration Project
Anderson, California

Dear Mr. Rios:

This letter provides updated information regarding the air quality dispersion modeling analysis originally developed in support of the Prevention of Significant Deterioration (PSD) permit application submitted by Sierra Pacific Industries (SPI) to construct and operate a new biomass-fired cogeneration unit at the existing Anderson facility. It is necessary to update the modeling as a result of some aspects of the final project design differing from the description provided in the submitted permit application. In addition, the U.S. Environmental Protection Agency (USEPA) Region 9 requested, in an e-mail received by SPI on March 20, 2012, that SPI provide updated modeling results that could be used to assess the potential for startup and shutdown emission rates proposed by SPI for the cogeneration unit to comply with the short-term average National Ambient Air Quality Standards (NAAQS) established for nitrogen dioxide (NO_2), carbon monoxide (CO), particulate matter (PM), and sulfur dioxide (SO_2).

Modeling Analysis Update

Differences between the final project design, and that described in the originally submitted permit application, include:

- The height, diameter, exhaust velocity, and exhaust temperature of the cogeneration unit stack;
- The number of cells, height, diameter, exhaust velocity, and emission rate of the cooling tower;
- The addition of an emergency boiler feedwater pump powered by a natural gas-fired engine; and
- The locations of the new structures and emissions points within the facility and relative to one another.

A new modeling site plan is provided in the attached Figure 1, and the attached Table 1 provides updated emission point release parameters used for the updated simulations. Other than these changes, the updated modeling analysis followed the methodology outlined in the permit application. The criteria pollutant emission rates included in the modeling simulations are summarized in the attached Table 2. Design concentrations calculated by the model associated with normal operation are summarized in the attached Table 3, where the results are compared to the Significant Impact Levels (SILs) and the Monitoring De Minimis Concentrations. Concentration isopleths for NO_2, CO, and $PM_{2.5}$ are presented in Figure 2 through Figure 7, with the location of the design concentration indicated on each. The 1-hour average NO_2 (Figure 2) and 24-hour average $PM_{2.5}$ (Figure 6) concentrations are 5-year averages, and the 1-hour average NO_2 concentrations (Figure 2) are based on the assumption that 80 percent of the NO is converted to NO_2, while the annual average NO_2 concentrations (Figure 3) are based on the assumption that 75 percent of the NO is converted to NO_2.

As shown in Table 3, the 1-hour and annual average NO_2, and 24-hour average $PM_{2.5}$ design concentrations were predicted to be greater than the applicable SILs.[1] As a result, additional modeling was required to assess compliance with the applicable NAAQS and PSD increments. Details of that additional modeling effort are provided later in this letter.

The attached Table 4 provides the maximum concentrations predicted by the model simulations, and combines them with background concentrations for comparison to the applicable California Ambient Air Quality Standards (CAAQS). As shown in Table 4, none of the total concentrations were predicted to exceed the CAAQS.

<u>Startup and Shutdown Emission Rates</u>

In the March 20 e-mail and subsequent conference call, Region 9 requested that modeling results be provided for NO_2, CO, and $PM_{2.5}$ that reflected worst-case conditions during startup. As described in the June 8, 2011 letter submitted by ENVIRON on behalf of SPI, the startup process takes approximately 12 hours. However, the startup and shutdown emission rates proposed in the June 8 letter were based on scaling previous modeling results, and, based on discussions with the boiler manufacturer, have been revised. During the startup process, CO and VOC emission rates are expected to exceed those experienced under normal operating conditions, while NO_2, $PM_{2.5}$, and SO_2 emission rates are not.

Startup modeling scenarios that incorporated the revisions described above were developed to assess compliance with short-term ambient standards during startup and shutdown. The startup and shutdown emission rates used in the modeling simulations are summarized in the attached Table 5. Only short-term ambient standards were addressed because the normal operation compliance assessment for annual average standards reflects the worst case scenario. SPI performs scheduled shutdowns of the cogeneration unit only once or twice a year, and each additional (unscheduled) shutdown-and-startup cycle actually decreases the annual emission rates of all criteria pollutants, as demonstrated by the attached Figures 2a and 2b.

Figure 2a and Figure 2b show total annual emission rates for criteria pollutants plotted against the number of startup and shutdown cycle per year. The startup portion of each cycle was assumed to consist of approximately 6 hours of firing on natural gas, then approximately 6 hours firing on biomass fuel. The shutdown portion of the cycle was assumed to consist of

[1] The model receptor grid was extended from a 10-kilometer square to a 20-kilometer square when calculating 1-hour average NO_X concentrations to encompass all receptors predicted to exceed the SIL.

a 1-hour shutdown period when the criteria pollutant emission rates would be equivalent to those during startup, followed by 23 hours of no emissions (11 hours for the boiler to cool down, and 12 hours to make the repairs, etc. that necessitated the shutdown). Thus, each startup and shutdown cycle would reduce the maximum annual number of operating hours by 36 hours. Figure 2a shows annual emissions of all pollutants and the number of operating hours per year versus the number of starts per year, while Figure 2b shows annual emissions of all pollutants except NO_X and CO to more clearly show the trends for pollutants with lower annual emissions. These figures demonstrate that each additional start would reduce annual emissions, and therefore, development of one or more annual scenarios that incorporate startups and shutdowns to assess compliance with annual standards is not warranted.

Startup and Shutdown Modeling

To assess compliance with short-term ambient standards during startup and shutdown, the revised modeling described above was modified to reflect an increased CO emission rate, a flow rate equal to approximately 60 percent of that associated with full load (which results in a stack exhaust velocity of 36.7 ft/s or 11.2 m/s), and a reduced exhaust temperature (250 °F or 394 K). Design concentrations calculated by the model associated with startup and shutdown are summarized in the attached Table 6, where the results are compared to the SILs and the Monitoring De Minimis Concentrations. Concentration isopleths for NO_2, CO, and $PM_{2.5}$ are presented in Figure 9 through Figure 12, with the location of the design concentration indicated on each. The 1-hour average NO_2 (Figure 9) and 24-hour average $PM_{2.5}$ (Figure 12) concentrations are 5-year averages, and the 1-hour average NO_2 concentrations (Figure 9) are based on the assumption that 80 percent of the NO is converted to NO_2.

As shown in Table 6, the 1-hour average NO_2 and 24-hour average $PM_{2.5}$ design concentrations were predicted to be greater than the applicable SILs. As a result, additional modeling was required to assess compliance with the applicable NAAQS and PSD increments. Details of that additional modeling effort are provided below. Table 7 is a summary of the maximum predicted concentrations; these concentrations, after combining with representative background concentrations indicate compliance with all applicable CAAQS.

Cumulative Modeling Analysis

As noted above, the 1-hour and annual average NO_2 and 24-hour average $PM_{2.5}$ design concentrations predicted by the normal operation modeling simulations were in greater that the applicable SILs. As a result, additional analysis is required to assess the potential for compliance with the applicable NAAQS and PSD increments.

For comparison to the NAAQS, competing emission units are included in the modeling analysis and a representative background concentration is added. To this end, Shasta County Air Quality Management District (SCAQMD) and Tehama County Air Pollution Control District (TCAPCD) were contacted and asked to provide a competing source inventory. The inventories were restricted to permitted sources of NO_2 and $PM_{2.5}$ that were within

50 kilometers (km) plus the distance from SPI's Anderson facility to the most distant receptor predicted to exceed the applicable SIL. The most distant receptor predicted to exceed an NO_2 SIL[2] was approximately 5.4 km from the facility, so the competing source NO_2 emission inventory included industrial sources located 55.4 km or less from the facility. The most distant receptor predicted to exceed the 24-hour average $PM_{2.5}$ SIL was approximately 1.0 km from the facility, so the competing source NO_2 emission inventory included industrial sources located 51.0 km or less from the facility. The competing source emission inventories are provided in Table 8 (NO_X) and Table 9 ($PM_{2.5}$).

Screening analyses were developed using the same modeling methodology applied to the project to determine which, if any, of the competing sources were predicted to have a significant impact (i.e., an impact greater than the applicable SIL) at one or more of the receptors the project was predicted to have a significant impact. The results of these screening analyses are provided in Table 10 through Table 14. Sources predicted to have a significant impact were included in the cumulative modeling analyses with the facility. No effort was made to eliminate receptors located on site at the competing source, resulting in a conservative analysis.

An existing dust collection system associated with rail car loading at SPI's Anderson facility, consisting of a cyclone and a baghouse, was included in the cumulative $PM_{2.5}$ modeling. The fan drawing air through the system has a maximum flow rate of 66,000 actual cubic feet per minute (acfm), which was combined with manufacturer-provided grain loading of 0.005 grains per dry standard cubic foot (gr/dscf) to calculate a maximum short-term emission rate of 2.82 pounds per hour (lb/hr), and, assuming continuous operation (8,760 hours per year), a maximum annual emission rate of 12.3 tons per year (tpy).[3] Emission release parameters used to represent the dust collection system in the modeling simulations were as follows: release height above grade – 37 ft (11.3 m), effective release diameter – 6.02 ft (1.83 m), exhaust velocity – 38.7 ft/s (11.8 m/s), and exhaust temperature – 68 °F (293 K). The POINTHOR option available in the current version of AERMOD was used to reflect the horizontal orientation of the exhaust exit from the control system.

Results of the cumulative modeling analyses based on normal operation are summarized in Table 15. When design concentrations are combined with representative background concentrations, the predicted total concentrations indicate compliance with all applicable NAAQS. Analyses of short-term concentrations were not restricted to the time periods during which the proposed project was predicted to exceed the SILs, adding further conservatism to the results. No concentration isopleth figures were developed for the cumulative analyses. To facilitate post-processing of model results, is restricted to only receptors at which the proposed project was predicted to exceed the SIL.

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[2] When more than one averaging period SIL is exceeded for a given pollutant, the maximum distance to a receptor that exceeds any of the SILs determines the competing source inventory area for all averaging period SILs associated with that pollutant.

[3] The flow was corrected from an assumed ambient temperature of 70 °F to standard conditions, but no correction was made for moisture in the air.

The cumulative modeling process described above was repeated for the cogeneration unit startup scenario. Results of the cumulative modeling analyses based on modeled startup conditions are presented in Table 16. As for the project-only modeling analyses, only short-term averaging periods associated with relevant ambient standards were considered. When design concentrations reflecting startup conditions are combined with representative background concentrations, the predicted total concentrations indicate compliance with all applicable NAAQS.

Pollutants predicted to exceed the SILs must assess compliance with the PSD increments as well as the NAAQS. In theory, compliance with PSD increments would be determined using competing source inventories that included only increment-consuming sources. In practice, however, because developing such an inventory requires considerable time and effort, the inventory developed for the NAAQS compliance analysis is used for a PSD increment screening analysis.[4] This screening analysis is essentially a comparison of the cumulative modeling analysis results developed for the NAAQS compliance analysis and the PSD increments, without the addition of background concentrations.

In this case, evaluations of compliance with the annual average NO_2 and 24-hour average $PM_{2.5}$ PSD increments are required. USEPA has not promulgated a PSD increment for 1-hour average NO_2. The PSD increment for annual average NO_2 is 25 $\mu g/m^3$; as shown in Table 8, the maximum NO_2 concentration predicted by the cumulative modeling simulation is 1.75 $\mu g/m^3$, which indicated compliance with the PSD increment. Because this project is the first in the area to exceed the SIL established for 24-hour average $PM_{2.5}$, it represents the only increment-consuming emission units in the area. As a result, the results of the project-only analysis can be used to assess compliance with the PSD increment, which, for 24-hour average, is 9 $\mu g/m^3$. As shown in Table 4, the maximum predicted 24-hour average $PM_{2.5}$ concentration associated with normal operation is 2.23 $\mu g/m^3$, and the maximum predicted concentration associated with startup and shutdown is 3.36 $\mu g/m^3$; both indicate compliance with the PSD increment.

Class I Area $PM_{2.5}$ Analysis

The March 2010 permit application as well as the July 1, 2010 letter sent in response to an incompleteness determination and information request, explains that scaling the Class I area modeling developed for the PSD permit application submitted in May 2007 for SPI's previous proposed biomass-fired cogeneration project indicated that none of the Class I area SILs were likely to be exceeded. At the time, EPA had not promulgated SILs for $PM_{2.5}$, and the PM_{10} surrogacy policy was still in effect. Now that the $PM_{2.5}$ SILs have been adopted, EPA has asked SPI to assess the need for a PSD increment compliance demonstration by comparing $PM_{2.5}$ concentrations attributable to the proposed project to the applicable SILs.

Although $PM_{2.5}$ was not included in the May 2007 PSD permit application analysis, $PM_{2.5}$ concentrations were developed using the original CALPUFF results, and the post-processing

[4] The emission inventory used to evaluate compliance with the NAAQS contains all permitted sources, those that consume increment, as well as those that do not. Because it includes non-increment consuming emissions, use of this inventory to evaluate compliance with a PSD increment is considered a conservative approach.

programs POSTUTILS and CALPOST. Reflecting current guidance from EPA,[5] the coarse PM, sulfate, and nitrate fractions were removed from the post-processing originally used to develop PM_{10} concentrations to obtain $PM_{2.5}$ concentrations. As described in the March 2010 permit application, the results were scaled by a factor of 1.25 to reflect the 25 percent greater heat input capacity of the currently proposed cogeneration unit, as compared to the unit proposed in the May 2007 permit application. The maximum three-year by-receptor average concentrations in the most-impacted Class I area (the Yolla Bolly – Middle Eel Wilderness Area) were 0.0118 $\mu g/m^3$ on a 24-hour average basis, and 0.000602 $\mu g/m^3$ on an annual average basis. Both are less than the applicable $PM_{2.5}$ Class I SILs (0.07 $\mu g/m^3$ on a 24-hour average basis, and 0.06 $\mu g/m^3$ on an annual average basis), which indicates that the proposed project will not significantly impact nearby Class I areas.

Conclusions

The new biomass-fired cogeneration unit proposed by SPI for installation and operation at their existing facility in Anderson, California was re-evaluated for compliance with ambient standards and PSD increments following finalization of the project design. At EPA's request, compliance during startup and shutdown and $PM_{2.5}$ impacts in nearby Class I areas were also evaluated. The results of the analyses indicated that, under normal operation, as well as during startup and shutdown periods, the proposed biomass-fired cogeneration unit does not have the potential to cause or contribute to violations of ambient standards or PSD increments.

We believe that the information provided in this letter addresses the information requested by Region 9, and should be considered to amend the submitted PSD permit application. Please let me know if Region 9 requires any additional information to finalize the draft permit. If you or your staff has any additional questions or need additional information, please do not hesitate to contact me at 425.412.1804.

Sincerely yours,
ENVIRON INTERNATIONAL, INC.

Eric Albright

Eric Albright
Senior Manager

Enclosures

cc: Omer Shalev, USEPA Region 9
Cleveland Holladay, USEPA Region 9
Ross Bell, Shasta County Air Pollution Control District
Shane Young, Sierra Pacific Industries
Dave Brown, Sierra Pacific Industries

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[5] The e-mail message from Stanley Krivo of EPA Region 4 to Bart Brashers of ENVIRON confirming this approach to obtaining $PM_{2.5}$ concentrations from CALPUFF for regulatory application is attached.

Table 1
Point Source Release Parameters

Source	Height (ft)	Diameter (ft)	Exit Velocity (ft/s)	Temperature (°F)
Proposed Cogeneration Unit[1]	85	8.5	61.1	350
Cooling Tower (Each of 3 Cells)	41.6	32.8	23.9	73
Emergency Backup Feedwater Pump Engine	6.58	0.333	209	1,151

1 For the startup scenario, the exit velocity was reduced to 36.7 ft/s and the exhaust temperature was reduced to 250 °F.

Table 2
Modeled Normal Operation Emission Rates

Pollutant	Averaging Period	Units	Proposed Cogeneration Unit[1]	Cooling Tower (All 3 Cells Combined)	Emergency Backup Feedwater Pump Engine[2]
NO_X	Hourly Avg.	lb/hr	70.2	–	0.782
	Annual	tpy	242	–	0.0391
CO	Hourly Avg.	lb/hr	108	–	6.11
	8-Hour Avg.	lb/hr	108	–	0.764
$PM/PM_{10}/PM_{2.5}$	Daily Avg.	lb/hr	8.93	0.272	0.000899
	Annual	tpy	37.3	1.19	0.00108
SO_2	Hourly Avg.	lb/hr	2.34	–	0.00127
	3-Hour Avg.	lb/hr	2.34	–	0.000423
	Daily Avg.	lb/hr	2.23	–	0.0000529
	Annual	tpy	9.32	–	0.0000635

1 Based on the following maximum firing rates: 467.9 MMBtu/hr hourly average, 446.7 MMBtu/hr daily average, and 425.4 MMBtu/hr annual average.

2 Based on maintenance and testing operation no more than 1 hour per day and 100 hours per year.

Table 3
Normal Operation Project-Only Modeling Results

Pollutant	Averaging Period	Design Concentration[1]	SIL[1,2]	Over SIL?	Monitoring De Minimis[1,3]	Over De Minimis?
NO_2[4]	1-Hour	26.3	7.5	Yes	–	–
	Annual	1.35	1	Yes	14	No
CO	1-Hour	122	2,000	No	–	–
	8-Hour	36.0	500	No	575	No
PM_{10}	24-Hour	2.23	5	No	10	No
$PM_{2.5}$[5]	24-Hour	1.84	1.2	Yes	–	–
	Annual	0.272	0.3	No	–	–
SO_2	1-Hour	1.15	7.8	No	–	–
	3-Hour	0.952	25	No	–	–
	24-Hour	0.527	5	No	13	No
	Annual	0.0689	1	No	–	–

1 Concentrations are in micrograms per cubic meter ($\mu g/m^3$)

2 SIL = Significant Impact Level. Taken from USEPA's New Source Review Workshop Manual (October, 1990), Table C-4, except the 24-hour and annual average $PM_{2.5}$ SILs, which are from 40 CFR 52.21(k)(2), and the 1-hour average NO_2 interim SIL as described in the memorandum "Guidance Concerning the Implementation of the 1-hour NO_2 NAAQS for the Prevention of Significant Deterioration Program," issued by Stephen Page, Director of EPA's Office of Air Quality Planning and Standards.

3 Monitoring de Minimis concentrations from 40 CFR 52.21(i)(8)(i).

4 Based on guidance in the "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" memorandum issued on March 1, 2011 by Tyler Fox, Leader of the Air Quality Modeling Group at EPA's Office of Air Quality Planning and Standards, the one-hour average NO_2 concentrations were assumed to be 80 percent of the NO_X concentrations calculated by the model. Annual average NO_2 concentrations were assumed to be 75 percent of the NO_X concentrations calculated by the model, based on guidance in Section 6.2.3 of the USEPA's Guideline on Air Quality Models (codified as Appendix W to 40 CFR Part 51). Also, based on guidance in the March 1, 2011 memorandum issued by Tyler Fox, the 1-hour average NO_2 design concentration is the maximum 1-hour average concentration averaged across the five modeled years at each receptor.

5 Based on guidance in the "Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS" memorandum issued on March 23, 2010 by Stephen Page, Director of the EPA's Office of Air Quality Planning and Standards, the 24-hour average design concentration for comparison to the SILs is the maximum 24-hour average concentration averaged at each receptor across the five modeled years.

Table 4
Normal Operation CAAQS Compliance Assessment

Pollutant	Averaging Period	Maximum Predicted[1]	Background[2]	Total[3]	CAAQS	Over CAAQS?
NO_2[4]	1-Hour	27.8	77.1	105	339	No
	Annual	1.35	33.1	34.5	57	No
CO	1-Hour	122	2,976	3,098	23,000	No
	8-Hour	36.0	2,404	2,440	10,000	No
PM_{10}	24-Hour	2.23	42.0	44.2	50	No
	Annual	0.344	16.1	16.4	20	No
$PM_{2.5}$[5]	Annual	0.344	5.30	5.64	12	No
SO_2	1-Hour	1.15	13.1	14.3	655	No
	24-Hour	0.527	2.62	3.15	105	No

1 Concentrations are in micrograms per cubic meter ($\mu g/m^3$)

2 Background concentrations are the maximum monitored concentrations (with exceptional event data removed, where applicable) from the following stations and years:

NO_2 & CO: Chico – Manzanita Ave; maximum concentrations 2011

PM_{10}: Anderson – North Street; 2011

$PM_{2.5}$: Redding – Health Department Roof; 2011

SO_2: Sacramento – Avalon Drive; 2011

Monitoring data are from EPA's AirData website (http://www.epa.gov/aqspubl1/annual_summary.html)

3 Total = Maximum Predicted + Background

4 NO_2 was assumed to be 100 percent of the emitted NO_X.

5 All PM_{10} was assumed to be $PM_{2.5}$

Table 5
Modeled Startup and Shutdown Emission Rates

Pollutant	Averaging Period	Units	Proposed Cogeneration Unit[1]	Cooling Tower (All 3 Cells Combined)	Emergency Backup Feedwater Pump Engine[2]
NO_X	Hourly Avg.	lb/hr	70.2	–	–
CO	Hourly Avg.	lb/hr	108	–	–
	8-Hour Avg.	lb/hr	108	–	–
$PM/PM_{10}/PM_{2.5}$	Daily Avg.	lb/hr	8.93	0.272	–
SO_2	Hourly Avg.	lb/hr	2.34	–	–
	3-Hour Avg.	lb/hr	2.34	–	–
	Daily Avg.	lb/hr	2.23	–	–

1 Mass emission rates are not expected to exceed those associated with normal operation, except CO. A worst-case emission rate of four times the mass emission rate expected during normal operations was assumed for startup and shutdown.

2. The emergency backup feedwater pump engine would not be operated for maintenance or testing when the cogeneration unit was being started or shutdown.

Table 6
Startup and Shutdown Project-Only Modeling Results

Pollutant	Averaging Period	Design Concentration[1]	SIL[1,2]	Over SIL?	Monitoring De Minimis[1,3]	Over De Minimis?
NO_2[4]	1-Hour	38.6	7.5	Yes	–	–
CO	1-Hour	307	2,000	No	–	–
	8-Hour	212	500	No	575	No
PM_{10}	24-Hour	3.36	5	No	10	No
$PM_{2.5}$[5]	24-Hour	3.11	1.2	Yes	–	–
SO_2	1-Hour	1.67	7.8	No	–	–
	3-Hour	1.55	25	No	–	–
	24-Hour	0.837	5	No	13	No

1 Concentrations are in micrograms per cubic meter (μg/m³)

2 SIL = Significant Impact Level. Taken from USEPA's New Source Review Workshop Manual (October, 1990), Table C-4, except the 24-hour and annual average $PM_{2.5}$ SILs, which are from 40 CFR 52.21(k)(2), and the 1-hour average NO_2 interim SIL as described in the memorandum "Guidance Concerning the Implementation of the 1-hour NO_2 NAAQS for the Prevention of Significant Deterioration Program," issued by Stephen Page, Director of EPA's Office of Air Quality Planning and Standards.

3 Monitoring de Minimis concentrations from 40 CFR 52.21(i)(8)(i).

4 Based on guidance in the "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" memorandum issued on March 1, 2011 by Tyler Fox, Leader of the Air Quality Modeling Group at EPA's Office of Air Quality Planning and Standards, the one-hour average NO_2 concentrations were assumed to be 80 percent of the NO_X concentrations calculated by the model. Annual average NO_2 concentrations were assumed to be 75 percent of the NO_X concentrations calculated by the model, based on guidance in Section 6.2.3 of the USEPA's Guideline on Air Quality Models (codified as Appendix W to 40 CFR Part 51). Also, based on guidance in the March 1, 2011 memorandum issued by Tyler Fox, the 1-hour average NO_2 design concentration is the maximum 1-hour average concentration averaged across the five modeled years at each receptor.

5 Based on guidance in the "Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS" memorandum issued on March 23, 2010 by Stephen Page, Director of the EPA's Office of Air Quality Planning and Standards, the 24-hour average design concentration for comparison to the SILs is the maximum 24-hour average concentration averaged at each receptor across the five modeled years.

Table 7
Startup and Shutdown CAAQS Compliance Assessment

Pollutant	Averaging Period	Maximum Predicted[1]	Background[2]	Total[3]	CAAQS	Over CAAQS?
NO_2[4]	1-Hour	40.0	77.1	117	339	No
CO	1-Hour	307	2,976	3,283	23,000	No
	8-Hour	212	2,404	2,616	10,000	No
PM_{10}	24-Hour	3.36	42.0	45.4	50	No
SO_2	1-Hour	1.67	13.1	14.8	655	No
	24-Hour	0.837	2.62	3.46	105	No

1 Concentrations are in micrograms per cubic meter ($\mu g/m^3$)

2 Background concentrations are the maximum monitored concentrations (with exceptional event data removed, where applicable) from the following stations and years:

NO_2 & CO: Chico – Manzanita Ave; maximum concentrations 2011

PM_{10}: Anderson – North Street; 2011

$PM_{2.5}$: Redding – Health Department Roof; 2011

SO_2: Sacramento – Avalon Drive; 2011

Monitoring data are from EPA's AirData website (http://www.epa.gov/aqspubl1/annual_summary.html)

3 Total = Maximum Predicted + Background

4 NO_2 was assumed to be 80 percent of the emitted NO_X based on guidance in the "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" memorandum issued on March 1, 2011 by Tyler Fox, Leader of the Air Quality Modeling Group at EPA's Office of Air Quality Planning and Standards.

5 All PM_{10} was assumed to be $PM_{2.5}$

Table 8
NO_X Competing Industrial Source Emission Inventory

Point Source	Unit	UTMx (m)	UTMy (m)	NO_X Emission Rate (lb/hr)	Stack Height (ft)	Stack Temp. (°F)	Exit Velocity (ft/s)	Stack Diameter (in)
Kiara Co Gen Project *(under constr.)*	1	556901	4480286	19.20	77	374	35.4	84
Wheelabrator Shasta Co-Gen	1	561184	4475287	50.67	170	260	58.4	90
	2	561184	4475287	50.67	170	260	58.4	90
	3	561184	4475287	50.67	170	260	58.4	90
Wheelabrator Lassen Gas Turbine	1	561987	4476151	92.00	70	350	72.8	108x118
City of Redding Power Plant	1	548845	4484294	10.00	45	400	89.4	102
	2	548845	4484294	12.10	45	400	89.4	102
	3	548845	4484294	12.10	45	400	89.4	102
	4a	548841	4484222	8.90	110	331	142.4	90
	4b	548841	4484222	8.90	110	331	142.4	90
	5	548731	4484141	4.20	100	575	108.9	112
	6	548731	4484141	4.20	100	575	108.9	112
Ag Products Asphalt	1	549536	4484029	8.00	40	140	19.0	120
North State Asphalt	1	548075	4483242	9.17	50	140	19.0	120
JF Shea Smith Road Asphalt	1	554477	4484456	25.00	80	120	18.3	120
Aramark Industries	1	552296	4492776	0.70	60	200	127.3	12
Knauf Insulation	1	551587	4501005	16.50	199	100	18.0	264
Sierra Pacific Industries, Shasta Lake	1	552344	4502712	10.00	60	475	41.8	42
	2	552344	4502712	6.54	60	300	39.0	42
Lehigh Cement	1	557225	4509534	247.50	175	285	79.0	83.5
JF Shea Fawndale Asphalt	1	558579	4509638	11.00	50	140	29.7	96
Pactiv Corporation	1	567278	4444393	0.30	52	1000	43.6	48
North Valley Crematory	1	564652	4447377	0.10	15	1300	13.3	24
Lassen Forest Products	1	569475	4442292	1.20	8	1300	34.0	6
	2	569475	4442292	1.90	8	1300	42.4	6
	3	569475	4442292	1.60	8	1300	34.0	6
	4	569475	4442292	1.20	8	1300	34.0	6
PG & E Gerber Compressor Station	1	567119	4434882	7.30	58	943	21.0	108
Cottonwood Creek Sand & Gravel	1	557822	4469048	0.70	8	1300	50.9	6
Chuck Wolf Sand And Gravel	1	555714	4460172	1.70	8	1300	50.9	6

Point Source	Unit	UTMx (m)	UTMy (m)	NO_X Emission Rate (lb/hr)	Stack Height (ft)	Stack Temp. (°F)	Exit Velocity (ft/s)	Stack Diameter (in)
Ben's Truck & Equipment Inc.	1	570761	4451508	1.10	8	1300	97.6	12
Sierra Pacific Industries, Red Bluff	1	568731	4441574	0.20	5	120	1.2	48
	2	568731	4441574	0.20	5	120	1.2	48
Louisiana Pacific Corp.	1	568663	4442113	0.00	4	300	1.3	96
Siemens Water Technologies	1	568012	4442557	2.80	78	185	42.5	24
	2	568012	4442557	0.20	20	185	8.0	24
North State Asphalt Inc.	1	560013	4469320	2.60	25	150	29.5	72
	2	560013	4469320	6.00	15	120	30.0	12
	3	560013	4469320	5.80	15	60	30.0	8
Tehama Asphalt Crushing	1	563975	4450548	7.40	8	1300	63.7	12
Tehama Asphalt Processing	1	564068	4450561	6.70	25	60	17.7	72
	2	564068	4450561	6.70	25	120	29.5	72
	3	564068	4450561	8.20	25	1300	23.3	4
California Power Holdings, LLC	1	567167	4444519	9.80	40	1300	53.1	24
Tehama County Landfill	1	560206	4449619	0.40	28	1600	8.9	60
SPI Powder Coatings	1	568311	4442156	0.60	30	150	42.4	12
	2	568311	4442156	0.00	30	150	42.4	12
	3	568311	4442156	0.10	30	150	39.8	24
	4	568311	4442156	0.20	30	150	53.1	48
	5	568311	4442156	0.20	30	150	53.1	24
	6	568311	4442156	0.20	15	150	21.2	12

Table 9

$PM_{2.5}$ Competing Industrial Source Emission Inventory

Point Source	Unit	UTMx (m)	UTMy (m)	$PM_{2.5}$ Emission Rate (lb/hr)	Stack Height (ft)	Stack Temp. (°F)	Exit Velocity (ft/s)	Stack Diameter (in)
Kiara Co Gen Project *(under constr.)*	1	556994	4480302	9.60	77	373	35.4	84
Wheelabrator Shasta Co-Gen	1	561276	4475303	20.00	170	260	58.4	90
	2	561276	4475303	20.00	170	260	58.4	90
	3	561276	4475303	20.00	170	260	58.4	90
Wheelabrator Lassen Gas Turbine	1	562079	4476168	2.80	70	350	72.8	108x118
City of Redding Power Plant	1	548937	4484311	5.66	45	400	89.4	102
	2	548937	4484311	5.66	45	400	89.4	102
	3	548937	4484311	5.66	45	400	89.4	102
	4a	548934	4484239	0.21	110	331	142.4	90
	4b	548934	4484239	0.21	110	331	142.4	90
	5	548824	4484158	2.70	100	575	108.9	112
	6	548824	4484158	2.80	100	575	108.9	112
Ag Products Asphalt	1	549628	4484046	16.60	40	140	19.0	120
North State Asphalt	1	548168	4483259	2.59	50	140	19.0	120
JF Shea Smith Road Asphalt	1	554569	4484472	71.20	80	120	18.3	120
Aramark Industries	1	552388	4492794	0.21	60	200	127.3	12
Knauf Insulation	1	551679	4501022	29.07	199	100	18.0	264
Sierra Pacific Industries, Shasta Lake	1	552436	4502729	1.17	60	475	41.8	42
	2	552436	4502729	0.47	60	300	39.0	42
Lehigh Cement	1	557317	4509551	17.90	175	285	79.0	84
JF Shea Fawndale Asphalt	1	558671	4509656	9.60	50	140	29.7	96
Pactiv Corporation	1	567167	4444519	0.01	52	1000	43.6	48
North Valley Crematory	1	564652	4447377	0.03	15	1300	13.33333	24
Lassen Forest Products	5	569475	4442292	0.34	15	60	0.5	120
PG&E Gerber Compressor Station	1	567119	4434882	0.16	58	949	20.96667	108
Cottonwood Creek Sand & Gravel	2	557822	4469048	0.15	15	60	0.5	120
Ben's Truck & Equipment Inc.	2	570761	4451508	2.03	15	60	0.5	120
Sierra Pacific Industries, Red Bluff	3	568731	4441574	0.54	5	60	24.93333	36
Louisiana Pacific Corp.	2	568663	4442113	2.13	65	70	65.98333	48
Crain Walnut Shelling	1	575235	4439261	0.03	18	60	18.56667	24
Long & Long Orchards, Inc.	1	574473	4442490	0.30	30	60	18.56667	24

Point Source	Unit	UTMx (m)	UTMy (m)	$PM_{2.5}$ Emission Rate (lb/hr)	Stack Height (ft)	Stack Temp. (°F)	Exit Velocity (ft/s)	Stack Diameter (in)
Siemens Water Technologies	1	567994	4442656	0.60	25	70	40.08333	36
California Power Holdings, LLC	1	567167	4444519	2.73	40	1300	53.05	24
Tehama County Landfill	1	560206	4449619	0.12	28	1600	8.916667	60
SPI Powder Coatings	7	568311	4442156	0.03	15	65	23.58333	36

Volume Source	Unit	UTMx (m)	UTMy (m)	$PM_{2.5}$ Emission Rate (lb/hr)	Release Height (ft)	Initial Horizontal Dimension (ft)	Initial Vertical Dimension (ft)
Bio Industries, Inc.	1	559651	4448205	0.164	5.0	22.9	4.7
Foothill Ready Mix	1	568110	4441709	1.084	15.0	22.9	14.0
Chuck Wolf Sand & Gravel	2	555714	4460172	0.002	4.0	22.9	3.7
Tehama Asphalt Crushing	2	563975	4450548	0.150	15.0	22.9	14.0

Table 10
Maximum Predicted 1-Hour Average NO_2 Competing Source Concentrations
(Normal Operation Scenario)

Source	Maximum NO_2 Concentration[1] ($\mu g/m^3$)	Include in Cumulative Analysis?
Kiara Co Gen Project (under const.)	24.2	Yes
Wheelabrator Shasta Co-Gen	32.8	Yes
Wheelabrator Lassen Gas Turbine	13.7	Yes
City of Redding Power Plant	8.15	Yes
Ag Products Asphalt	3.08	No
North State Asphalt	3.07	No
JF Shea Smith Road Asphalt	14.9	Yes
Aramark Industries	0.323	No
Knauf Insulation	1.51	No
Sierra Pacific Industries, Shasta Lake	2.43	No
Lehigh Cement	7.57	Yes
JF Shea Fawndale Asphalt	1.41	No
Pactiv Corporation	0.0662	No
North Valley Crematory	0.0525	No
Lassen Forest Products	2.76	No
PG & E Gerber Compressor Sta.	1.27	No
Cottonwood Creek Sand & Gravel	2.14	No
Chuck Wolf Sand And Gravel	2.33	No
Bens Truck & Equipment Inc	0.578	No
Sierra Pacific Industries, Red Bluff	0.209	No
Louisiana Pacific Corp.	0.0159	No
Siemens Water Technologies	0.874	No
North State Asphalt Inc.	51.9	Yes
Tehama Asphalt Crushing	4.73	No
Tehama Asphalt Processing	14.6	Yes
California Power Holdings Llc	2.93	No
Tehama County Landfill	0.119	No
SPI Powder Coatings	0.518	No

[1] 80 percent of NO_X was assumed to be converted to NO_2.

Table 11
Maximum Predicted Annual Average NO_2 Competing Source Concentrations
(Normal Operation Scenario)

Source	Maximum NO_2 Concentration[1] ($\mu g/m^3$)	Include in Cumulative Analysis?
Kiara Co Gen Project (under const.)	0.283	No
Wheelabrator Shasta Co-Gen	0.0664	No
Wheelabrator Lassen Gas Turbine	0.0200	No
City of Redding Power Plant	0.0217	No
Ag Products Asphalt	0.0121	No
North State Asphalt	0.00743	No
JF Shea Smith Road Asphalt	0.0887	No
Aramark Industries	0.00232	No
Knauf Insulation	0.0106	No
Sierra Pacific Industries, Shasta Lake	0.0186	No
Lehigh Cement	0.0968	No
JF Shea Fawndale Asphalt	0.00651	No
Pactiv Corporation	0.000180	No
North Valley Crematory	0.000120	No
Lassen Forest Products	0.00408	No
PG & E Gerber Compressor Sta.	0.00302	No
Cottonwood Creek Sand & Gravel	0.00575	No
Chuck Wolf Sand And Gravel	0.00517	No
Bens Truck & Equipment Inc	0.00125	No
Sierra Pacific Industries, Red Bluff	0.000240	No
Louisiana Pacific Corp.	0.0000225	No
Siemens Water Technologies	0.00200	No
North State Asphalt Inc.	0.101	No
Tehama Asphalt Crushing	0.0105	No
Tehama Asphalt Processing	0.0308	No
California Power Holdings Llc	0.00680	No
Tehama County Landfill	0.000353	No
SPI Powder Coatings	0.000810	No

[1] 75 percent of NO_X was assumed to be converted to NO_2.

Table 12
Maximum Predicted 24-Hour Average $PM_{2.5}$ Competing Source Concentrations
(Normal Operation Scenario)

Source	Maximum $PM_{2.5}$ Concentration ($\mu g/m^3$)	Include in Cumulative Analysis?
Kiara Co Gen Project (under const.)	2.08	Yes
Wheelabrator Shasta Co-Gen	0.685	No
Wheelabrator Lassen Gas Turbine	0.0209	No
City of Redding Power Plant	0.181	No
Ag Products Asphalt	0.650	No
North State Asphalt	0.0545	No
JF Shea Smith Road Asphalt	3.12	Yes
Aramark Industries	0.00974	No
Knauf Insulation	0.157	No
Sierra Pacific Industries, Shasta Lake	0.0406	No
Lehigh Cement	0.0617	No
JF Shea Fawndale Asphalt	0.102	No
Pactiv Corporation	0.000250	No
North Valley Crematory	0.00144	No
Lassen Forest Products	0.0341	No
PG & E Gerber Compressor Sta	0.00166	No
Cottonwood Creek Sand & Gravel	0.0541	No
Chuck Wolf Sand And Gravel	0.000490	No
Bens Truck & Equipment Inc	0.272	No
Sierra Pacific Industries, Red Bluff	0.0294	No
Louisiana Pacific Corp.	0.0687	No
Siemens Water Technologies	0	No
North State Asphalt Inc.	0	No
Tehama Asphalt Crushing	0.0107	No
Tehama Asphalt Processing	0	No
California Power Holdings Llc	0.0845	No
Tehama County Landfill	0.00339	No
SPI Powder Coatings	0.00142	No

Table 13
Maximum Predicted 1-Hour Average NO_2 Competing Source Concentrations
(Startup & Shutdown Scenario)

Source	Maximum NO_2 Concentration[1] ($\mu g/m^3$)	Include in Cumulative Analysis?
Kiara Co Gen Project (under const.)	32.9	Yes
Wheelabrator Shasta Co-Gen	35.8	Yes
Wheelabrator Lassen Gas Turbine	31.9	Yes
City of Redding Power Plant	9.18	Yes
Ag Products Asphalt	7.53	Yes
North State Asphalt	5.14	No
JF Shea Smith Road Asphalt	34.8	Yes
Aramark Industries	0.462	No
Knauf Insulation	1.71	No
Sierra Pacific Industries, Shasta Lake	2.57	No
Lehigh Cement	7.89	Yes
JF Shea Fawndale Asphalt	1.46	No
Pactiv Corporation	0.0737	No
North Valley Crematory	0.0629	No
Lassen Forest Products	3.08	No
PG & E Gerber Compressor Sta	1.48	No
Cottonwood Creek Sand & Gravel	2.49	No
Chuck Wolf Sand And Gravel	3.29	No
Bens Truck & Equipment Inc	0.600	No
Sierra Pacific Industries, Red Bluff	0.209	No
Louisiana Pacific Corp.	0.0169	No
Siemens Water Technologies	0.909	No
North State Asphalt Inc.	68.0	Yes
Tehama Asphalt Crushing	5.17	No
Tehama Asphalt Processing	14.6	Yes
California Power Holdings Llc	3.07	No
Tehama County Landfill	0.177	No
SPI Powder Coatings	0.551	No

[1] 80 percent of NO_X was assumed to be converted to NO_2.

Table 14
Maximum Predicted 24-Hour Average $PM_{2.5}$ Competing Source Concentrations
(Startup & Shutdown Scenario)

Source	Maximum $PM_{2.5}$ Concentration ($\mu g/m^3$)	Include in Cumulative Analysis?
Kiara Co Gen Project (under const.)	3.55	Yes
Wheelabrator Shasta Co-Gen	0.719	No
Wheelabrator Lassen Gas Turbine	0.0224	No
City of Redding Power Plant	0.184	No
Ag Products Asphalt	0.651	No
North State Asphalt	0.0915	No
JF Shea Smith Road Asphalt	3.57	Yes
Aramark Industries	0.0112	No
Knauf Insulation	0.160	No
Sierra Pacific Industries, Shasta Lake	0.0421	No
Lehigh Cement	0.0629	No
JF Shea Fawndale Asphalt	0.105	No
Pactiv Corporation	0.00026	No
North Valley Crematory	0.00147	No
Lassen Forest Products	0.0342	No
PG & E Gerber Compressor Sta	0.00186	No
Cottonwood Creek Sand & Gravel	0.0636	No
Chuck Wolf Sand And Gravel	0.000490	No
Bens Truck & Equipment Inc	0.272	No
Sierra Pacific Industries, Red Bluff	0.0314	No
Louisiana Pacific Corp.	0.0687	No
Siemens Water Technologies	0	No
North State Asphalt Inc.	0	No
Tehama Asphalt Crushing	0.0113	No
Tehama Asphalt Processing	0	No
California Power Holdings Llc	0.0851	No
Tehama County Landfill	0.00358	No
SPI Powder Coatings	0.00152	No

Table 15
Normal Operation NAAQS Compliance Cumulative Modeling Results

Pollutant	Averaging Period	Design Concentration[1]	Background Concentration[1,2]	Total Concentration[1,3]	NAAQS[1,4]	Over NAAQS?
NO_2[5]	1-Hour	46.9	62.7	110	188	No
	Annual	1.75	33.1	34.8	100	No
$PM_{2.5}$[6]	24-Hour	14.6	15.3	29.9	35	No

1 Concentrations are in micrograms per cubic meter (µg/m^3)

2 Background concentrations are based on monitored concentrations (with exceptional event data removed, where applicable) from the following stations and years:

NO_2: Chico – Manzanita Ave; 3-year average of the 98th percentile of daily maximum 1-hour average concentrations, 2009-2011

$PM_{2.5}$: Redding – Health Department Roof; 3-year average of the 98th percentile of 24-hour average concentrations ,2009-2011

3 Total Concentration = Design Concentration + Background Concentration

4 NAAQS = National Ambient Air Quality Standards

5 Based on guidance in the "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" memorandum issued on March 1, 2011 by Tyler Fox, Leader of the Air Quality Modeling Group at EPA's Office of Air Quality Planning and Standards, the one-hour average NO_2 concentrations were assumed to be 80 percent of the NO_X concentrations calculated by the model. Also, based on guidance in the March 1, 2011 memorandum issued by Tyler Fox, the 1-hour average NO_2 design concentration is the maximum 1-hour average concentration averaged across the five modeled years at each receptor.

6 Based on guidance in the "Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS" memorandum issued on March 23, 2010 by Stephen Page, Director of the EPA's Office of Air Quality Planning and Standards, the 24-hour average design concentration for comparison to the SILs is the maximum 24-hour average concentration averaged at each receptor across the five modeled years.

Table 16
Startup and Shutdown NAAQS Compliance Cumulative Modeling Results

Pollutant	Averaging Period	Design Concentration[1]	Background Concentration[1,2]	Total Concentration[1,3]	NAAQS[1,4]	Over NAAQS?
NO_2[5]	1-Hour	94.0	62.7	157	188	No
$PM_{2.5}$[6]	24-Hour	13.5	15.3	28.8	35	No

1 Concentrations are in micrograms per cubic meter ($\mu g/m^3$)

2 Background concentrations are based on monitored concentrations (with exceptional event data removed, where applicable) from the following stations and years:

NO_2: Chico – Manzanita Ave; 3-year average of the 98th percentile of daily maximum 1-hour average concentrations, 2009-2011

$PM_{2.5}$: Redding – Health Department Roof; 3-year average of the 98th percentile of 24-hour average concentrations ,2009-2011

3 Total Concentration = Design Concentration + Background Concentration

4 NAAQS = National Ambient Air Quality Standards

5 Based on guidance in the "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" memorandum issued on March 1, 2011 by Tyler Fox, Leader of the Air Quality Modeling Group at EPA's Office of Air Quality Planning and Standards, the one-hour average NO_2 concentrations were assumed to be 80 percent of the NO_X concentrations calculated by the model. Also, based on guidance in the March 1, 2011 memorandum issued by Tyler Fox, the 1-hour average NO_2 design concentration is the maximum 1-hour average concentration averaged across the five modeled years at each receptor.

6 Based on guidance in the "Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS" memorandum issued on March 23, 2010 by Stephen Page, Director of the EPA's Office of Air Quality Planning and Standards, the 24-hour average design concentration for comparison to the SILs is the maximum 24-hour average concentration averaged at each receptor across the five modeled years.

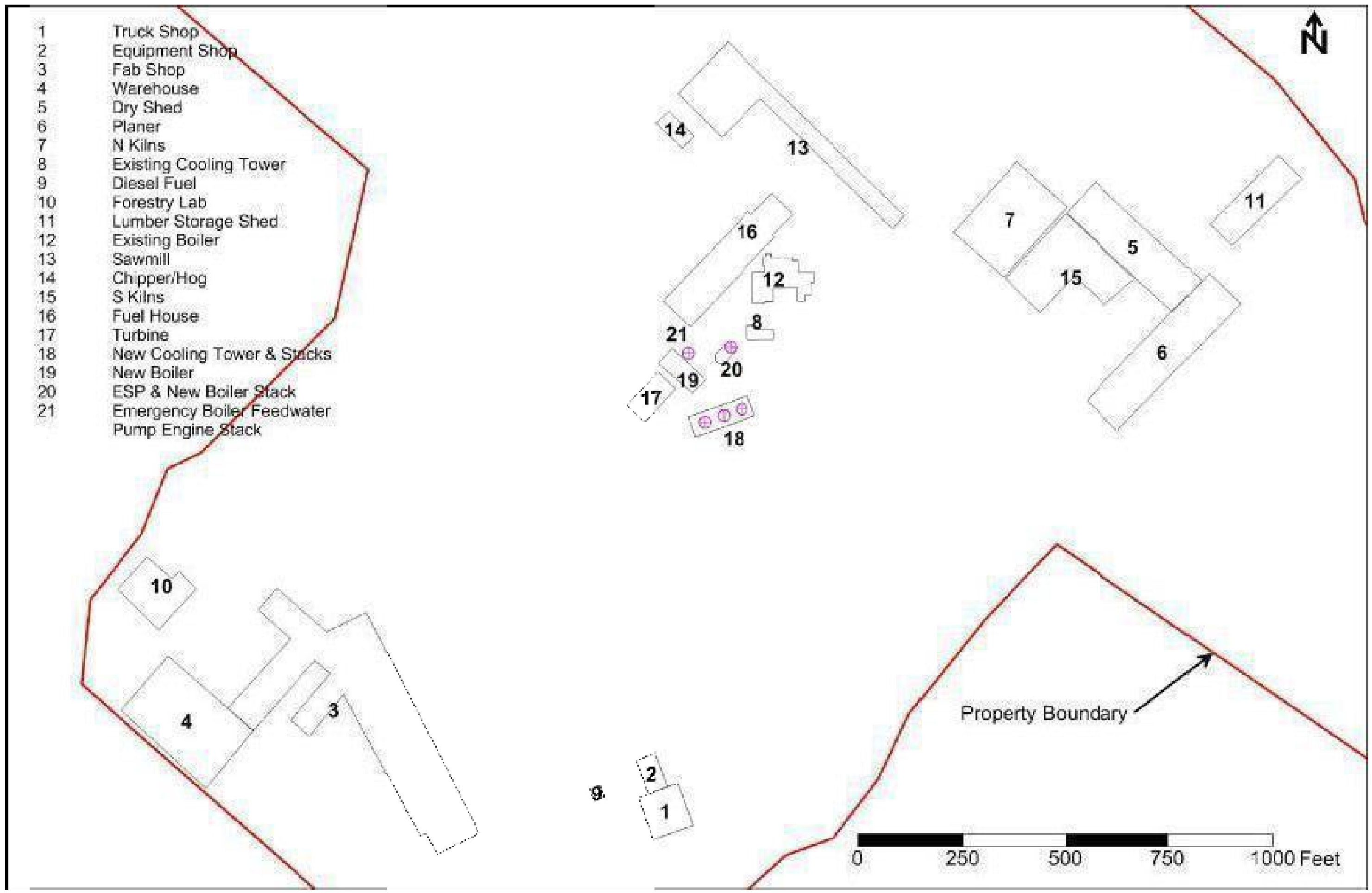


Figure 1. Updated Site Plan

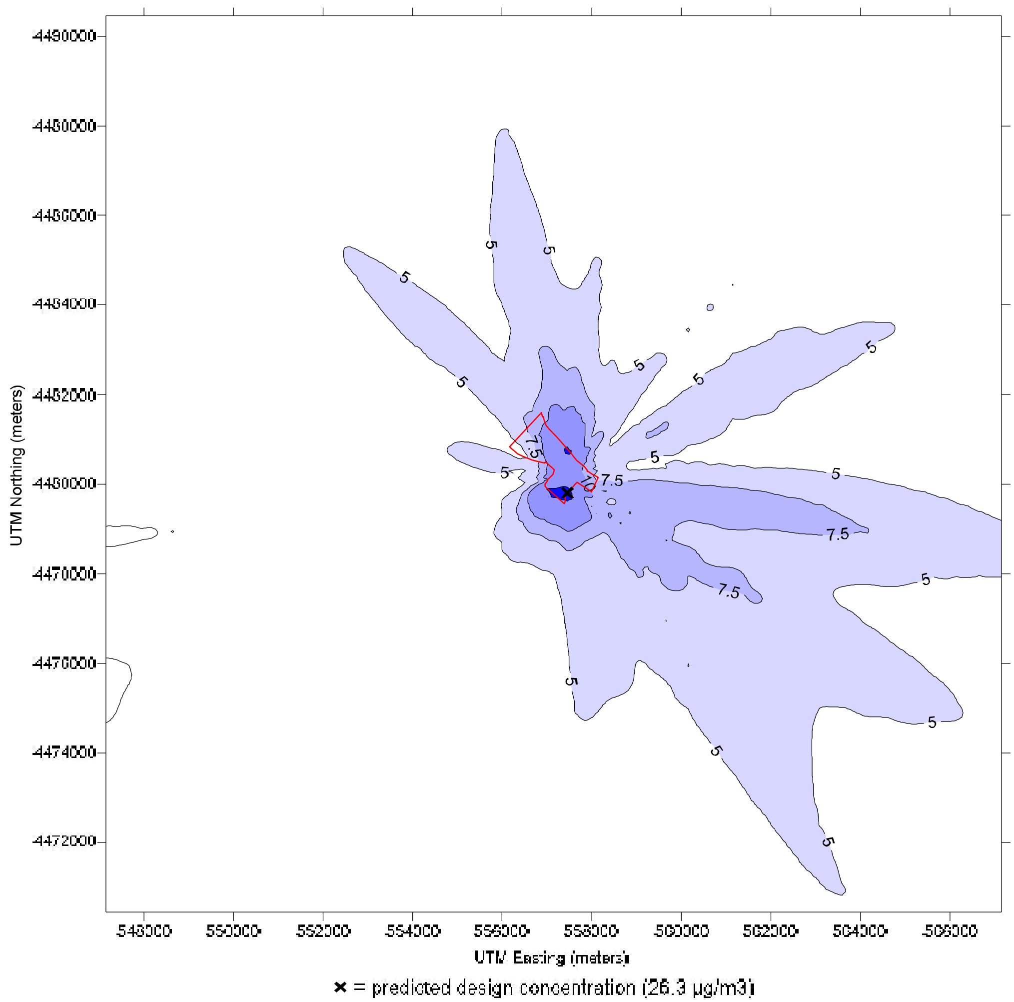
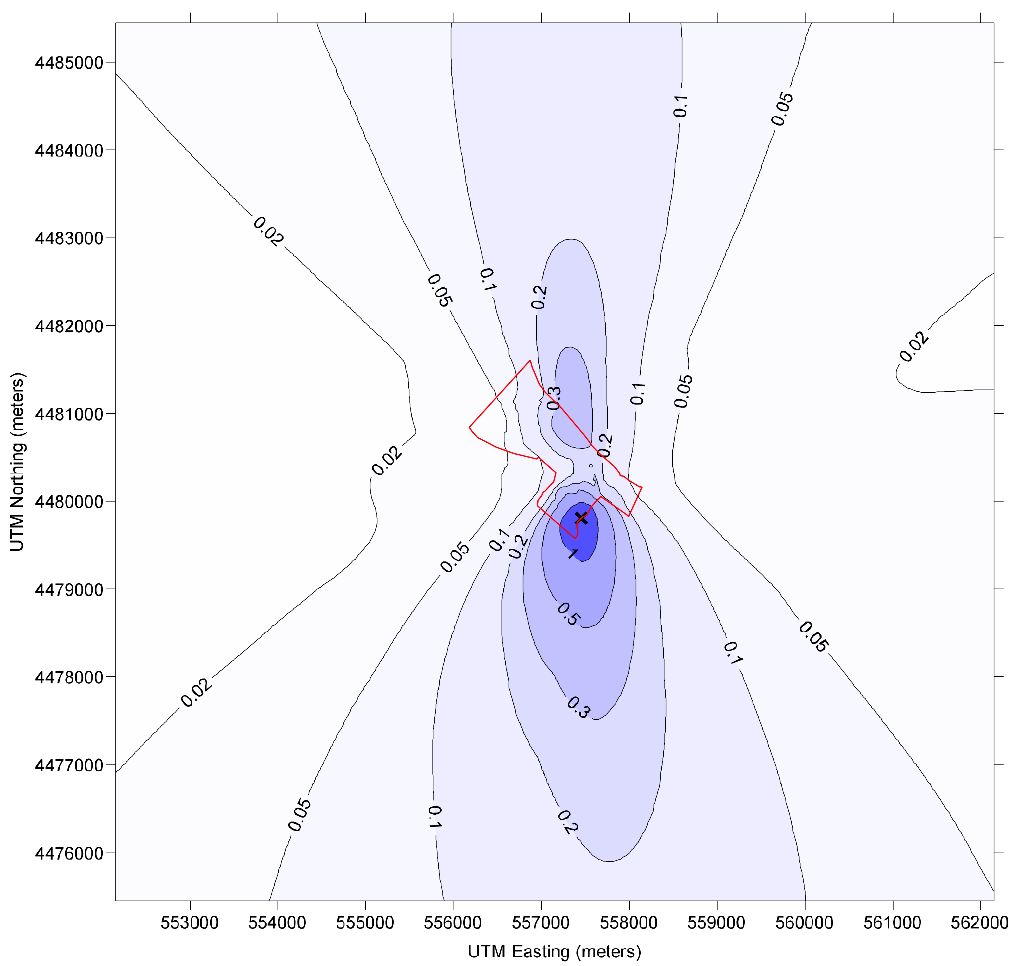


Figure 2. Normal Operation Project-Only 1-hr Average NO_2 Concentrations Averaged By-Receptor Over Five Years



✖ = predicted design concentration (1.35 µg/m3)

Figure 3. Normal Operation Project-Only Annual Average NO_2 Concentrations

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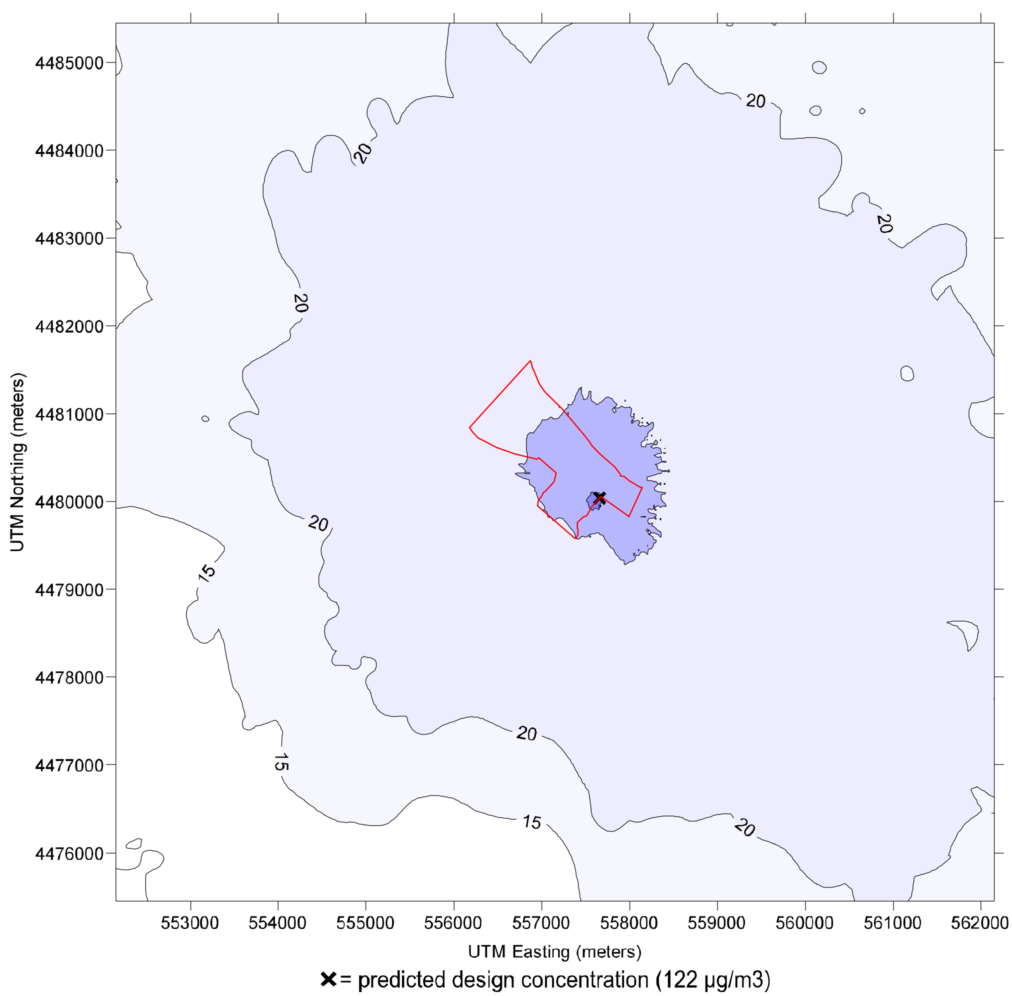


Figure 4. Normal Operation Project-Only 1-hr Average CO Concentrations

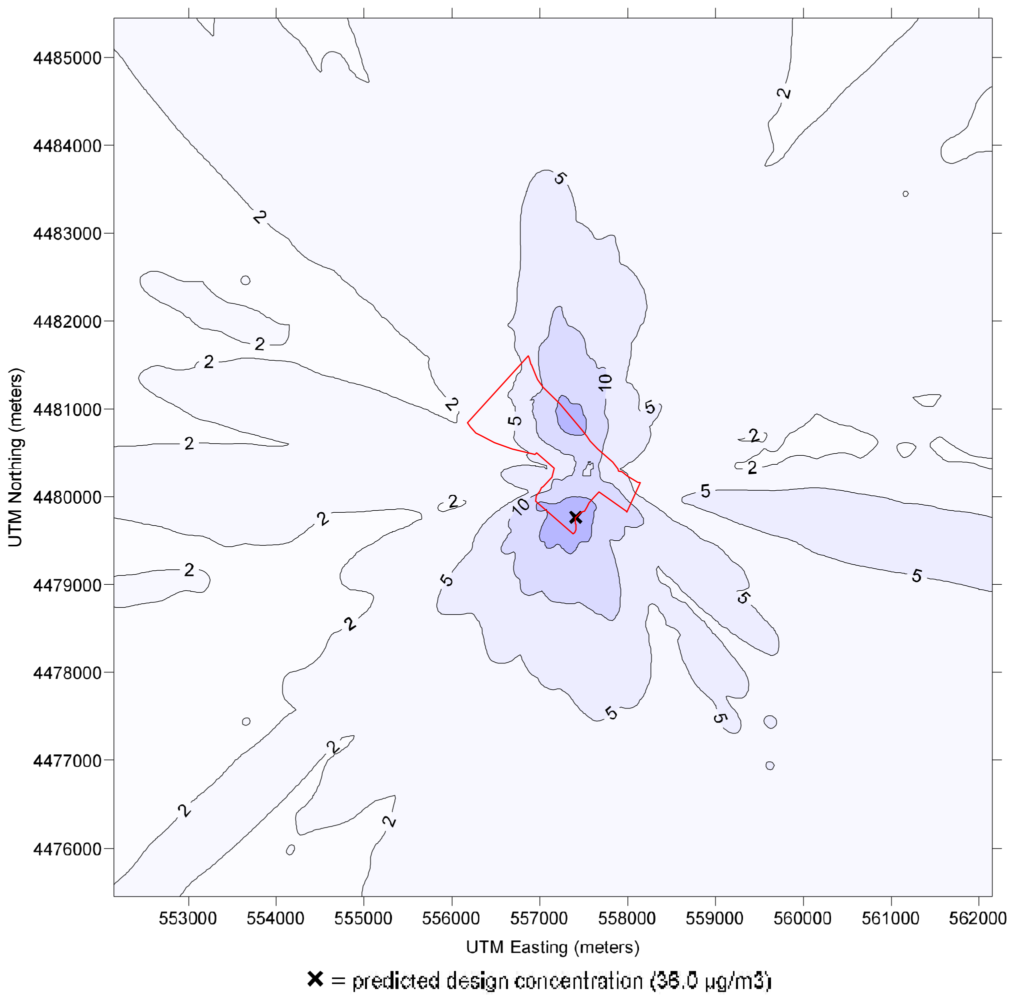


Figure 5. Normal Operation Project-Only 8-hr Average CO Concentrations

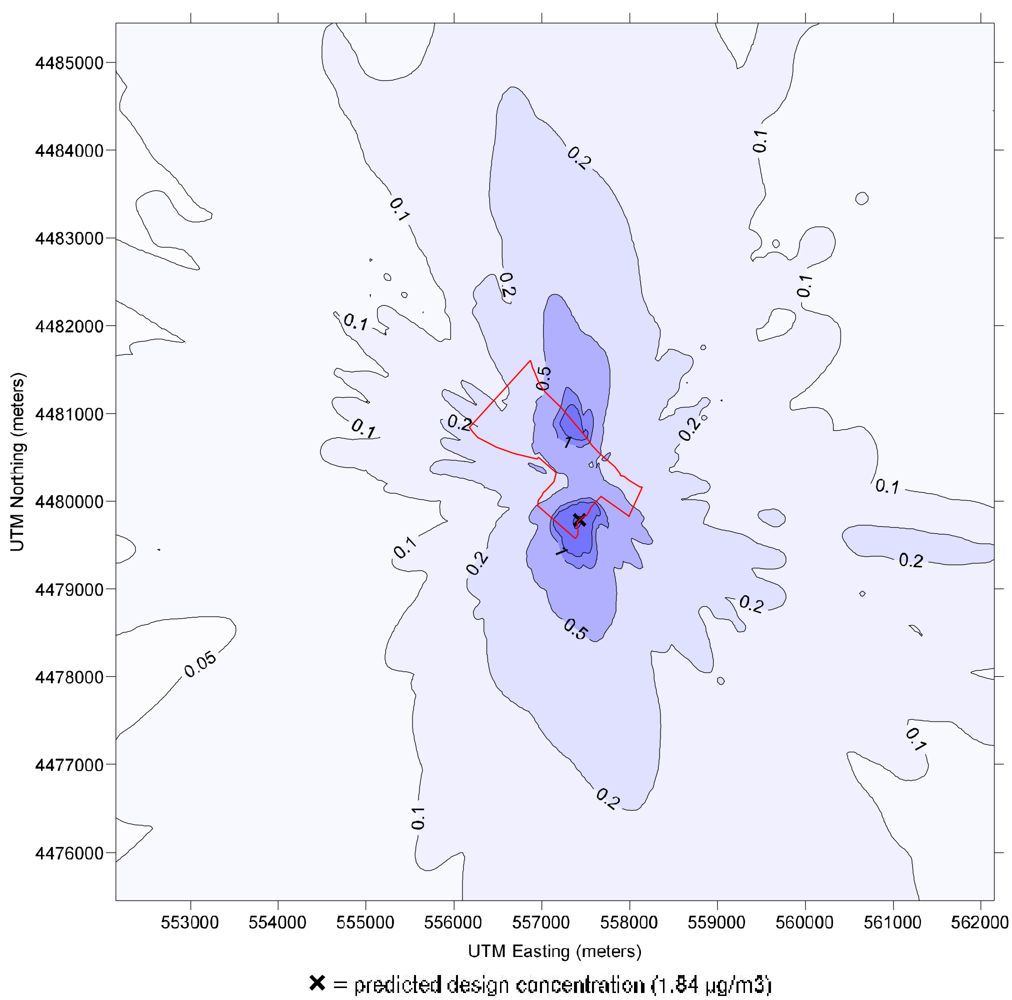


Figure 6. Normal Operation Project-Only 24-hr Average $PM_{2.5}$ Concentrations Averaged By-Receptor Over Five Years

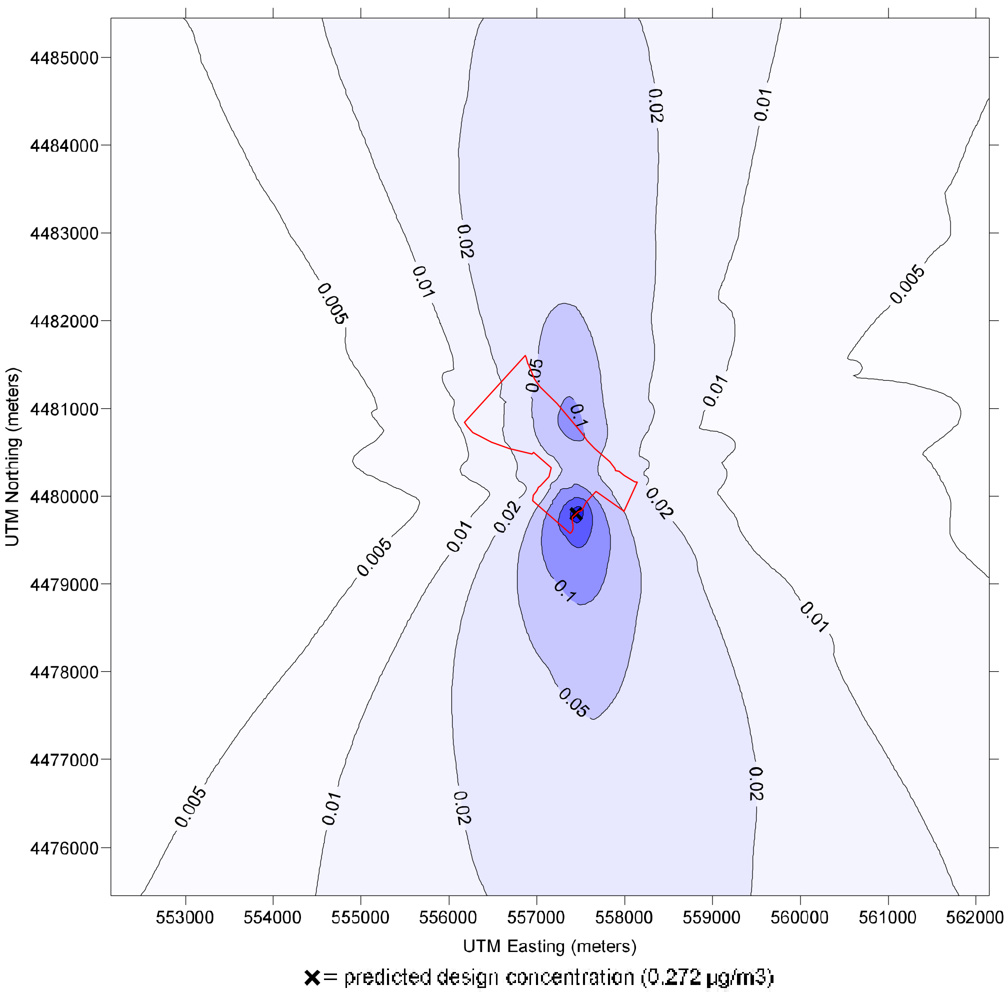


Figure 7. Normal Operation Project-Only Annual Average $PM_{2.5}$ Concentrations

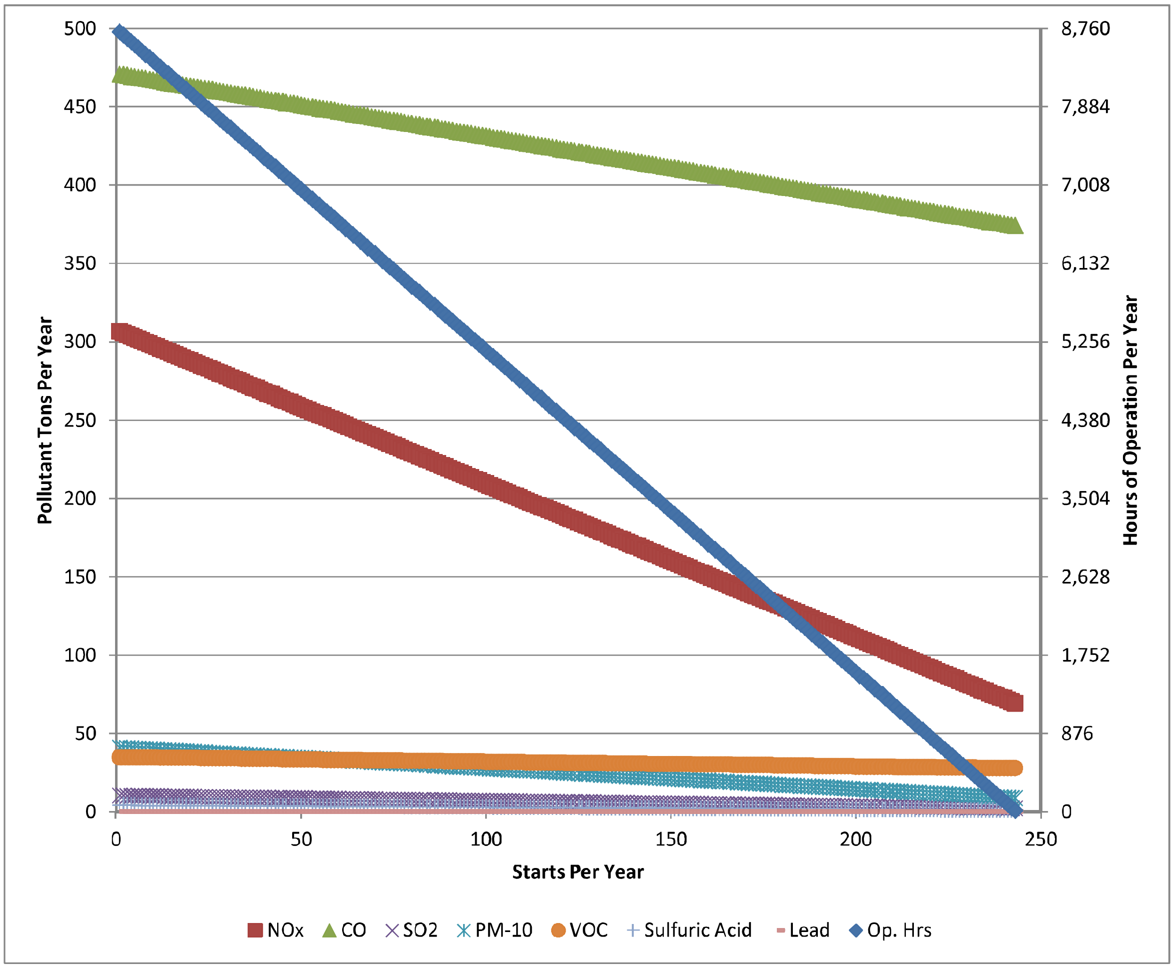


Figure 8a. Annual Emission Rates and Hours of Operation Versus Number of Starts Per Year

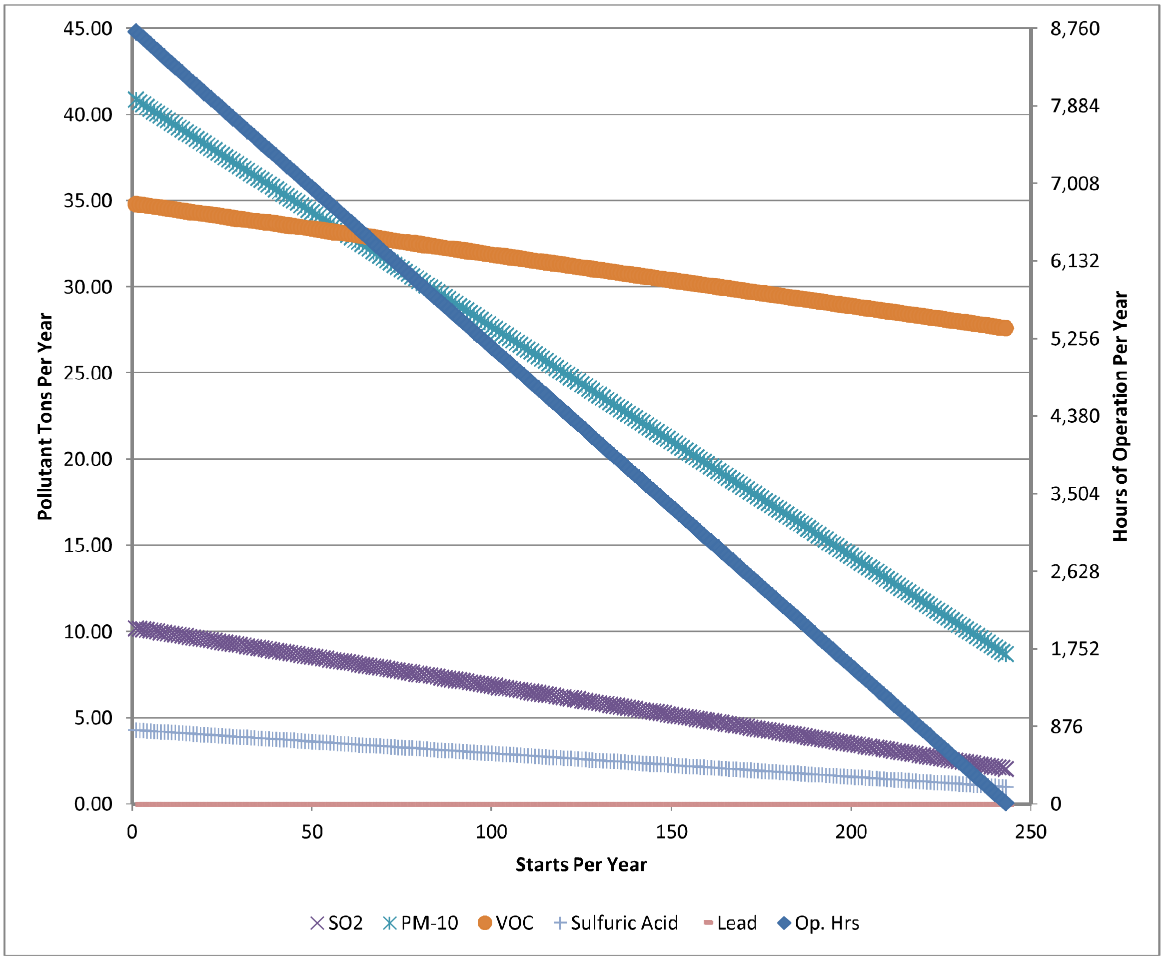
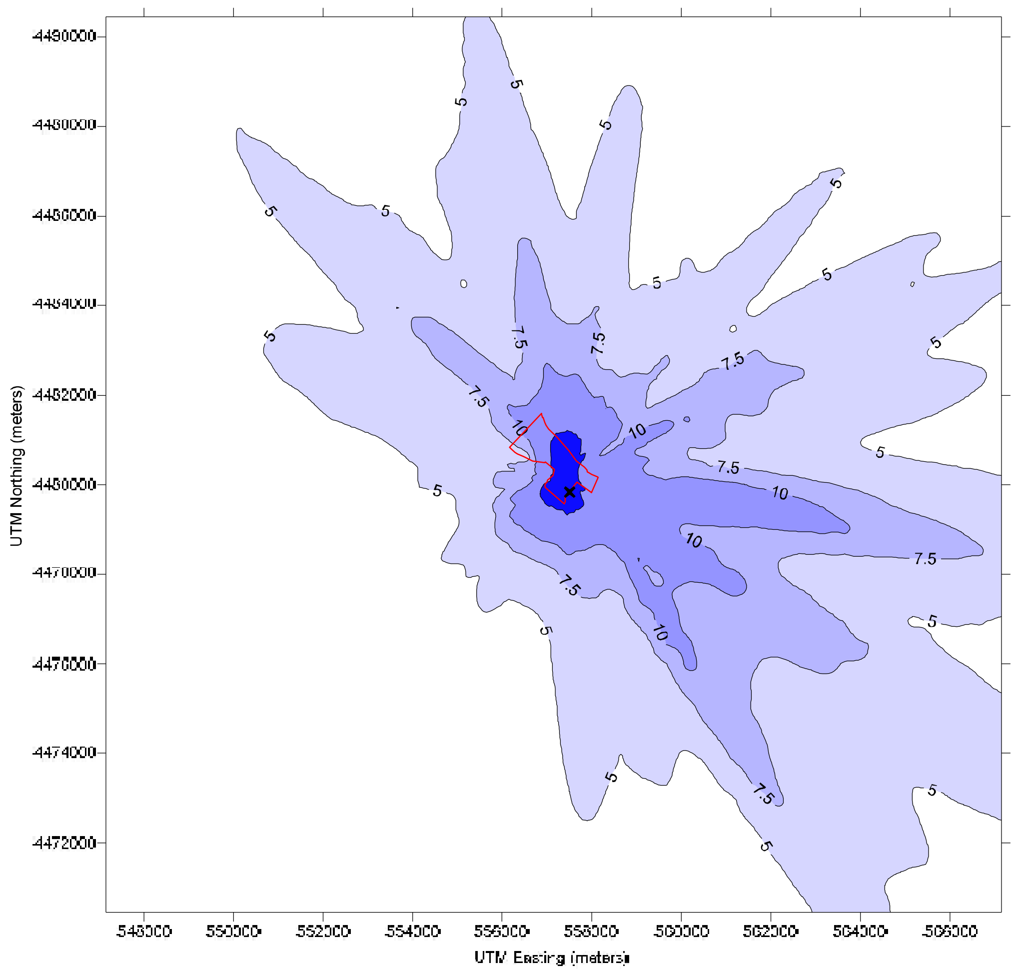


Figure 8b. Annual Emission Rates and Hours of Operation Versus Number of Starts Per Year (with NO_X and CO removed and scales adjusted to more clearly show lower emitting pollutants)



× = predicted design concentration (38.6 µg/m3)

Figure 9. Startup & Shutdown Project-Only 1-hr Average NO_2 Concentrations Averaged By-Receptor Over Five Years

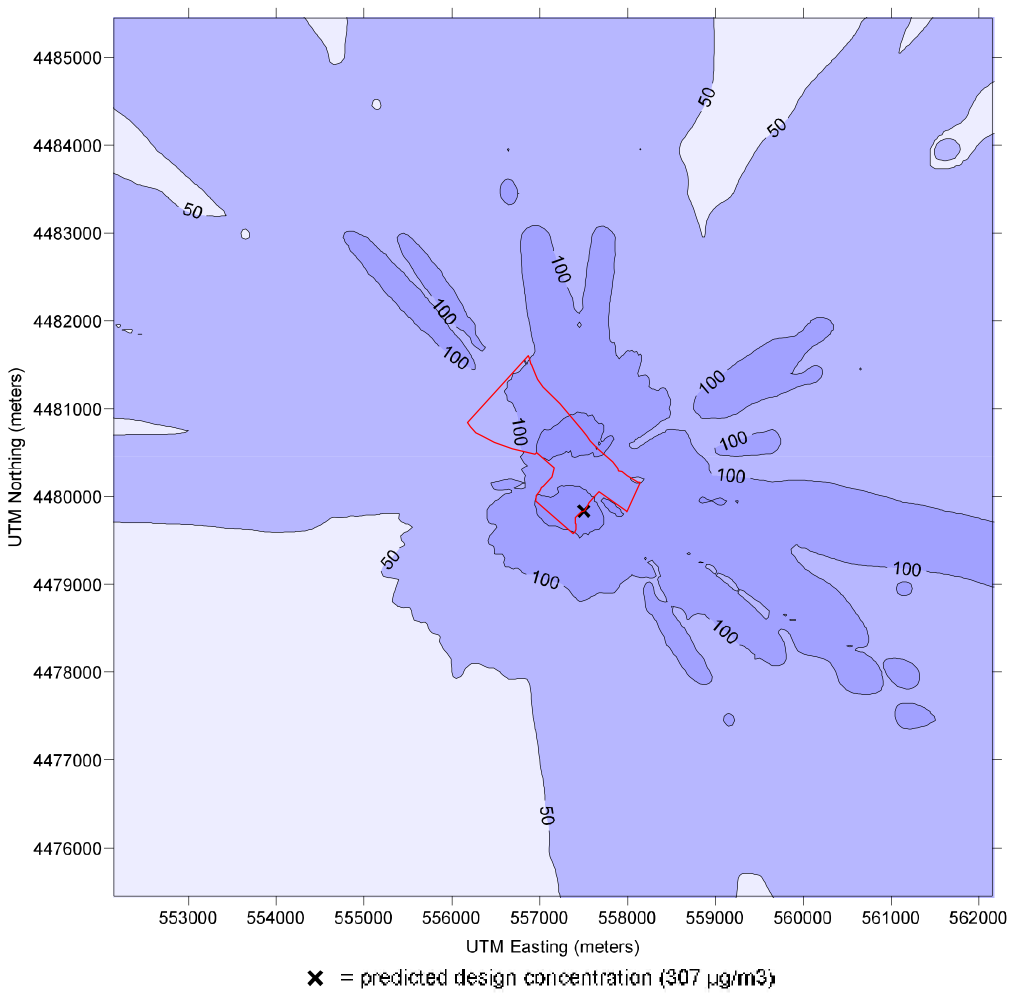
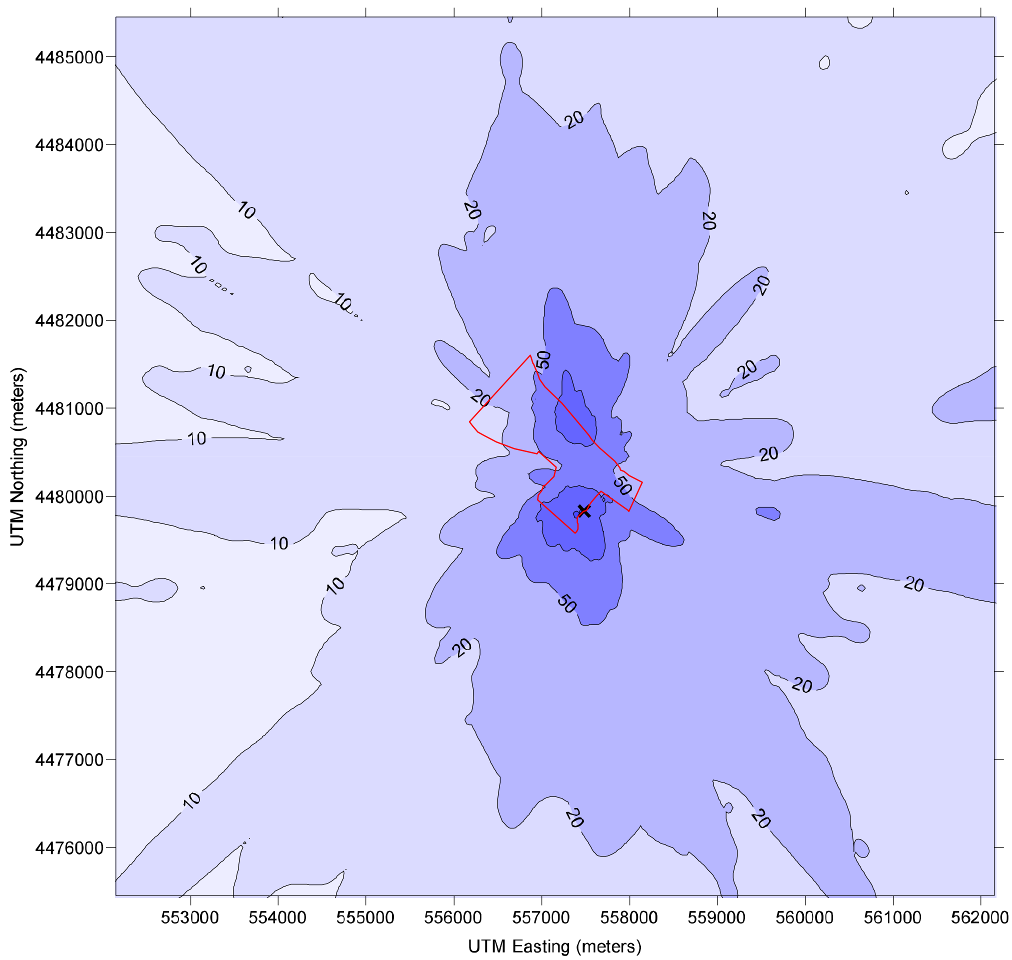


Figure 10. Startup & Shutdown Project-Only 1-hr Average CO Concentrations



✖ = predicted design concentration (212 µg/m3)

Figure 11. Startup & Shutdown Project-Only 8-hr Average CO Concentrations

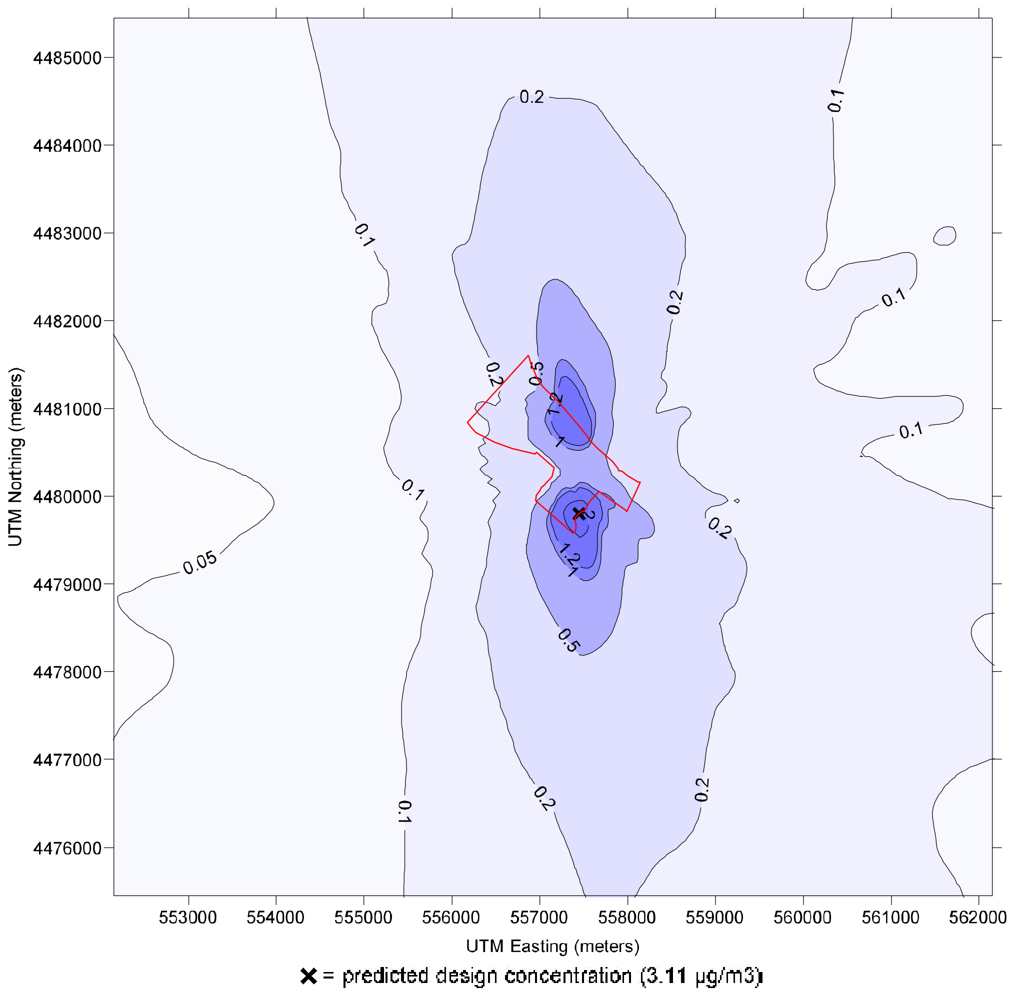


Figure 12. Startup & Shutdown Project-Only 24-hr Average $PM_{2.5}$ Concentrations Averaged By-Receptor Over Five Years

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E-Mail From Stanley Krivo of USEPA Region 4 Discussing Inclusion of Precursors When Predicting $PM_{2.5}$ Concentrations in Class I Areas Using CALPUFF

-----Original Message-----
From: Stanley Krivo [Krivo.Stanley@epamail.epa.gov]
Received: Wednesday, 11 Apr 2012, 7:34am
To: Bart Brashers [bbrashers@environcorp.com]
Subject: Re: Refs or other backup for excluding secondary PM2.5 in a Class I analysis

Bart,

The Stephen Page 23 March 2010 clarification memo provides current guidance on modeling compliance with PM2.5 NAAQS.
[http://www.epa.gov/ttn/scram/Official%20Signed%20Modeling%20Proc%20for%20Demo%20Compli%20w%20PM2.5.pdf]
Although the memo is written for NAAQS compliance, it should also be applicable for PSD increments.

I can not find any explicit reference concerning the limitations of CALPUFF to direct emissions accept Appendix A of Appendix W limits CALPUFF regulatory application to the default options. Another reference could be the requirement to consult with Regional EPA office on acceptable model/modeling procedures. As indicated in our discussion, OAQPS indicated the CALPUFF chemistry was not included in the regulatory evaluation of the model so is currently not a regulatory application of CALPUFF.

I hope that helps.
...sjk

Stanley J. Krivo
US Environmental Protection Agency, Air Planning Branch
Atlanta Federal Center, 61 Forsyth Street, SW
Atlanta, Georgia 30303
404/562-9123 (Phone) 404/562-9019(Fax)