P4 Production, LLC

Soda Springs Plant
1853 Highway 34
P.O. Box 816
Soda Springs, Idaho 83276-0816
Phone: (208) 547-4300
Fax: (208) 547-3312

August 23, 2012

Mr. Bill Rogers
Air Quality Division
Department of Environmental Quality
1410 North Hilton
Boise, ID 83706

RE: Coke Screens Project Permit To Construct Application

Dear Mr. Rogers:

Enclosed are two (2) copies of the P4 Production, LLC Coke Screens Project Permit To Construct Application. If you have any questions regarding this submittal, please contact Mr. Jim McCulloch at (208) 547-1233.

I am a "responsible official" for P4 Production, LLC's Soda Springs facility. In accordance with IDAPA 58.01.01.123, I certify based on information and belief formed after reasonable inquiry, that the statements and information in this document are true, accurate, and complete.

Sincerely,

Allegra Beck
For Sheldon Alver

Sheldon Alver
Plant Manager

Enclosures

Idaho Department of Environmental Quality

Permit to Construct Application – Coke Screens Project

P4 Production, LLC
Soda Springs, Idaho

August 22, 2012

Project No. 0161019

Bernard Evans, P.E.
Project Manager

Dave R. Jordan, P.E.
Principal-in-Charge

Environmental Resources Management
700 West Virginia Street, Suite 601
Milwaukee, WI 53204

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1.0 INTRODUCTION

P4 Production, LLC (P4) is submitting a Permit to Construct application for a project to replace an existing coke screen system with a new coke screen system at their elemental phosphate plant in Soda Springs, Idaho. The replacement of the coke screens will allow P4 to reduce coke fines in the feedstock to the furnaces. This application package includes the information necessary for the Idaho Department of Environmental Quality (DEQ) to process and issue the Permit to Construct (PTC) for this source.

1.1 APPLICATION SUMMARY

The coke screens project results in a modification to point source and fugitive particulate emissions from this operation. The required facility description, project description, emissions determination and air quality impact analysis follow this introduction. Section 2.0 of this application describes the physical characteristics of the existing facility and the new coke screen system operations. Emissions of particulate and toxic air pollutant (TAP) emissions are discussed in Section 3.0. Results of the air quality modeling analyses are presented in Section 4.0.

Figure 2-1 is a plot plan of the entire site with building locations, major equipment and control devices identified . Figure 2-2 shows the location of the coke screens project at the facility. Appendix A includes DEQ Permit to Construct Forms. Appendix B contains the air emissions calculations for particulate matter prior to and after the Coke Screens Project and Appendix C presents the TAP emissions from the project. Appendix D includes an air quality impact analysis for particulate and TAP emissions. Finally, Appendix E includes a prior discussion presented by P4 to the agency explaining the TAP emissions that are expected from facility operations and those TAPs that are excluded.

1.2 FEES

The Permit to Construct Application Fee of $1,000 is submitted concurrently with this application.

2.0 *DESCRIPTION OF FACILITY OPERATION AND THE COKE SCREENS PROJECT*

This section includes the facility description followed by the planned changes to the coke screening operation at the Soda Springs facility.

2.1 *FACILITY DESCRIPTION*

P4 owns and operates an elemental phosphorous production facility near Soda Springs, Idaho. The facility processes phosphate ore to produce elemental phosphorus (P4) for sale. There are two primary departments at the facility – the Burden Preparation Department and the Furnace Department.

The Burden Preparation Department includes activities associated with handling and beneficiation of raw materials (coke, quartzite, and phosphate ore) to produce a suitable feedstock for processing by the Furnace Department to produce elemental phosphorus. Ore is received and stockpiled onsite. Ore is then conveyed to a nodulizing kiln for processing. The resulting nodules are cooled and stockpiled or sent directly to the nodule sizing and scale room from the cooler. In the scale room the nodules are blended with coke and quartzite.

The coke and quartzite are received and stockpiled separately at the facility and are dried to a desired moisture content, if necessary, prior to blending with the nodules. This process is described in more detail in the next subsection.

The nodule-coke-quartzite blend (burden) is then sent to the Furnace Department for processing. Fuel used in the nodulizing kiln is primarily carbon monoxide (CO) off-gas from the furnace process which is supplemented with small quantities of natural gas and coal. The kiln off-gas is treated with existing air pollution control equipment including a series of dust bins, a spray tower, and four parallel hydrosonic venturi scrubbers. The hydrosonic venturi scrubbers are fed with lime concentrated dual alkali (LCDA) solution to scrub acid gases, primarily SO2, from the gas flow.

The Furnace Department operations utilize electric arc furnaces to melt the burden, chemically react the components, and create off-gases containing elemental phosphorus. The burden enters one of three electric furnaces (No. 7, No. 8, and No. 9) that operate on a continuous basis at temperatures of 1,400 to 1,500°C (2,550 to 2732°F). The reducing environment in the furnaces reacts phosphate from the nodules to form phosphorus gas, carbon monoxide gas, and molten slag and ferrophosphorus.

The furnace gases, composed of mainly carbon monoxide and phosphorus, are drawn through electrostatic precipitator (ESP) dust collectors where particulate matter is removed. The cleaned gases are then sent through water spray condensers where the gases are cooled - condensing the phosphorus. The condensed phosphorus is pumped to settling/storage tanks for further solids removal and product storage. The stored phosphorus is loaded into water-blanketed railroad cars for shipment to market.

After the removal of phosphorus, the furnace off-gas is composed primarily of CO and water vapor. The CO is then sent to the nodulizing kiln as fuel. Excess CO is combusted by CO flares where it is oxidized to carbon dioxide and emitted to the atmosphere. A thermal oxidizer (TO) unit is being constructed to replace the flares, and the TO will combust excess furnace gas and scrub the resulting off-gas.

The furnaces are periodically tapped to remove accumulated molten slag and ferrophosphorus. Slag taps occur about 45-48 times per day per furnace and last about 15 minutes per tap. The ferrophosphorus is tapped once or twice per day per furnace. The tapping gases pass through a high-energy venturi scrubber equipped with a cyclonic separator before discharge to the atmosphere.

The molten slag is tapped into cast steel ladles that are transported and poured onto the slag storage pile at the site. The ferrophosphorus is also collected in ladles, cooled, and stockpiled on-site.

Figure 2-1 P4 Soda Springs Facility Plot Plan

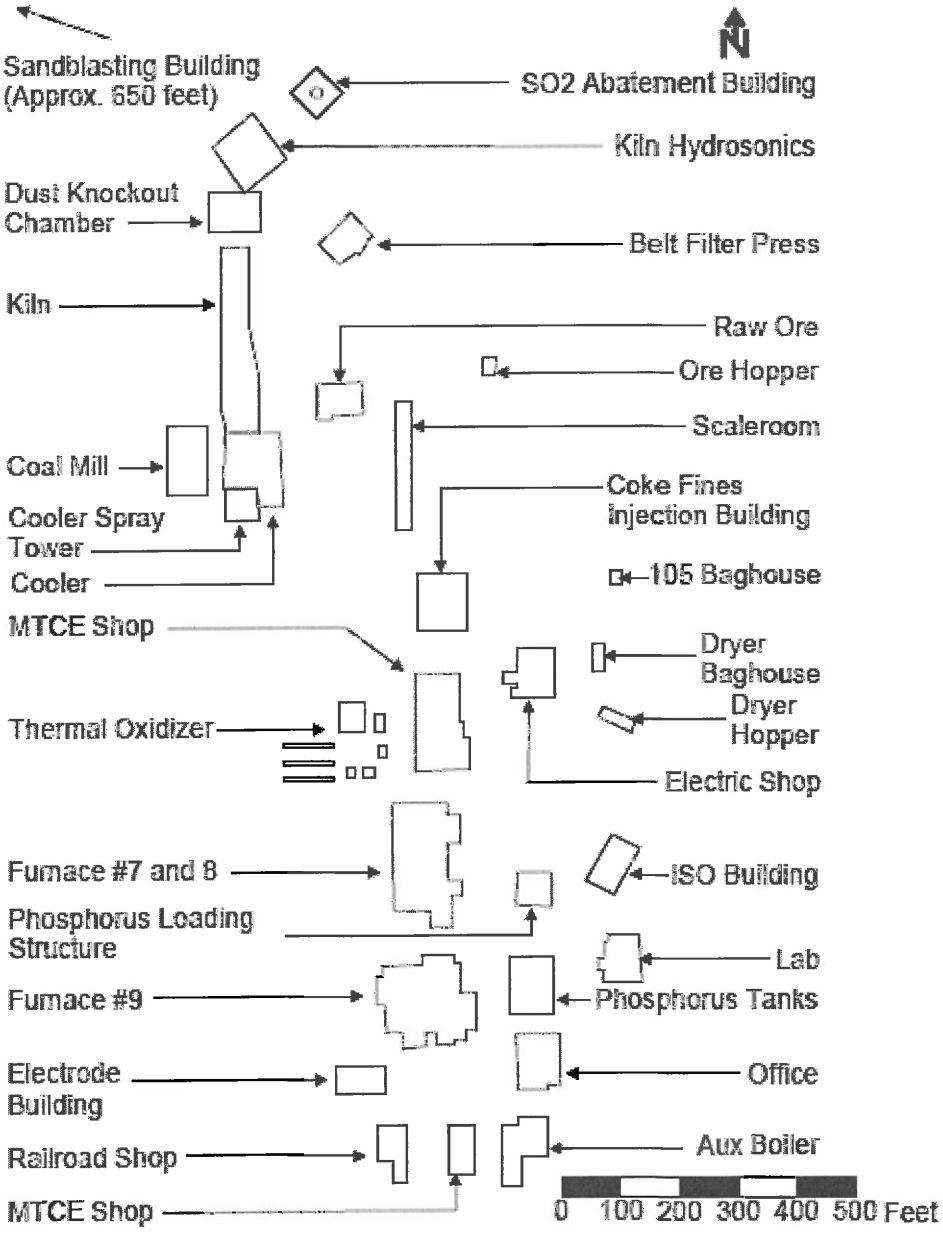
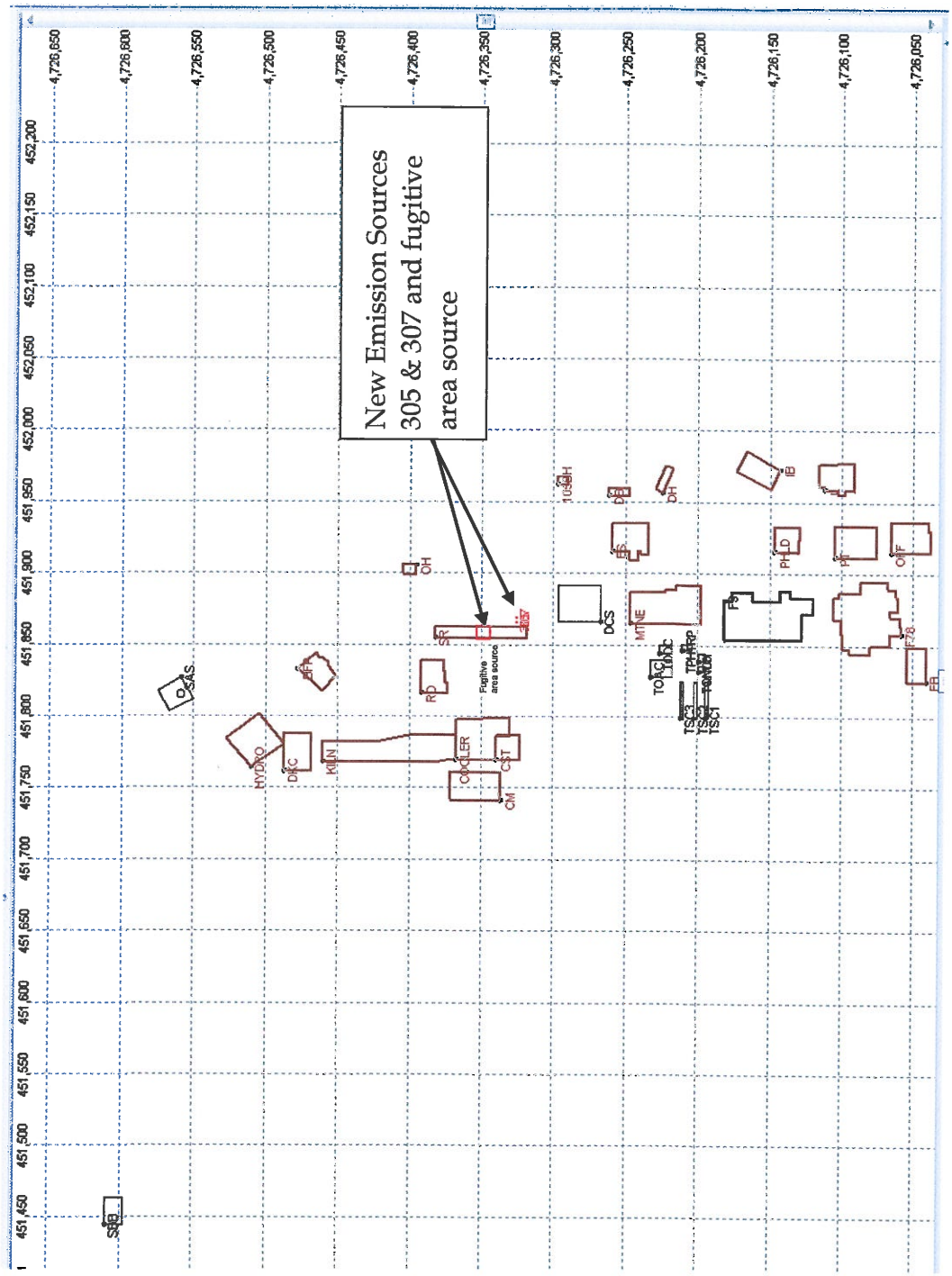


Figure 2-2
Emissions Sources in Relation to Building Structures



2.2 *COKE HANDLING SOURCE DESCRIPTION*

The proposed Coke Screens Project being permitted in this application will include:

- The replacement of a 50 ton/hour coke screen with two new 65 ton/hour coke screens and structure;
- The installation of a coke fines collection bin, a coke fines truck loading station, a coke conveyor tail pulley, and a coke conveyor discharge enclosure;
- The removal of the existing conveyor 107 and the upper portion of the 105 belt and set up of a new coke conveyor and distributor;
- The installation of a new 105 head pulley, a bucket elevator and a prescreen truck load out;
- The utilization, but reconfiguration of two existing baghouses;
- The removal of the Bulk Storage Bin Baghouse with control changed to the 305 Scaleroom Baghouse; and
- The removal of the old boiler and dryer building.

The former 119.1 Coke Handling Baghouse will be reconfigured as the 305 Scaleroom Baghouse utilizing its full 57,800 cfm capacity. The former 501 Scaleroom Baghouse will be become the 307 Coke Screens Baghouse and will be configured to 29,000 cfm controlling the new 65 ton coke screens. A description of the coke handling system following completion of the Coke Screen Project is provided in the following subsection.

Coke Drying and Associated Handling

Coke is reclaimed from the coke stockpile by loader and dumped to the dryer feed hopper, which feeds the vibrating pan feeder. Coke falls from the vibrating pan feeder to belt 855, which feeds coke and quartzite to dryer 851. Dried coke falls from dryer 851 to belt 835 (coke and quartzite share this equipment to this point), and then to belt 105. Coke is fed from belt 105 to one of two coke screens. Sized coke falls from the coke screen to belt 106, and then fed to the coke distributor which fills scaleroom coke bin 8, coke bin 9, or coke bin 10. Sized coke can also be directed to belt 827, and then to

scaleroom coke bin 11. Coke fines falls through the coke screen to a loadout bin. From the loadout bin, coke fines can be sent back through a bypass around the coke screens to belt 106 and fed to belt 827 which fills scaleroom coke bin 11, or feeds belt 828 which fills the bulk coke fines storage bin. The Dryer Baghouse collects PM from the tail and head-end of the 855 belt, the dryer, and the tail-end of the 835 belt. The 105 Baghouse is described below.

Undried coke unloading from railroad cars or trucks

Coke brought in by railroad cars is unloaded at hopper 105. From hopper 105 the coke is fed to a truck loadout chute where it is then taken to the coke stockpile. Coke brought in by semi-trucks can be unloaded into the coke storage tent or deposited directly onto the coke stockpile.

Undried coke handling to screening and storage

Undried coke is unloaded from railroad cars or semi-trucks to the coke and quartzite hopper. Undried coke falls from the hopper to belt 105. Coke falls from belt 105 to one of two coke screens. Sized coke falls from the coke screen to the coke distributor which fills scaleroom coke bin 8, coke bin 9, or coke bin 10. Sized coke can also be directed to belt 827, and then to scaleroom coke bin 11. Coke fines fall through the coke screen to a loadout bin. From the loadout bin, coke fines can be sent back through a bypass around the coke screens to belt 106 and fed to belt 827 which fills scaleroom coke bin 11, or feeds belt 828 which fills the bulk coke fines storage bin. The 105 Baghouse collects PM from the head-end of the 835 belt, tail and head-end of the Q1 belt, the tail-end of the Q2 belt, and tail-end of the 105 belt. The 307 Coke Screens Baghouse collects PM from the head-end of belt 105, tail and head-end of the bucket elevator, coke screens, tail-end of belt 106, bypass and fines loadout bin discharge spouts, and the fines loadout bin vent. The 305 Scaleroom Baghouse collects PM from the scaleroom bins 1-11, head-end of belt 106, tail and head-end of belt 827, tail-end of 828, and the bulk storage bin.

Coke fines handling from railcars to the stockpile

Coke fines are unloaded from railcars to hopper 105 and fed to belt 105. Belt 105 feeds coke fines to a truck loadout chute and the coke fines are then hauled to the coke fines stockpile.

Coke fines screening and handling from the stockpile or railcars to the bulk storage bin

Coke fines are reclaimed from the coke fines stockpile by loader and dumped to hopper 105. Coke fines are also unloaded from railcars directly to hopper 105. Coke fines fall from hopper 105 onto belt 105 and are fed to one of two coke screens. Coke fines fall through the coke screens to a loadout bin. From the loadout bin, coke fines can be sent back through a bypass around the coke screens to belt 106 and fed to belt 827 which fills coke bin 11 or feeds belt 828. Belt 828 fills the bulk coke fines storage bin.

Coke fines drying, screening, and handling from the stockpile to the bulk storage bin

Coke fines are reclaimed from the coke fines stockpile by loader and dumped to dryer feed hopper 853 which feeds vibrating pan feeder 854. Coke fines fall from vibrating pan feeder 854 to belt 855 which feeds coke and quartzite dryer 851. Dried coke fines fall from dryer 851 to belt 835 and then to belt 105 (coke, quartzite, and coke fines share this equipment to this point). Coke fines are fed from belt 105 to one of two coke screens. Sized coke in the fines falls from the coke screen to the mid-sized coke distributor which fills either coke bin 8, bin 9, or bin 10. Sized coke can also be directed to belt 827, and then to scaleroom coke bin 11. Coke fines fall through the coke screen to a loadout bin. From the loadout bin, coke fines can be sent back through a bypass around the coke screens to belt 106 and fed to belt 827 which fills coke bin 11 or feeds belt 828. Belt 828 fills the bulk coke fines storage bin. The 305 Scaleroom Baghouse collects from the tail and head-end of belt 827, tail and head-end of belt 828, bulk coke fines storage bin, and moving coke fines from the bulk storage bin to the first air conveyor.

Coke fines screening, crushing, and handling from the bulk storage bin to the furnace feed bins

Coke fines are transferred from the bulk storage bin to the coke-fines screen. Oversized coke fines fall through the screen to the over-sized coke surge pile. Contaminated or wet coke fines may be unloaded from the bulk coke fines storage bin through a reject chute to the ground. Under-sized coke fines are fed from the coke-fines screen to the second air conveyor, which pneumatically conveys the coke fines either to fines bins 304 or 305 (which feed furnace 7), to fines bins 306 or 307 (which feed furnace 8), or to fines bins 308 or 309 (which feed furnace 9). The 304, 305, 306, 307, 308, and 309 Furnace Feed Bin Vents collect dust from conveying coke fines from the second air conveyor to fines bins 304, 305, 306, 307, 308, and 309.

3.0 EMISSIONS

3.1 PARTICULATE EMISSIONS FROM THIS PROJECT

Air emissions from the project will include particulate matter emissions from the coke handling and screening operations and Toxic Air Pollutant (TAP) emissions from the constituents that make up the coke particulate. Point source emissions will result from the particulate collection devises and control equipment (305 Scaleroom Baghouse & 307 Coke Screens Baghouse) and the fugitive emissions from material transfer and handling equipment.

P4 conducted stack testing on the 305 Scaleroom Baghouse (formerly the 119.1 Coke Handling Baghouse) and the 307 Coke Screens Baghouse (formerly the 501 Scaleroom Baghouse). The results of the stack testing identified emission rates of 0.00074 grain per dry standard cubic feet (gr/dscf) and 0.0031 gr/dscf, respectively. The stack tests are on file with IDEQ and are dated October 2 & 3, 2008 for the 305 Scaleroom Baghouse and June 17 & 18, 2002 for the 307 Coke Screens Baghouse.

With this project, each of these two baghouses will have a change in flow rates and a change in some of the emission units that will be ducted to the baghouses resulting in a change in the particulate loading to the baghouses. P4 is committing to an emission rate from the two baghouses of 0.00148 gr/dscf for the 305 Scaleroom Baghouse and 0.00465 gr/dscf for the 307 Coke Screening Baghouse. These rates are based on the stack test results stated above and applied to the new flow rates for the reconfigured baghouses. The stack tests serve as the documentation of the emission rates presented in item 7.b of Form BCE for each baghouse. Fan curves are provided in Appendix F for documentation of flow rates for the baghouses.

At the reconfigured flow rates for these baghouses, the potential particulate emissions are 2.90 tpy and 4.89 tpy, respectively. The determination of the potential particulate emissions is included in Appendix B.

Past actual particulate emissions from the coke screening operation and baghouses serving the operation prior to this modification are 1.42 tpy for

PM, PM_{10} and $PM_{2.5}$ for point sources; and 17.50 tpy, 8.28 tpy, 1.28 tpy for PM, PM_{10} and $PM_{2.5}$ respectively for fugitive sources. The determination of particulate emissions prior to the Coke Screens Project is included in Appendix B.

The replacement of the existing coke screen with the new screens will result in a slight recovery of lost production. P4 has determined the amount of increase in particulate emissions resulting from the projected recovered production at the Soda Springs facility. That determination is provided in Appendix B of this report. The overall changes in particulate emissions resulting from the modification of the coke screening operation and recovered production are summarized below in Table 3-1. The total increase in particulate emissions from the modification of the coke screening process plus the recovered production remains below the particulate thresholds defining a major modification for purposes of Prevention of Significant Deterioration (PSD) at 40 CFR Part 52.21.

Detailed emission calculations are included in a compact disc provided with this application.

Table 3-1 Particulate Emissions Increase from the Project

Coke Screen Project Particulate Emissions Summary

PSD Assessment - Associated Emissions Increase of PM, PM-10, and PM-2.5 Due to Project

	PM-10 EMISSIONS			PM-2.5 EMISSIONS			PM (TSP) EMISSIONS[2]		
Emission Type	Pre-Project Actual Emissions (ton/year)	Post-Project (PTE) Emissions (ton/year)		Pre-Project Actual Emissions (ton/year)	Post-Project (PTE) Emissions (ton/year)		Pre-Project Actual Emissions (ton/year)	Post-Project (PTE) Emissions (ton/year)	
Point Source	1.42	7.78		1.42	7.78		1.42	7.78	
Fugitive Source	8.28	9.93		1.28	1.38		17.50	21.00	
Recoverd Production Emissions[1]	NA	2.98		NA	2.78		NA	2.99	
Total emissions:	**9.69**	**20.70**		**2.69**	**11.95**		**18.91**	**31.78**	
	Pre	**Post**	**Compare to Threshold**	**Pre**	**Post**	**Compare to Threshold**	**Pre**	**Post**	**Compare to Threshold**
Threshold:			**15**			**10**			**25**
EMISSIONS Increase (TPY)]	9.69	20.70	**11.01**	2.69	11.95	**9.26**	18.91	31.78	**12.86**

Note 1: Recoverd Production Emissions determined on separate spreadsheet by increasing production rates at units that benefit from the Coke Screens Project

3.2 *EMISSIONS OF TOXIC AIR POLLUTANTS*

In past Permit to Construct applications, P4 has included an explanation of the IDEQ TAP emissions that are not present in their raw materials or products and are excluded from the TAPs emissions estimations for the facility. A reproduction of this explanation is included in the application package as Appendix E Future Potential Toxic Air Pollutant Emissions. These same TAPs are excluded from analysis in this PTC application.

P4 estimated the toxic air pollutants (TAPs) associated with the coke materials based on the chemical assays of the various cokes used at the Soda Springs facility. For each TAP contained in the coke, the highest concentration of each individual TAP contained in the assays was used to calculate the maximum possible emissions of that TAP from the point and fugitive emission units in the Coke Screens Project. This is a conservative approach that overestimates the potential TAP emissions from the project. The TAP emissions determinations are included in Appendix C.

4.0 *COMPLIANCE WITH AMBIENT AIR CONCENTRATIONS*

Air quality modeling analyses were performed to assess the ambient air quality impact of the proposed project. The dispersion modeling analysis included atmospheric dispersion modeling using a U.S. EPA-approved model to simulate the downwind transport and predicted off-site concentrations of PM_{10} and $PM_{2.5}$. In addition, any toxic air pollutants (TAPs) were modeled if their potential to emit exceeds the IDAPA screening emission levels (EL) as described in Idaho Administrative Procedure Act (IDAPA) 35.01.01.585. The emission rates and stack parameters modeled are provided as Table 4-1.

The maximum predicted 24-hour average concentration for PM_{10} is 3.25 $\mu g/m^3$. The maximum predicted 24-hour average concentration for $PM_{2.5}$ is 0.932 $\mu g/m^3$. The maximum predicted annual average concentration for $PM_{2.5}$ is 0.133 $\mu g/m^3$. Since these concentrations are below the applicable SCL and SIL, additional dispersion modeling is not required.

The maximum predicted annual average arsenic concentration is 0.00000184 $\mu g/m^3$. This shows compliance with the annual arsenic AAC of 0.000232 $\mu g/m^3$.

A complete air quality impact analysis of compliance with particulate and TAP ambient concentration requirements associated with the change in particulate emissions resulting from the change in coke screens is included in Appendix D.

Table 4-1
Maximum Uncontrolled TAP Emissions Rates

Point Sources

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (ft)	Temperature (°F)	Exit Velocity (fps)	Stack Diameter (ft)	PM10 (lb/hr)	PM2.5 (lb/hr)	ARSENIC (lb/hr)
305	Scaleroom BH	451866.3	4726326.5	1827.8	18.3	300	76.69	4.00	0.64	0.64	2.70E-06
307	Coke Screen BH	451869.3	4726326.5	1827.8	18.3	321	60.14	3.20	0.75	0.75	4.57E-06

Area Sources

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (ft)	Easterly Length (ft)	Northerly Length (m)	Angle from North	Vertical Dimension (m)	PM10 (lb/hr)	PM2.5 (lb/hr)	ARSENIC (lb/hr)
FUGITIVE	Coke Screens Fugitives	451855.3	4726348.48	1827.79	40	26.25	--	--	--	0.3785	0.0247	1.89E-06

APPENDIX A

DEQ Forms for Permit to Construct a Modification

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Cover Sheet for Air Permit Application – Permit to Construct **Form CSPTC**

Please see instructions on page 2 before filling out the form.

COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER

1. Company Name	P4 Production, LLC		
2. Facility Name	P4 Production, LLC.	3. Facility ID No.	029-00001
4. Brief Project Description - One sentence or less	Improvements to the coke screening and blending equipment, including replacement of the existing inclined coke screen with two new horizontal screens.		

PERMIT APPLICATION TYPE

5. ☐ New Source ☐ New Source at Existing Facility ☒ PTC for a Tier I Source Processed Pursuant to IDAPA 58.01.01.209.05.c
☐ Unpermitted Existing Source ☐ Facility Emissions Cap ☐ Modify Existing Source: Permit No.: P-030316 Date Issued: 11-1-2010
☐ Required by Enforcement Action: Case No.:____

6. ☒ Minor PTC ☐ Major PTC

FORMS INCLUDED

Included	N/A	Forms		DEQ Verify
☒	☐	Form CSPTC – Cover Sheet		☐
☒	☐	Form GI – Facility Information		☐
☒	☐	Form EU0 – Emissions Units General		☐
☐	☐	Form EU1– Industrial Engine Information	Please specify number of EU1s attached: ____	☐
☐	☐	Form EU2– Nonmetallic Mineral Processing Plants	Please specify number of EU2s attached: ____	☐
☐	☐	Form EU3– Spray Paint Booth Information	Please specify number of EU3s attached: ____	☐
☐	☐	Form EU4– Cooling Tower Information	Please specify number of EU3s attached: ____	☐
☐	☐	Form EU5 – Boiler Information	Please specify number of EU4s attached: ____	☐
☐	☐	Form CBP– Concrete Batch Plant	Please specify number of CBPs attached: ____	☐
☐	☐	Form HMAP – Hot Mix Asphalt Plant	Please specify number of HMAPs attached: ____	☐
☐	☐	PERF – Portable Equipment Relocation Form		☐
☐	☐	Form AO – Afterburner/Oxidizer		☐
☐	☐	Form CA – Carbon Adsorber		☐
☐	☐	Form CYS – Cyclone Separator		☐
☐	☐	Form ESP – Electrostatic Precipitator		☐
☒	☐	Form BCE– Baghouses Control Equipment		☐
☐	☐	Form SCE– Scrubbers Control Equipment		☐
☐	☐	Form VSCE – Venturi Scrubber Control Equipment		☐
☐	☐	Form CAM – Compliance Assurance Monitoring		☐
☐	☐	Forms EI— Emissions Inventory		☐
☒	☐	PP – Plot Plan		☐
☒	☐	Forms MI1 – MI4 – Modeling	(Excel workbook, all 4 worksheets)	☐
☒	☐	Form FRA – Federal Regulation Applicability		☐

Instructions for Form CSPTC

This form is the cover sheet for an air quality permit application. It provides DEQ with basic information regarding the company and the proposed permitting action. This form helps DEQ efficiently determine whether the application is administratively complete. This form also provides the applicant with a list of forms available to aid the applicant to successfully submit a complete application.

Company Name, Facility Name, and Facility ID Number

1-3. Provide the name of your company, the name of the facility (if different than company name), and the facility identification (ID) number (Facility ID No.) in the boxes provided. The facility ID number is also known as the AIRS number or AIRS/AFS number (example: 095-00077). If you already have a permit, the facility ID number is located in the upper right hand corner of the cover page. The facility ID number must be provided unless your facility has not received one, in which case you may leave this box empty. **Use these same names and ID number on all forms**. This is useful in case any pages of the application are separated.

4. Provide a brief description of this permitting project in one sentence or less. Examples might be "Install/construct a new boiler" or "Increase the allowable process throughput." **This description will be used by DEQ as a unique identifier for this permitting project, in conjunction with the name(s) and ID number referenced in 1-3.** You will need to put this description, using the exact same words, on all other forms that are part of this project application. This is useful in case any pages of the application are separated.

Permit Application Type

5. Provide the reason you are submitting the permit application by checking the appropriate box (e.g., a new facility being constructed, a new source being constructed at an existing facility, an unpermitted existing source (as-built) applying for a permit for the first time, a permitted source to be modified, or the permit application is the result of an enforcement action, in which case provide the case number). If you are modifying an existing permitted source, provide the number and issue date of the most recent permit.

   If this PTC is for a Tier I source issued pursuant to the procedures contained at IDAPA 58.01.01.209.05.c, the source or modification may operate upon submittal of a Tier I Administrative Amendment issued pursuant to IDAPA 58.01.01.381.

6. Indicate if the application is a minor permit to construct application or a major permit to construct application by checking the appropriate box (e.g., major PTC or minor PTC). If the permit to construct application is for a major new source or major modification, you must ensure that all necessary information required by IDAPA 58.01.01.202, and .204, or .205, as applicable, is provided.

Forms Included

Check the "Included" box for each form included in this permit to construct application. If there are multiples of a form for multiple units of that type, check the box and fill in the number of forms in the blank provided.

The "N/A" box should only be checked if the form is absolutely unnecessary to complete the application. Additional information may be requested.

Application Fee

All applicants for a PTC shall submit a PTC application fee of $1000.00 to DEQ <u>at the time of the original submission of the application</u> as required by IDAPA 58.01.01.224. An application fee is not required for exemption applicability determinations, typographical errors, and name or ownership changes. An application fee can be paid by check, credit card, or Electronic Funds Transfer (EFT). If you choose to pay by credit card or EFT, call DEQs Fiscal Office to complete the necessary paperwork. Paper checks must be submitted with the original application as described below.

Submit Application

When complete, enclose a check for the application fee along with the hardcopy application certified by a responsible official (as defined in IDAPA 58.01.01.006.94), and send to:

Air Quality Program Office – Application Processing
Department of Environmental Quality
1410 N. Hilton
Boise, ID 83706-1255

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

General Information **Form GI**
Revision 7
2/18/10

Please see instructions on page 2 before filling out the form.

All information is required. If information is missing, the application will not be processed.

IDENTIFICATION

1. Company Name	2. Facility Name:
P4 Production, LLC	P4 Production, LLC

3. Brief Project Description:	Improvements to the coke screening and blending equipment, including replacement of the existing inclined coke screen with two new horizontal screens.

FACILITY INFORMATION

4. Primary Facility Permit Contact Person/Title	James McCulloch		Environmental Engineer	
5. Telephone Number and Email Address	(208) 547-1233			
6. Alternate Facility Contact Person/Title	Sheldon D. Alver		Plant Manager	
7. Telephone Number and Email Address	(208) 547-1318			
8. Address to Which the Permit Should be Sent	P.O. Box 816			
9. City/County/State/Zip Code	Soda Springs	Caribou	ID	83276
10. Equipment Location Address (if different than the mailing address above)				
11. City/County/State/Zip Code				
12. Is the Equipment Portable?	☐ Yes ☒ No			
13. SIC Code(s) and NAICS Code	Primary SIC: 2819	Secondary SIC:	NAICS: 325188	
14. Brief Business Description and Principal Product	Elemental phosphorus manufacturing facility			
15. Indentify any adjacent or contiguous facility that this company owns and/or operates				
16. Specify the reason for the application	☒ Permit to Construct (PTC) For Tier I permitted facilities only: If you are applying for a PTC then you must also specify how the PTC will be incorporated into the Tier I permit. ☐ Incorporate the PTC at the time of the Tier I renewal ☐ Co-process the Tier I modification and PTC ☒ Administratively amend the Tier I permit to incorporate the PTC upon your request (IDAPA 58.01.01.209.05.a, b, or c) ☐ Tier I Permit ☐ Tier II Permit ☐ Tier II/Permit to Construct			

CERTIFICATION

In accordance with **IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I** certify based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

17. Responsible Official's Name/Title	Sheldon D. Alver	Plant Manager	
18. Responsible Official Address	1853 Highway 34		
19. Responsible Official Telephone Number	(208) 547-1318		
20. Responsible Official Email Address	Sheldon.d.alver@monsanto.com		
21. Responsible Official's Signature	Allegra Bell for Sheldon Alver	Date:	8/24/12

22. ☒ Check here to indicate that you would like to review the draft permit prior to final issuance.

Instructions for Form GI

This form is used by DEQ to identify a company or facility, equipment locations, and personnel involved with the permit application. Additional information may be requested.

1 – 3. Please fill in the same company name, facility name (if different), and brief project description as on Form CS. This is useful in case any pages of the application are separated.

4. Name of the primary person who should be contacted regarding this permit.

5. Telephone number and e-mail address of person listed in 4.

6. Name of the person who should be contacted if the person listed in 4 is not available.

7. Telephone number and e-mail address of person listed in 6.

8 - 9. Address to which DEQ should mail the permit.

10 – 11. Physical address at which the equipment is located (if different than 9).

12. If the equipment is portable (such as an asphalt plant), identify by marking "yes." If there are other locations where you know the portable equipment will be used, attach a Portable Equipment Relocation Form (PERF) to list those locations. An electronic copy of the PERF can be obtained from the DEQ website at http://www.deq.idaho.gov/media/576773-ptc_relocation.pdf or http://www.deq.idaho.gov/media/576769-ptc_relocation.doc (for Word format).
Important note: In addition to being submitted with this PTC application, a PERF must also be completed and filed at DEQ at least 10 days in advance of relocating any of the equipment covered in this application.

13. Provide the Standard Industrial Classification (SIC) code and the North American Industry Classification System (NAICS) code for your plant. NAICS codes can be found at http://www.census.gov/epcd/naics02/naicod02.htm. If a secondary SIC code is applicable, provide it also.

14. Describe the primary activity and principal product of your business as it relates to the SIC code or NAISC code listed in line 13.

15. Please indicate if there are any other branches or divisions of this company located on adjacent or contiguous properties.

16. Check the box which describes the type of permit application.

For existing Tier I facilities that are applying for a PTC the applicant must specify how the PTC will be incorporated to the Tier I permit (IDAPA 58.01.01.209.05; Call the Air Permit Hotline if you have questions 1-877-573-7648).

17 – 21. Provide the name, title, telephone number, email address of the facilities responsible official. Responsible official is defined in IDAPA 58.01.01.006.94. The Responsible official must sign and date the application before it is submitted to DEQ.

22. If you would like to review a draft before the final permit is issued, check this box.

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
P4 Production, LLC	P4 Production, LLC	029-00001

4. Brief Project Description: See form CSPTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	EAST COKE SCREEN
6.	EU ID Number:	
7.	EU Type:	☐ New Source ☐ Unpermitted Existing Source ☒ Modification to a Permitted Source -- Previous Permit #:P-030316 Date Issued: 11-1-2010
8.	Manufacturer:	W.S. TYLER
9.	Model:	F-1100, 6' X 20' 2D
10..	Maximum Capacity:	65 TONS/HR
11.	Date of Construction:	EXISTING SCREEN CONSTRUCTED ON 02/1997
12.	Date of Modification (if any):	PROJECTED CONSTRUCTION ON 10/2013
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	307 coke screens baghouse
15. Date of Installation:	10/1977 16. Date of Modification (if any):
17. Manufacturer and Model Number:	FLEX-KLEEN CORP, Model 100MW660 (III) and Model 100WMW300 (III)
18. ID(s) of Emission Unit Controlled:	See Table EU0-1
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☒ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	99	99	0	0	0	0

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	24 HOURS/DAY, 7008 HOURS/YEAR
23.	Maximum Operation:	24 HOURS/DAY, 8760 HOURS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☐ Operation Hour Limit(s):	
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	LIMIT BAGHOUSE EMISSIONS TO 0.0031 GR/DSCF
25.	Rationale for Requesting the Limit(s):	BASED ON STACK TEST AND RECONFIGURED SCF/M

Instructions for Form EU0

This form provides DEQ with information about an emissions unit. An emissions unit is the equipment or process that generates emissions of regulated air pollutant(s). This form is used by the permit writer to become familiar with the emissions unit (EU). This form is also used by DEQ to identify the control equipment and the emission point (stack or vent) used for the emission unit(s) proposed in this permit application. This form also asks for supporting documents to verify stated control efficiencies and details about the emission point. Additional information may be requested.

1 - 4. Provide the same company name, facility name (if different), facility ID number, and brief project description as on Form CS in the boxes provided. This is useful in case any pages of the application get separated.

5. Provide the name of the emissions unit (EU), such as "Union boiler," etc. A separate EU0 form is required for each emissions unit.

6. Provide the identification (ID) number of the EU. It can be any unique identifier you choose; however, this ID number should be unique to this EU and should be used consistently throughout this application and any other air quality permit application(s) (e.g., operating permit application) to identify this EU.

7. Indicate the type of EU by checking the appropriate box (e.g., a new source to be constructed, an unpermitted existing source (as-built) applying for the first time, or an existing permitted source to be modified). If the EU is being modified, indicate on the form the most recent permit issued for the EU.

8. Provide the manufacturer's name for the EU. If the EU is custom-designed or homemade, indicate so.

9. Provide the model number of the EU. If the EU is custom-designed or homemade, indicate so.

10. Provide the maximum capacity of the EU. For example, a boiler's rated capacity may be modified in units of MMBtu/hr in terms of heat input of natural gas; an assembly line capacity may be in parts produced per day. Capacity should be based on a rated nameplate or as stated in the manufacturer's literature.

11. The date of construction is the month, day, and year in which construction or modification was commenced.

Definitions:

Construction fabrication, erection, or installation of an affected facility.

Commenced an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

Modification any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted to the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) to the atmosphere not previously emitted.

12. If the EU has been or will be modified, provide the month, day, and year of the most recent or future modification as defined in IDAPA 58.01.01.006.

13. Indicate if emissions from the EU are controlled by air pollution control equipment. If the answer is yes, complete the next section. If the answer is no, go to line 18.

14. Provide the name of the air pollution control equipment (e.g., wet scrubber) and the control equipment's identification number. This identification number should be unique to this air pollution control equipment and should be used consistently throughout this and all other air quality permit applications (e.g., operating permit application) to identify this air pollution control equipment.

15. Provide the date the air pollution control equipment was installed.

16. If the air pollution control equipment has been modified, provide the date of the modification.

17. Provide the name of the manufacturer and the model number for the air pollution control equipment.

18. If this air pollution control equipment controls emissions from more than this EU, provide the identification number(s) of the other EU(s).

19. Indicate if this air pollution control equipment operates on a schedule different from the EU(s) it controls.

20. Indicate if the air pollution control manufacturer guarantees the control efficiency of the control equipment. If the answer is yes, attach the manufacturer's guarantee and label it with the air pollution control equipment identification number. Indicate the control efficiency for the target pollutant(s).

21. If the control efficiency of the air pollution control equipment is not guaranteed, attach the design specifications and any performance data to support the control efficiency stated in part 16. Label the supporting documentation with the air pollution control equipment identification number.

22. Provide the projected actual operating schedule for the emission unit in hours/day, hours/year, or other.

23. Provide the maximum operating schedule for the emission unit in hours/day, hours/year, or other.

24. If you are requesting to have limits placed on this EU, mark "Yes." Then, check the applicable requested limit(s) and provide the limit(s). For example, production limits may be in terms of parts produced per year, material usage limits may be in gallons per day.

25. Please provide the reason you are requesting limits, if any. This helps DEQ and the applicant determine whether the limits are necessary, and if they will accomplish the desired purpose. Provide supporting documentation (calculations, modeling assessment, regulatory review, etc.) for each limit requested.

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Emissions Unit - General **Form EU0**
Revision 4
08/28/08

Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name:	2. Facility Name:	3. Facility ID No:
P4 Production, LLC	P4 Production, LLC	029-00001

4. Brief Project Description: See form CSPTC

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

5.	Emissions Unit (EU) Name:	**WEST COKE SCREEN**
6.	EU ID Number:	
7.	EU Type:	☐ New Source ☐ Unpermitted Existing Source ☒ Modification to a Permitted Source -- Previous Permit #:P-030316 Date Issued: 11-1-2010
8.	Manufacturer:	**W.S. TYLER**
9.	Model:	**F-1100, 6' X 20' 2D**
10..	Maximum Capacity:	**65 TONS/HR**
11.	Date of Construction:	**EXISTING SCREEN CONSTRUCTED ON 02/1997**
12.	Date of Modification (if any):	**PROJECTED CONSTRUCTION ON 10/2013**
13.	Is this a Controlled Emission Unit?	☐ No ☒ Yes If Yes, complete the following section. If No, go to line 22.

EMISSIONS CONTROL EQUIPMENT

14. Control Equipment Name and ID:	307 coke screens baghouse
15. Date of Installation:	10/1977 16. Date of Modification (if any):
17. Manufacturer and Model Number:	FLEX-KLEEN CORP, Model 100MW660 (III) and Model 100WMW300 (III)
18. ID(s) of Emission Unit Controlled:	See Table EU0-2
19. Is operating schedule different than emission units(s) involved?	☐ Yes ☒ No
20. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☒ No (If Yes, attach and label manufacturer guarantee)

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	99	99	0	0	0	0

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

22.	Actual Operation:	24 HOURS/DAY, 7008 HOURS/YEAR
23.	Maximum Operation:	24 HOURS/DAY, 8760 HOURS/YEAR

REQUESTED LIMITS

24.	Are you requesting any permit limits?	☒ Yes ☐ No (If Yes, indicate all that apply below)
	☐ Operation Hour Limit(s):	
	☐ Production Limit(s):	
	☐ Material Usage Limit(s):	
	☐ Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
	☒ Other:	LIMIT OF 0.0031 GR/DSCF FROM BAGHOUSE
25.	Rationale for Requesting the Limit(s):	BASED ON STACK TEST AND RECONFIGURED SCF/M

Instructions for Form EU0

This form provides DEQ with information about an emissions unit. An emissions unit is the equipment or process that generates emissions of regulated air pollutant(s). This form is used by the permit writer to become familiar with the emissions unit (EU). This form is also used by DEQ to identify the control equipment and the emission point (stack or vent) used for the emission unit(s) proposed in this permit application. This form also asks for supporting documents to verify stated control efficiencies and details about the emission point. Additional information may be requested.

1 - 4. Provide the same company name, facility name (if different), facility ID number, and brief project description as on Form CS in the boxes provided. This is useful in case any pages of the application get separated.

5. Provide the name of the emissions unit (EU), such as "Union boiler," etc. A separate EU0 form is required for each emissions unit.

6. Provide the identification (ID) number of the EU. It can be any unique identifier you choose; however, this ID number should be unique to this EU and should be used consistently throughout this application and any other air quality permit application(s) (e.g., operating permit application) to identify this EU.

7. Indicate the type of EU by checking the appropriate box (e.g., a new source to be constructed, an unpermitted existing source (as-built) applying for the first time, or an existing permitted source to be modified). If the EU is being modified, indicate on the form the most recent permit issued for the EU.

8. Provide the manufacturer's name for the EU. If the EU is custom-designed or homemade, indicate so.

9. Provide the model number of the EU. If the EU is custom-designed or homemade, indicate so.

10. Provide the maximum capacity of the EU. For example, a boiler's rated capacity may be modified in units of MMBtu/hr in terms of heat input of natural gas; an assembly line capacity may be in parts produced per day. Capacity should be based on a rated nameplate or as stated in the manufacturer's literature.

11. The date of construction is the month, day, and year in which construction or modification was commenced.

Definitions:

Construction fabrication, erection, or installation of an affected facility.

Commenced an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

Modification any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted to the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) to the atmosphere not previously emitted.

12. If the EU has been or will be modified, provide the month, day, and year of the most recent or future modification as defined in IDAPA 58.01.01.006.

13. Indicate if emissions from the EU are controlled by air pollution control equipment. If the answer is yes, complete the next section. If the answer is no, go to line 18.

14. Provide the name of the air pollution control equipment (e.g., wet scrubber) and the control equipment's identification number. This identification number should be unique to this air pollution control equipment and should be used consistently throughout this and all other air quality permit applications (e.g., operating permit application) to identify this air pollution control equipment.

15. Provide the date the air pollution control equipment was installed.

16. If the air pollution control equipment has been modified, provide the date of the modification.

17. Provide the name of the manufacturer and the model number for the air pollution control equipment.

18. If this air pollution control equipment controls emissions from more than this EU, provide the identification number(s) of the other EU(s).

19. Indicate if this air pollution control equipment operates on a schedule different from the EU(s) it controls.

20. Indicate if the air pollution control manufacturer guarantees the control efficiency of the control equipment. If the answer is yes, attach the manufacturer's guarantee and label it with the air pollution control equipment identification number. Indicate the control efficiency for the target pollutant(s).

21. If the control efficiency of the air pollution control equipment is not guaranteed, attach the design specifications and any performance data to support the control efficiency stated in part 16. Label the supporting documentation with the air pollution control equipment identification number.

22. Provide the projected actual operating schedule for the emission unit in hours/day, hours/year, or other.

23. Provide the maximum operating schedule for the emission unit in hours/day, hours/year, or other.

24. If you are requesting to have limits placed on this EU, mark "Yes." Then, check the applicable requested limit(s) and provide the limit(s). For example, production limits may be in terms of parts produced per year, material usage limits may be in gallons per day.

25. Please provide the reason you are requesting limits, if any. This helps DEQ and the applicant determine whether the limits are necessary, and if they will accomplish the desired purpose. Provide supporting documentation (calculations, modeling assessment, regulatory review, etc.) for each limit requested.

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Baghouse Control Equipment **Form BCE**
Revision 6
2/18/10

Complete this form for each baghouse. Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name	2. Facility Name:
P4 Production, LLC	P4 Production, LLC

3. Brief Project Description: Improvements to the coke screening and blending equipment, including replacement of the existing inclined coke screen with two new horizontal screens

BAGHOUSE INFORMATION

4. Baghouse Manufacturer: FLEX-KLEEN CORP	5. Baghouse Model: 100MW660 (III)	6. Baghouse Equipment ID: 305 Scaleroom Baghouse

7 (a). Baghouse particulate matter emission concentration. **Note: Provide information in 7(a)-(c) or answer question #8 below.**	0.00148 gr/dscf	*Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration.* ***Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required.*** *If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.*
7 (b). Percentage PM_{10} Or Provide PM_{10} Emission Concentration	_____ % 0.00148* gr/dscf	*What percentage of the PM concentration listed in question #7(a) is PM_{10}. You must provide documentation as to how the percentage was determined (i.e per the baghouse manufacturer). Without documentation the application is not complete.*
7 (c). Baghouse flow rate	57,800 dscfm	*Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm* ***if it is documented*** *that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.*
8. Baghouse particulate matter control efficiency. **Note: Not needed if section #7 is completed.**	_____ % PM control _____ % PM_{10} control	*Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM_{10}. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.*
9. Is the baghouse equipped with a bag leak detector?	☐ Yes ☒ No	*If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.*

Instructions for Form BCE

1 – 3. Provide the same company name, facility name, and brief project description as on the application cover sheet Form CS**. This is useful if application pages are separated.

USE ATTACHMENT IF ADDITIONAL SPACE IS REQUIRED.

Baghouse Information:

4-5. Provide the baghouse manufacturer name and the model number.

6. Provide an identification number for the baghouse stack. This number is assigned by the applicant and must be provided on any other application materials which are submitted that include baghouse information.

7-9. Follow the instructions in the form. All documentation provided must be sufficient so that DEQ can verify the validity of the information provided. Provide the Baghouse Equipment ID number on all submitted documentation. If documentation is not provided the application is incomplete.

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Baghouse Control Equipment **Form BCE**
Revision 6
2/18/10

Complete this form for each baghouse. Please see instructions on page 2 before filling out the form.

IDENTIFICATION

1. Company Name	2. Facility Name:
P4 Production, LLC	P4 Production, LLC

3. Brief Project Description: Improvements to the coke screening and blending equipment, including replacement of the existing inclined coke screen with two new horizontal screens

BAGHOUSE INFORMATION

4. Baghouse Manufacturer: FLEX-KLEEN CORP	5. Baghouse Model: 100WMW300 (III)	6. Baghouse Equipment ID: 307 Coke Screen Baghouse

7 (a). Baghouse particulate matter emission concentration. **Note: Provide information in 7(a)-(c) or answer question #8 below.**	0.00465 gr/dscf	*Manufacturers typically provide guarantees in grains per dry standard cubic foot (gr/dscf). Provide a copy of the guarantee, or other documentation, with the application along with a description of the types of bags that must be used to achieve the emission concentration.* ***Emission concentrations less than 0.01 gr/dscf will receive additional scrutiny by DEQ and a source test of the baghouse may be required.*** *If a guarantee is not provided then you must document how you obtained the emission concentration. Without documentation the application is not complete.*
7 (b). Percentage PM_{10} Or Provide PM_{10} Emission Concentration	_____ % 0.00465* gr/dscf	*What percentage of the PM concentration listed in question #7(a) is PM_{10}. You must provide documentation as to how the percentage was determined (i.e per the baghouse manufacturer). Without documentation the application is not complete.*
7 (c). Baghouse flow rate	29,000 dscfm	*Provide the baghouse flow rate in dry standard cubic feet per minute. Actual cubic feet per minute may be given in lieu of dscfm* ***if it is documented*** *that moisture content is insignificant. You must provide documentation as to how this flow rate was determined (i.e. per the exhaust fan manufacturer, combustion evaluation, etc.). Without documentation the application is not complete.*
8. Baghouse particulate matter control efficiency. **Note: Not needed if section #7 is completed.**	_____ % PM control _____ % PM_{10} control	*Applicant's providing the control efficiency of the baghouse must provide control efficiency for both PM and PM_{10}. Provide a copy of the control efficiency documentation with the application. Documentation must include a description of the types of bags that must be used to achieve the control efficiency. Without documentation the application is not complete.*
9. Is the baghouse equipped with a bag leak detector?	☐ Yes ☒ No	*If a bag leak detector is installed provide documentation on the leak detector, including; how the leak detector functions and what level of the output signal indicates that a bag is leaking. Without documentation the application is not complete.*

Instructions for Form BCE

1 – 3. Provide the same company name, facility name, and brief project description as on the application cover sheet Form CS**. This is useful if application pages are separated.

USE ATTACHMENT IF ADDITIONAL SPACE IS REQUIRED.

Baghouse Information:

4-5. Provide the baghouse manufacturer name and the model number.

6. Provide an identification number for the baghouse stack. This number is assigned by the applicant and must be provided on any other application materials which are submitted that include baghouse information.

7-9. Follow the instructions in the form. All documentation provided must be sufficient so that DEQ can verify the validity of the information provided. Provide the Baghouse Equipment ID number on all submitted documentation. If documentation is not provided the application is incomplete.

DEQ AIR QUALITY PROGRAM
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Air Permit Hotline – 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 2
02/14/07

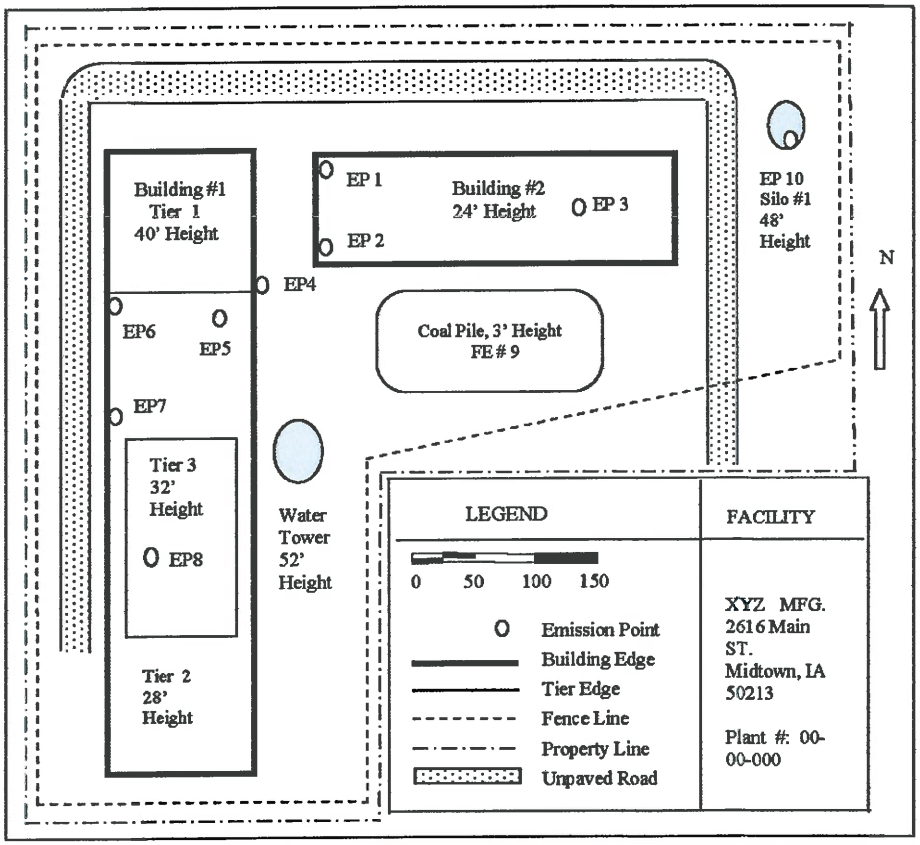
PLOT PLAN REQUIREMENTS

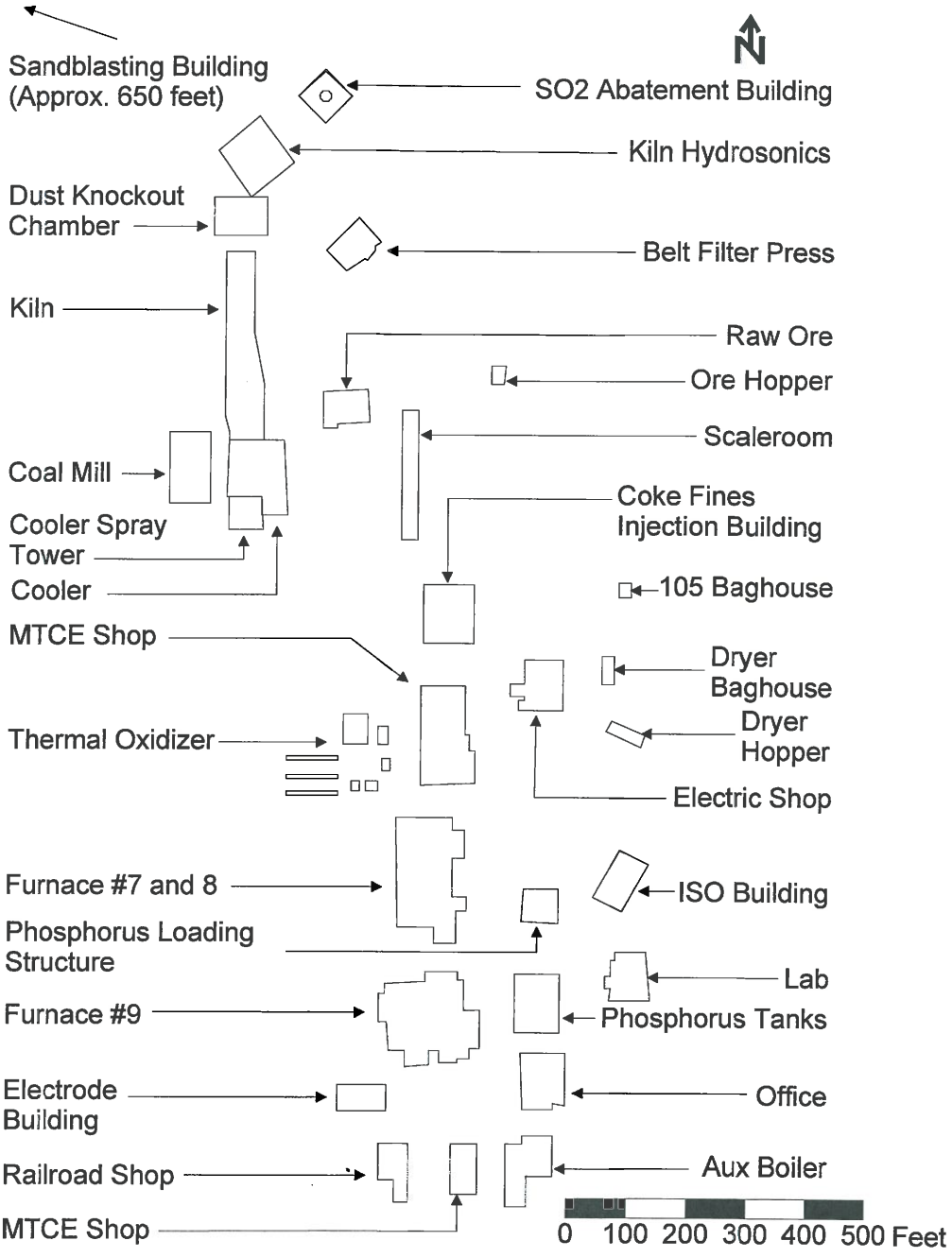
A scaled plot plan of the entire plant is required with your permit application. The plot plan must show:

1. A scale bar and a north arrow. The scale must be of sufficient size to allow drawings to be converted to electronic format.
2. Property lines.
3. If any, fence lines or any physical barriers precluding the public access.
4. Locations of all buildings **within the property lines**. Locations of tiers on multi-level buildings. Include the building and structure heights, and tier heights. A description of the buildings or structures is optional.
5. Locations of **ALL** emission points. Emission point symbols need not be to scale.
6. Locations of all structures **above ground level** and **within property lines**. Structures **above ground level** such as a gasoline storage tank, grain storage silos, etc., must be shown. Structures **at ground level,** such as concrete pads, paved parking lots, etc., should **not** be on the plot plan.
7. Locations of unpaved roads (need not be to scale) and area sources, such as coal piles must be shown, only if fugitive emissions must be included in the permit application.
8. Highlight or mark the emission point that is the subject of this permit application so that it is clearly distinguished from other emission points or labels on the plot plan.

- **All buildings and structures above ground level and all emission points must be marked with identification numbers, which MUST be consistent with all forms in the application.**
- AutoCAD or equivalent computer-aid drawings on paper and on disk are preferred.
- Sketches are acceptable.
- Aerial photographs are not acceptable.

SAMPLE PLOT PLAN





P4 Production, LLC Soda Springs Facility Plot Plan

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline - 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
4/5/2007

Please see instructions on page 2 before filling out the form.

Company Name:	P4 Production, LLC
Facility Name:	P4 Production, LLC
Facility ID No.:	029-00001
Brief Project Description:	See Form CSPTC

SUMMARY OF AIR IMPACT ANALYSIS RESULTS - CRITERIA POLLUTANTS

		1.		2.	3.	4.		5.
Criteria Pollutants	**Averaging Period**	**Significant Impact Analysis Results (µg/m3)**	**Significant Contribution Level (µg/m3)**	**Full Impact Analysis Results (µg/m3)**	**Background Concentration (µg/m3)**	**Total Ambient Impact (µg/m3)**	**NAAQS (µg/m3)**	**Percent of NAAQS**
$PM_{2.5}$	24-hour	0.93	1.2				35	
	Annual	0.13	0.3				17	
PM_{10}	24-hour	3.22	5				150	
	Annual		1				50	
SO_2	3-hr		25				1300	
	24-hr		5				365	
	Annual		1				80	
NO_2	Annual		1				100	
CO	1-hr		2000				10000	
	8-hr		500				40000	

Instructions for Form MI1

This form is designed to provide the air quality modeler with a summary of the air impact analysis results for the criteria pollutants. This information will be used by IDEQ to determine compliance demonstration with the national ambient air quality standards (NAAQS).

Please fill in the same company name, facility name, facility ID number, and brief project description as on Form CS in the boxes provided. This is useful in case any pages of the application get separated.

Significant Impact Analysis - Evaluates the emissions increase from the proposed project only. This analysis determines whether or not a proposed project has a significant impact on ambient air, and therefore, requires a full impact analysis.

Full Impact Analysis - Only required if the significant impact analysis exceeds the significant contribution level - evaluates the emissions from the facility, including the emissions increase from the proposed project. This analysis determines whether the facility, with the emissions increase, complies with the NAAQS.

1. Provide the results of the significant impact analysis in $\mu g/m^3$.
2. Provide the results of the full impact analysis in $\mu g/m^3$ (if required).
3. List the background concentration in mg/m3. Contact the Stationary Source Modeling Coordinator at (208) 373-0502 for the current background concentrations for the area of interest. (Not needed if full impact analysis is not required.)
4. Provide the total ambient impact in mg/m3. The total ambient impact is the sum of the background concentration and the full impact analysis result.
5. Calculate the percent of the NAAQS that the total ambient impact analysis represents.

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline - 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION
Revision 3
3/27/2007

Please see instructions on page 2 before filling out the form.

Company Name:	P4 Production, LLC
Facility Name:	P4 Production, LLC
Facility ID No.:	029-00001
Brief Project Description:	See Form CSPTC

POINT SOURCE STACK PARAMETERS

1.	2.	3a.	3b.	4.	5.	6.	7.	8.	9.	10.
Emissions units	**Stack ID**	**UTM Easting (m)**	**UTM Northing (m)**	**Base Elevation (m)**	**Stack Height (m)**	**Modeled Diameter (m)**	**Stack Exit Temperature (K)**	**Stack Exit Flowrate (acfm)**	**Stack Exit Velocity (m/s)**	**Stack orientation (e.g., horizontal, rain cap)**
Point Source(s)										
Scaleroom BH	305	451,866.3	4,726,326.5	1,828	5.58	1.22	422.00	57,800	23.37	up, unobstructed
Coke Screen BH	307	451,869.3	4,726,326.5	1,827.79	5.58	0.98	433.71	29,000	18.33	up, unobstructed
(insert more rows as needed)										

Instructions for Form MI2

This form is designed to provide the air quality modeler with information on the stack characteristics of each point source located at the facility. This information may be used by the IDEQ to perform an air quality analysis or to review an air quality analysis submitted with the permit application or requested by the IDEQ.

Please fill in the same company name, facility name, facility ID number, and brief project description as on Form CS in the boxes provided. This is useful in case any pages of the application get separated.

1. Provide the name of the emission unit. This name should match names on other submittals to IDEQ and within this application.
2. Provide the identification number for the stack which the emission unit exits.
3. Provide the UTM locations for each point source. The UTM Easting and UTM Northing are the coordinates for the center of the point source.
4. Provide the elevation of the base of the stack. This elevation must be calculated by the same method as the buildings and receptor elevation.
5. Provide the height of the stack, from the ground.
6. Provide the stack diameter that is included in the modeling analysis. Refer to the State of Idaho Modeling Guideline for guidance on developing the appropriate diameter.
7. Provide the stack exit temperature. Include documentation and justification for the exit temperature used.
8. Provide the stack exit flowrate. Include documentation and justification for the exit flowrate used.
9. Provide the stack exit velocity. Include documentation and justification for the exit velocity used.
10. Provide the orientation of the stack (horizontal or vertical). Indicate whether there is an obstruction on the stack, such as a raincap.

DEQ AIR QUALITY PROGRAM
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PERMIT TO CONSTRUCT APPLICATION

Revision 3
4/5/2007

Please see instructions on page 2 before filling out the form.

Company Name:	P4 Production, LLC
Facility Name:	P4 Production, LLC
Facility ID No.:	029-00001
Brief Project Description:	See Form CSPTC

FUGITIVE SOURCE PARAMETERS

1.	2.	3a.	3b.	4.	5.	6.	7.	8.	9.	10.
Emissions units	**Stack ID**	**UTM Easting (m)**	**UTM Northing (m)**	**Base Elevation (m)**	**Release Height (m)**	**Easterly Length (m)**	**Northerly Length (m)**	**Angle from North (°)**	**Initial Vertical Dimension (m)**	**Initial Horizontal Dimension (m)**
Area Source(s)										
Coke Screens Fugitives	FUG	451,855.30	4,726,348.48	1,827.79	12.19	8.00	--	--	--	--
Volume Source(s)										
NONE										
(insert more rows as needed)										

Instructions for Form MI3

This form is designed to provide the air quality modeler with information on the characteristics of each fugitive source located at the facility. This information may be used by the IDEQ to perform an air quality analysis or to review an air quality analysis submitted with the permit application or requested by the IDEQ.

Please fill in the same company name, facility name, facility ID number, and brief project description as on Form CS in the boxes provided. This is useful in case any pages of the application get separated.

Fugitive sources are typically modeled as either area or volume sources. Area sources are used to model fugitives from sources such as roads or parking lots, while volume sources are typically used to model fugitives from piles. Refer to the State of Idaho Air Quality Modeling Guideline for additional guidance on modeling fugitive sources.

1. Provide the name of the fugitive source. This name should match names used on other submittals to IDEQ and within this application.
2. Provide the identification number for the fugitive source.
3. Provide the UTM locations of the fugitive source. The UTM Easting and UTM Northing are the coordinates for the center of the fugitive source.
4. Provide the elevation of the base of the fugitive source. This elevation must be calculated by the same method as the buildings and receptor elevation.
5. Provide the height of the fugitive source, from the ground. This is used for an elevated release. If the fugitive source is at ground level enter zero.
6. Provide the easterly length of the fugitive source.
7. Provide the northly length of the fugitive source.
8. Provide the angle from north, in degrees. This allows for accurate evaluation of the alignment of the fugitive source.
9. Provide the initial vertical dimension of the fugitive source. Refer to the State of Idaho Modeling Guideline for guidance on estimating this value.
10. Provide the initial horizontal dimension of the fugitive source. This parameter is only used for volume sources. Refer to the State of Idaho Modeling Guideline for guidance on estimating this value.

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PERMIT TO CONSTRUCT APPLICATION

Revision 3
4/5/2007

Please see instructions on page 2 before filling out the form.

Company Name:	P4 Production, LLC
Facility Name:	P4 Production, LLC
Facility ID No.:	029-00001
Brief Project Description:	See Form CSPTC

BUILDING AND STRUCTURE INFORMATION

1.	2.	3.	4.	5.	6.	7.
Building ID Number	**Length (ft)**	**Width (ft)**	**Base Elevation (m)**	**Building Height (m)**	**Number of Tiers**	**Description/Comments**
Building 1 ID	Please see attached table titled "P4 Coke Screens Modeling - Building and Structures"					
Building 2 ID						
Building 3 ID						
(insert more rows as needed)						

This form is designed to provide the air quality modeler with information on the buildings and structures located at the facility. This information may be used by the IDEQ to perform an air quality analysis or to review an air quality analysis submitted with the permit application or requested by the IDEQ.

Please fill in the same company name, facility name, facility ID number, and brief project description in the boxes provided. This is useful in case any pages of the application get separated.

1. Provide the building ID number.
2. Provide the length of the building.
3. Provide the width of the building.
4. Provide the base elevation of the building. This elevation must be calculated by the same method as the sources and receptor elevation.
5. Provide the height of the building, from the ground.
6. Provide the number of tiers on the building. Refer to the State of Idaho Modeling Guideline for guidance on this topic.
7. Provide a description of the building.

P4 Coke Screens Modeling - Building and Structures

	Building Name	Number of Tiers	Tier Number	Comment	Base Elevation	Tier Height	Number of Corners	Corner 1 East (X)	Corner 1 North (Y)	Corner 2 East (X)	Corner 2 North (Y)	Corner 3 East (X)	Corner 3 North (Y)
					(m)	(m)		(m)	(m)	(m)	(m)	(m)	(m)
HYDRO-1	HYDRO	1	1	Hydrosonics	1826.92	9.45	4	451764.3	4726510.5	451784.3	4726527.5	451801.3	4726504.5
DKC-1	DKC	1	1	Dust Knockout Chamber	1826.92	9.45	4	451762.3	4726487.5	451788.3	4726487.5	451788.3	4726468.5
COOLER-1	COOLER	1	1	Cooler	1827.18	12.2	6	451770.3	4726367.5	451797.3	4726367.5	451799.3	4726330.5
CST-1	CST	1	1	Cooler Spray Tower	1826.96	36	4	451770.3	4726339.5	451770.3	4726323.5	451787.3	4726323.5
CM-1	CM	1	1	Coal Mill	1827.05	20.12	4	451741.3	4726336.5	451741.3	4726371.5	451761.3	4726371.5
RO-1	RO	1	1	Raw Ore	1827.15	15.2	6	451816.3	4726391.5	451838.3	4726392.5	451839.3	4726376.5
OH-1	OH	1	1	Ore Hopper	1827.09	7.92	4	451905.3	4726395.5	451899.3	4726395.5	451899.3	4726404.5
SR-1	SR	1	1	ScaleRoom	1827.17	16.15	4	451855.3	4726382.5	451855.3	4726318.5	451863.3	4726318.5
105BH-1	105BH	1	1	105 Baghouse	1827.36	10.97	4	451962.3	4726297.5	451968.3	4726297.5	451968.3	4726290.5
DB-1	DB	1	1	Dryer Baghouse	1828.24	6.71	4	451954.3	4726261.5	451960.3	4726261.5	451960.3	4726247.5
DH-1	DH	1	1	Dryer Hopper	1828.52	6.71	4	451956.3	4726224.5	451959.3	4726229.5	451975.3	4726222.5
IB-1	IB	1	1	Iso Building	1829.76	9.75	4	451973.0906	4726143.081	451959.0906	4726150.081	451972.0906	4726173.081
OFF-1	OFF	1	1	Office	1827.22	6.1	6	451915.3	4726065.5	451937.3	4726065.5	451937.3	4726039.5
MTC-1	MTC	1	1	MTC Shop	1826.75	6.1	4	451881.3	4726020.5	451894.3	4726020.5	451894.3	4725995.5
RR-1	RR	1	1	RR Shop	1826.73	6.1	6	451845.3	4726020.5	451860.3	4726020.5	451860.3	4725991.5
EB-1	EB	1	1	Electrode Building	1827.03	6.1	4	451825.3055	4726040.997	451849.3055	4726040.997	451849.3055	4726053.997
PT-1	PT	1	1	Phosphorus Tanks	1827.74	9.45	4	451912.3	4726104.5	451934.3	4726104.5	451934.3	4726075.5
PHLD-1	PHLD	1	1	Phophourus Loading	1828.49	6.1	4	451916.3	4726146.5	451933.3	4726146.5	451933.3	4726129.5
DCS-1	DCS	1	1	Dry Coke Storage	1828.49	15.2	4	451866.3	4726267.5	451891.3	4726267.5	451891.3	4726296.5
TSC3-1	TSC3	1	1	To Scrubber 3	1826.77	15.2	4	451799.3	4726211.5	451824.3	4726211.5	451824.3	4726209.5
TSC2-1	TSC2	1	1	To Scrubber 2	1826.74	15.2	4	451799.3	4726202.5	451824.3	4726202.5	451824.3	4726200.5
TSC1-1	TSC1	1	1	To Scrubber 1	1826.96	15.2	4	451799.3	4726194.5	451824.3	4726194.5	451824.3	4726192.5
TOAC-1	TOAC	1	1	To Air Compressor	1827.12	7.6	4	451827.3	4726232.5	451839.3	4726232.5	451839.3	4726217.5
TODC-1	TODC	1	1	To Dust Collector	1827.55	7.6	4	451844.3	4726226.5	451849.3	4726226.5	451849.3	4726217.5
TPHTRP-1	TPHTRP	1	1	To Phosphate Trap	1827.72	6.1	4	451846.3	4726210.5	451850.3	4726210.5	451850.3	4726204.5
TQNCH-1	TQNCH	1	1	To Quench	1827.28	30.5	4	451831.3	4726199.5	451835.3	4726199.5	451835.3	4726194.5
TO-1	TO	1	1	Thermal Oxidizer	1827.47	30.5	4	451838.3	4726199.5	451844.3	4726199.5	451844.3	4726194.5
SAS-1	SAS	2	1	SO2 Abatement Structure	1827.01	12.19	4	451826.62	4726558.29	451812.13	4726549.36	451803	4726566.03
SBB-1	SBB	1	1	Sand Blasting Building	1823.9	9.144	4	451444.2	4726609.6	451462.4	4726609.6	451462.4	4726597.4

P4 Coke Screens Modeling - Building and Structures Continued

	Building Name	Number of Tiers	Tier Number	Comment	Corner 4 East (X) (m)	Corner 4 North (Y) (m)	Corner 5 East (X) (m)	Corner 5 North (Y) (m)	Corner 6 East (X) (m)	Corner 6 North (Y) (m)
HYDRO-1	HYDRO	1	1	Hydrosonics	451780.3	4726487.5				
DKC-1	DKC	1	1	Dust Knockout Chamber	451762.3	4726468.5				
COOLER-1	COOLER	1	1	Cooler	451786.3	4726330.5	451786.3	4726339.5	451769.3	4726339.5
CST-1	CST	1	1	Cooler Spray Tower	451786.3	4726339.5				
CM-1	CM	1	1	Coal Mill	451761.3	4726336.5				
RO-1	RO	1	1	Raw Ore	451823.3	4726375.5	451823.3	4726373.5	451816.3	4726373.5
OH-1	OH	1	1	Ore Hopper	451906.3	4726404.5				
SR-1	SR	1	1	ScaleRoom	451863.3	4726382.5				
105BH-1	105BH	1	1	105 Baghouse	451962.3	4726290.5				
DB-1	DB	1	1	Dryer Baghouse	451954.3	4726247.5				
DH-1	DH	1	1	Dryer Hopper	451973.3	4726216.5				
IB-1	IB	1	1	Iso Building	451986.0906	4726166.081				
OFF-1	OFF	1	1	Office	451931.3	4726040.5	451931.3	4726037.5	451916.3	4726037.5
MTC-1	MTC	1	1	MTC Shop	451881.3	4725995.5				
RR-1	RR	1	1	RR Shop	451853.3	4725991.5	451853.3	4726002.5	451845.3	4726002.5
EB-1	EB	1	1	Electrode Building	451825.3055	4726053.997				
PT-1	PT	1	1	Phosphorus Tanks	451912.3	4726075.5				
PHLD-1	PHLD	1	1	Phophourus Loading	451915.3	4726130.5				
DCS-1	DCS	1	1	Dry Coke Storage	451866.3	4726296.5				
TSC3-1	TSC3	1	1	To Scrubber 3	451799.3	4726209.5				
TSC2-1	TSC2	1	1	To Scrubber 2	451799.3	4726200.5				
TSC1-1	TSC1	1	1	To Scrubber 1	451799.3	4726192.5				
TOAC-1	TOAC	1	1	To Air Compressor	451827.3	4726217.5				
TODC-1	TODC	1	1	To Dust Collector	451844.3	4726217.5				
TPHTRP-1	TPHTRP	1	1	To Phosphate Trap	451846.3	4726204.5				
TQNCH-1	TQNCH	1	1	To Quench	451831.3	4726194.5				
TO-1	TO	1	1	Thermal Oxidizer	451838.3	4726194.5				
SAS-1	SAS	2	1	SO2 Abatement Structure	451817.69	4726574.36				
SBB-1	SBB	1	1	Sand Blasting Building	451444.2	4726597.4				

P4 Coke Screens Modeling - Building and Structures Continued

	Building Name	Number of Tiers	Tier Number	Comment	Base Elevation (m)	Tier Height (m)	Number of Corners	Corner 1 East (X) (m)	Corner 1 North (Y) (m)	Corner 2 East (X) (m)	Corner 2 North (Y) (m)	Corner 3 East (X) (m)
BFP-1	BFP	1	1	Belt Filter Press	1826.94	8.22	8	451833.3	4726477.5	451844.3	4726465.5	451841.3
KILN-1	KILN	1	1	Kiln	1826.92	13.41	8	451768.3	4726460.5	451782.3	4726460.5	451782.3
ES-1	ES	1	1	Electric Shop	1829.73	7.6	10	451916.3	4726259.5	451916.3	4726247.5	451909.3
MTNE-1	MTNE	1	1	MTNE Shop	1828.48	6.1	8	451865.3	4726246.5	451865.3	4726197.5	451892.3
AB-1	AB	1	1	Auxiliary Boiler	1826.08	6.1	8	451908.3	4725989.5	451908.3	4726020.5	451916.3
L-1	L	1	1	Laboratory	1829	4.88	10	451959.3	4726111.5	451961.3	4726111.5	451961.3
F78-1	F78	1	1	Furnace 7-8	1826.9	40.5	24	451858.3	4726058.5	451870.3	4726059.5	451870.3
F9-1	F9	1	1	Furnace 9	1828.84	48.8	14	451881.3	4726181.5	451881.3	4726175.5	451887.3
SAS-2	SAS	*	2	*	*	24.99	32	451814.8086	4726560.99	451814.3086	4726560.89	451813.8086

	Building Name	Number of Tiers	Tier Number	Comment	Corner 4 East (X) (m)	Corner 4 North (Y) (m)	Corner 5 East (X) (m)	Corner 5 North (Y) (m)	Corner 6 East (X) (m)	Corner 6 North (Y) (m)	Corner 7 East (X) (m)	Corner 7 North (Y) (m)
BFP-1	BFP	1	1	Belt Filter Press	451841.3	4726461.5	451837.3	4726456.5	451836.3	4726457.5	451827.3	4726451.5
KILN-1	KILN	1	1	Kiln	451787.3	4726395.5	451787.3	4726367.5	451770.3	4726367.5	451770.3	4726371.5
ES-1	ES	1	1	Electric Shop	451909.3	4726241.5	451916.3	4726241.5	451916.3	4726239.5	451913.3	4726239.5
MTNE-1	MTNE	1	1	MTNE Shop	451892.3	4726214.5	451889.3	4726214.5	451889.3	4726222.5	451887.3	4726222.5
AB-1	AB	1	1	Auxiliary Boiler	451916.3	4726024.5	451931.3	4726024.5	451931.3	4726004.5	451918.3	4726004.5
L-1	L	1	1	Laboratory	451976.3	4726115.5	451978.3	4726091.5	451958.3	4726091.5	451959.3	4726097.5
F78-1	F78	1	1	Furnace 7-8	451875.3	4726066.5	451875.3	4726060.5	451884.3	4726060.5	451884.3	4726062.5
F9-1	F9	1	1	Furnace 9	451887.3	4726161.5	451881.3	4726161.5	451881.3	4726142.5	451888.3	4726142.5
SAS-2	SAS	*	2	*	451813.4086	4726560.39	451813.0086	4726559.99	451812.7086	4726559.59	451812.5086	4726559.09

	Building Name	Number of Tiers	Tier Number	Comment	Corner 8 East (X) (m)	Corner 8 North (Y) (m)	Corner 9 East (X) (m)	Corner 9 North (Y) (m)	Corner 10 East (X) (m)	Corner 10 North (Y) (m)	Corner 11 East (X) (m)	Corner 11 North (Y) (m)
BFP-1	BFP	1	1	Belt Filter Press	451817.3	4726461.5						
KILN-1	KILN	1	1	Kiln	451768.3	4726379.5						
ES-1	ES	1	1	Electric Shop	451913.3	4726234.5	451935.3	4726234.5	451935.3	4726259.5		
MTNE-1	MTNE	1	1	MTNE Shop	451887.3	4726246.5						
AB-1	AB	1	1	Auxiliary Boiler	451918.3	4725989.5						
L-1	L	1	1	Laboratory	451956.3	4726097.5	451956.3	4726103.5	451959.3	4726103.5		
F78-1	F78	1	1	Furnace 7-8	451890.3	4726062.5	451890.3	4726067.5	451895.3	4726067.5	451895.3	4726086.5
F9-1	F9	1	1	Furnace 9	451888.3	4726135.5	451883.3	4726135.5	451883.3	4726119.5	451872.3	4726119.5
SAS-2	SAS	*	2	*	451812.4086	4726558.59	451812.4086	4726557.99	451812.5086	4726557.49	451812.7086	4726556.99

	Building Name	Number of Tiers	Tier Number	Comment	Corner 12 East (X) (m)	Corner 12 North (Y) (m)	Corner 13 East (X) (m)	Corner 13 North (Y) (m)	Corner 14 East (X) (m)	Corner 14 North (Y) (m)	Corner 15 East (X) (m)	Corner 15 North (Y) (m)
BFP-1	BFP	1	1	Belt Filter Press								
KILN-1	KILN	1	1	Kiln								
ES-1	ES	1	1	Electric Shop								
MTNE-1	MTNE	1	1	MTNE Shop								
AB-1	AB	1	1	Auxiliary Boiler								
L-1	L	1	1	Laboratory								
F78-1	F78	1	1	Furnace 7-8	451887.3	4726086.5	451887.3	4726101.5	451884.3	4726101.5	451884.3	4726105.5
F9-1	F9	1	1	Furnace 9	451872.3	4726127.5	451854.3	4726127.5	451853.3	4726181.5		
SAS-2	SAS	*	2	*	451813.0086	4726556.59	451813.4086	4726556.19	451813.8086	4726555.89	451814.3086	4726555.69

P4 Coke Screens Modeling - Building and Structures Continued

	Building Name	Number of Tiers	Tier Number	Comment	Corner 16 East (X) (m)	Corner 16 North (Y) (m)	Corner 17 East (X) (m)	Corner 17 North (Y) (m)	Corner 18 East (X) (m)	Corner 18 North (Y) (m)	Corner 19 East (X) (m)	Corner 19 North (Y) (m)
BFP-1	BFP	1	1	Belt Filter Press								
KILN-1	KILN	1	1	Kiln								
ES-1	ES	1	1	Electric Shop								
MTNE-1	MTNE	1	1	MTNE Shop								
AB-1	AB	1	1	Auxiliary Boiler								
L-1	L	1	1	Laboratory								
F78-1	F78	1	1	Furnace 7-8	451868.3	4726105.5	451868.3	4726100.5	451848.3	4726099.5	451848.3	4726094.5
F9-1	F9	1	1	Furnace 9								
SAS-2	SAS	*	2	*	451814.8086	4726555.59	451815.4086	4726555.59	451815.9086	4726555.69	451816.4086	4726555.89

	Building Name	Number of Tiers	Tier Number	Comment	Corner 20 East (X) (m)	Corner 20 North (Y) (m)	Corner 21 East (X) (m)	Corner 21 North (Y) (m)	Corner 22 East (X) (m)	Corner 22 North (Y) (m)	Corner 23 East (X) (m)	Corner 23 North (Y) (m)
BFP-1	BFP	1	1	Belt Filter Press								
KILN-1	KILN	1	1	Kiln								
ES-1	ES	1	1	Electric Shop								
MTNE-1	MTNE	1	1	MTNE Shop								
AB-1	AB	1	1	Auxiliary Boiler								
L-1	L	1	1	Laboratory								
F78-1	F78	1	1	Furnace 7-8	451845.3	4726094.5	451845.3	4726080.5	451849.3	4726080.5	451850.3	4726066.5
F9-1	F9	1	1	Furnace 9								
SAS-2	SAS	*	2	*	451816.8086	4726556.19	451817.2086	4726556.59	451817.5086	4726556.99	451817.7086	4726557.49

	Building Name	Number of Tiers	Tier Number	Comment	Corner 24 East (X) (m)	Corner 24 North (Y) (m)	Corner 25 East (X) (m)	Corner 25 North (Y) (m)	Corner 26 East (X) (m)	Corner 26 North (Y) (m)	Corner 27 East (X) (m)	Corner 27 North (Y) (m)
BFP-1	BFP	1	1	Belt Filter Press								
KILN-1	KILN	1	1	Kiln								
ES-1	ES	1	1	Electric Shop								
MTNE-1	MTNE	1	1	MTNE Shop								
AB-1	AB	1	1	Auxiliary Boiler								
L-1	L	1	1	Laboratory								
F78-1	F78	1	1	Furnace 7-8	451858.3	4726066.5						
F9-1	F9	1	1	Furnace 9								
SAS-2	SAS	*	2	*	451817.8086	4726557.99	451817.8086	4726558.59	451817.7086	4726559.09	451817.5086	4726559.59

	Building Name	Number of Tiers	Tier Number	Comment	Corner 28 East (X) (m)	Corner 28 North (Y) (m)	Corner 29 East (X) (m)	Corner 29 North (Y) (m)	Corner 30 East (X) (m)	Corner 30 North (Y) (m)	Corner 31 East (X) (m)	Corner 31 North (Y) (m)	Corner 32 East (X) (m)	Corner 32 North (Y) (m)
BFP-1	BFP	1	1	Belt Filter Press										
KILN-1	KILN	1	1	Kiln										
ES-1	ES	1	1	Electric Shop										
MTNE-1	MTNE	1	1	MTNE Shop										
AB-1	AB	1	1	Auxiliary Boiler										
L-1	L	1	1	Laboratory										
F78-1	F78	1	1	Furnace 7-8										
F9-1	F9	1	1	Furnace 9										
SAS-2	SAS	*	2	*	451817.2086	4726560.09	451816.8086	4726560.39	451816.3086	4726560.69	451815.9086	4726560.89	451815.4086	4726560.99

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

AIR PERMIT APPLICATION

Revision 6
10/7/09

For each box in the table below, CTRL+click on the blue underlined text for instructions and information.

IDENTIFICATION	
1. Company Name: P4 Production, LLC	2. Facility Name: P4 Production, LLC
3. Brief Project Description:	Improvements to the coke screening and blending equipment, including replacement of the existing inclined coke screen with two new horizontal screens.

APPLICABILITY DETERMINATION	
4. List applicable subparts of the New Source Performance Standards (NSPS) (40 CFR part 60). Examples of NSPS affected emissions units include internal combustion engines, boilers, turbines, etc. The applicant must thoroughly review the list of affected emissions units.	List of applicable subpart(s): ☑ Not Applicable
5. List applicable subpart(s) of the National Emission Standards for Hazardous Air Pollutants (NESHAP) found in 40 CFR part 61 and 40 CFR part 63. Examples of affected emission units include solvent cleaning operations, industrial cooling towers, paint stripping and miscellaneous surface coating. EPA has a web page dedicated to NESHAP that should be useful to applicants.	List of applicable subpart(s): ☑ Not Applicable
6. For each subpart identified above, conduct a complete a regulatory analysis using the instructions and referencing the example provided on the following pages. **Note** - Regulatory reviews must be submitted with sufficient detail so that DEQ can verify applicability and document in legal terms why the regulation applies. Regulatory reviews that are submitted with insufficient detail will be determined incomplete.	☐ A detailed regulatory review is provided (Follow instructions and example). ☐ DEQ has already been provided a detailed regulatory review. Give a reference to the document including the date.

IF YOU ARE UNSURE HOW TO ANSWER ANY OF THESE QUESTIONS, CALL THE AIR PERMIT HOTLINE AT 1-877-5PERMIT

It is emphasized that it is the applicant's responsibility to satisfy all technical and regulatory requirements, and that DEQ will help the applicant understand what those requirements are prior to the application being submitted but that DEQ will not perform the required technical or regulatory analysis on the applicant's behalf.

Instructions for Form FRA

Item 4 & 5. It is important that facilities review the most recent federal regulations when submitting their permit application to DEQ. Current federal regulations can be found at the following Web site: http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?&c=ecfr&tpl=/ecfrbrowse/Title40/40tab_02.tpl.

Item 6. For each applicable subpart identified under items 4-5 conduct a complete regulatory analysis. The facility must follow the procedure given below or obtain permission from DEQ to provide the necessary information using an alternative procedure:

1. Retrieve a TEXT or PDF copy of the applicable federal regulation subpart(s) online at http://www.gpoaccess.gov/cfr/retrieve.html

2. Copy and paste the regulation(s) into your DEQ air permit application.

3. Highlight or underline sections in the regulation(s) that are applicable to the source(s).

4. Under each section of the subpart, explain why the source is subject to the section, or why the source is not subject to the section. When providing the explanation use a different font than the regulation (i.e. ***bold, italic***) so that it is easy for the reader to determine the text that the applicant has provided. An example NSPS regulatory analysis is attached. The applicant must provide all necessary information needed to determine applicability. If information is lacking or the analysis is incomplete the application will be determined incomplete.

   EPA provides a web site dedicated to NSPS/NESHAP applicability determinations that may be useful to applicants. Follow this link to the applicability determination index Clean Air Act Applicability Determination Index - Compliance Monitoring - EPA. Another useful source of information is the preamble to the regulation which is published in the Federal Register on the date the regulation was promulgated. Federal Registers may be found online at Federal Register: Main Page. The date the regulation was published in the Federal Register is included in the footnotes of the regulation.

5. DEQ will assist in identifying the applicable requirements that the applicant must include in the application but will not perform the required technical or regulatory analysis on the applicant's behalf. Applicants should contact the Air Quality Permit Hotline (1-877-573-7648) to discuss NSPS/NESHAP regulatory analysis requirements or to schedule a meeting.

6. It also benefits facilities to document a non-applicability determination on federal air regulations which appear to apply to the facility but actually do not. A non-applicability determination will avoid future confusion and expedite the air permit application review. If you conduct an applicability determination and find that your activity is not NSPS or NESHAP affected facility an analysis should be submitted using the methods described above.

7. **It is not sufficient to simply provide a copy of the NSPS or NESHAP. The applicant must address each section of the regulation as described above and as shown in the example that is provided.**

EXAMPLE OF A NSPS REGULATORY ANALYSIS

[Title 40, Volume 6]
[Revised as of July 1, 2008]
From the U.S. Government Printing Office via GPO Access
[CITE: 40CFR60]

TITLE 40--PROTECTION OF ENVIRONMENT

CHAPTER I--ENVIRONMENTAL PROTECTION AGENCY (CONTINUED)

PART 60_STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES--
Table of Contents

Subpart H_Standards of Performance for Sulfuric Acid Plants

Sec.60.80 Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to each sulfuric acid production unit, which is the affected facility.
(b) Any facility under paragraph (a) of this section that commences construction or modification after August 17, 1971, is subject to the requirements of this subpart.

ACME Chemicals, Inc. is proposing to construct after August 17, 1971 a sulfuric acid plant which burns elemental sulfur as defined by 40 CFR 60.81(a). ACME is therefore affected by this subpart.

(Be sure to use the terms of the regulation to describe applicability; usually applicability is determined based on a specific date, definition of an affected facility, and rated input capacity. All of the applicability criteria must be addressed by the applicant.)

Note – if a determination of non-applicability is being submitted it is not necessary to address the remaining non-applicable regulatory sections. Be sure to provide the applicability determination in terms of the regulation (i.e. construction/modification date, rated input capacity, definition of affected facility).

Sec.60.81 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.
(a) Sulfuric acid production unit means any facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans, or acid sludge, but does not include facilities where conversion to sulfuric acid is utilized primarily as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.
(b) Acid mist means sulfuric acid mist, as measured by Method 8 of appendix A to this part or an equivalent or alternative method.

ACME Chemicals, Inc. has read and understands these definitions and used them in providing this regulatory analysis.

Sec.60.82 Standard for sulfur dioxide.

(a) On and after the date on which the performance test required to be conducted by Sec.60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of 2 kg per metric ton of acid produced (4 lb per ton), the production being expressed as 100 percent H2/SO4/.

ACME Chemicals, Inc. is subject to this standard and has provided a documented emission inventory (or manufacturer guarantee) which shows compliance.

Sec.60.83 Standard for acid mist.

(a) On and after the date on which the performance test required to be conducted by Sec.60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any affected facility any gases which:

(1) Contain acid mist, expressed as H2/SO4/, in excess of 0.075 kg per metric ton of acid produced (0.15 lb per ton), the production being expressed as 100 percent H2/SO4/.

ACME Chemicals, Inc. is subject to this standard and has provided a documented emission inventory (or manufacturer guarantee) which shows compliance.

(2) Exhibit 10 percent opacity, or greater.

ACME Chemicals, Inc. understands that this will become a permit condition and has supplied a manufacturer guarantee that the sulfuric acid plant will comply with this standard.

Sec.60.84 Emission monitoring.

(a) A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated by the owner or operator. The pollutant gas used to prepare calibration gas mixtures under Performance Specification 2 and for calibration checks under Sec.60.13(d), shall be sulfur dioxide (SO2/). Method 8 shall be used for conducting monitoring system performance evaluations under Sec.60.13(c) except that only the sulfur dioxide portion of the Method 8 results shall be used. The span value shall be set at 1000 ppm of sulfur dioxide.

(b) The owner or operator shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods (e.g., the Reich test, National Air Pollution Control Administration Publication No. 999-AP-13) and calculating the appropriate conversion factor for each eight-hour period as follows:

$CF=k[(1.000-0.015r)/(r-s)]$

where:

CF=conversion factor (kg/metric ton per ppm, lb/ton per ppm).
k=constant derived from material balance. For determining CF in metric units, k=0.0653. For determining CF in English units, k=0.1306.
r=percentage of sulfur dioxide by volume entering the gas converter. Appropriate corrections must be made for air injection plants subject to the Administrator's approval.
s=percentage of sulfur dioxide by volume in the emissions to the atmosphere determined by the continuous monitoring system required under paragraph (a) of this section.

(c) The owner or operator shall record all conversion factors and values under paragraph (b) of this section from which they were computed (i.e., CF, r, and s).

ACME Chemicals, Inc. is not proposing to utilize Sections 60.84(a)-(c)listed above to monitor emissions. Instead ACME Chemicals is utilizing 40 CFR 60.84(d) listed below to monitor emissions of sulfur dioxide.

(d) Alternatively, a source that processes elemental sulfur or an ore that contains elemental sulfur and uses air to supply oxygen may use the following continuous emission monitoring approach and calculation procedures in determining SO2/ emission rates in terms of the standard. This procedure is not required, but is an alternative that would alleviate problems encountered in the measurement of gas velocities or production rate. Continuous emission monitoring systems for measuring SO2/, O2/, and CO2/ (if required) shall be installed, calibrated, maintained, and operated by the owner or operator and subjected to the certification procedures in Performance Specifications 2 and 3. The calibration procedure and span value for the SO2/ monitor shall be as specified in paragraph (b) of this section. The span value for CO2/ (if required) shall be 10 percent and for O2/ shall be 20.9 percent (air). A conversion factor based on process rate data is not necessary. Calculate the SO2/ emission rate as follows:

Es/=(Cs/ S)/[0.265-(0.126 %O2/)-(A %CO2/)]

where:

Es/=emission rate of SO2/, kg/metric ton (lb/ton) of 100 percent of H2/SO4/ produced.
Cs/=concentration of SO2/, kg/dscm (lb/dscf).
S=acid production rate factor, 368 dscm/metric ton (11,800 dscf/ton) of 100 percent H2/SO4/ produced.
%O2/=oxygen concentration, percent dry basis.
A=auxiliary fuel factor,
=0.00 for no fuel.
=0.0226 for methane.
=0.0217 for natural gas.
=0.0196 for propane.
=0.0172 for No 2 oil.
=0.0161 for No 6 oil.
=0.0148 for coal.
=0.0126 for coke.
%CO2/= carbon dioxide concentration, percent dry basis.

Note: It is necessary in some cases to convert measured concentration units to other units for these calculations:

Use the following table for such conversions:

From--	To--	Multiply by--
g/scm.....	kg/scm.....	10-3
mg/scm.....	kg/scm.....	10-6
ppm (SO2).....	kg/scm.....	2.660x10-6
ppm (SO2).....	lb/scf.....	1.660x10-7

ACME Chemicals, Inc. has elected to use the monitoring requirements of the preceding section.

(e) For the purpose of reports under Sec.60.7(c), periods of excess emissions shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under Sec.60.82.

ACME acknowledges that this section applies to the sulfuric acid plant.

Sec.60.85 Test methods and procedures.

(a) In conducting the performance tests required in Sec.60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in Sec.60.8(b). Acceptable alternative methods and procedures are given in paragraph (c) of this section.

(b) The owner or operator shall determine compliance with the SO2/ acid mist, and visible emission standards in Sec. Sec. 60.82 and 60.83 as follows:

(1) The emission rate (E) of acid mist or SO2/ shall be computed for each run using the following equation:

E=(CQsd/)/(PK)

where:

E=emission rate of acid mist or SO2/ kg/metric ton (lb/ton) of 100 percent H2/SO4/ produced.
C=concentration of acid mist or SO2/, g/dscm (lb/dscf).
Qsd/=volumetric flow rate of the effluent gas, dscm/hr (dscf/hr).
P=production rate of 100 percent H2/SO4/, metric ton/hr (ton/hr).
K=conversion factor, 1000 g/kg (1.0 lb/lb).

(2) Method 8 shall be used to determine the acid mist and SO2/ concentrations (C's) and the volumetric flow rate (Qsd/) of the effluent gas. The moisture content may be considered to be zero. The sampling time and sample volume for each run shall be at least 60 minutes and 1.15 dscm (40.6 dscf).

(3) Suitable methods shall be used to determine the production rate (P) of 100 percent H2/SO4/ for each run. Material balance over the production system shall be used to confirm the production rate.

(4) Method 9 and the procedures in Sec.60.11 shall be used to determine opacity.

(c) The owner or operator may use the following as alternatives to

the reference methods and procedures specified in this section:

(1) If a source processes elemental sulfur or an ore that contains elemental sulfur and uses air to supply oxygen, the following procedure may be used instead of determining the volumetric flow rate and production rate:

(i) The integrated technique of Method 3 is used to determine the O2/ concentration and, if required, CO2/ concentration.

(ii) The SO2/ or acid mist emission rate is calculated as described in Sec.60.84(d), substituting the acid mist concentration for Cs/ as appropriate.

ACME Chemicals, Inc. acknowledges that performance tests shall be conducted as specified above.

APPENDIX B

Particulate Emissions Calculations

Coke Screens Project Particulate Emissions Summary

PSD Assessment - Associated Emissions Increase of PM, PM-10, and PM-2.5 Due to Project

Emission Type	PM-10 EMISSIONS Pre-Project Actual Emissions (ton/year)	PM-10 EMISSIONS Post-Project (PTE) Emissions (ton/year)		PM-2.5 EMISSIONS Pre-Project Actual Emissions (ton/year)	PM-2.5 EMISSIONS Post-Project (PTE) Emissions (ton/year)		PM (TSP) EMISSIONS Pre-Project Actual Emissions (ton/year)	PM (TSP) EMISSIONS Post-Project (PTE) Emissions (ton/year)	
Point Source	1.42	7.78		1.42	7.78		1.42	7.78	
Fugitive Source	8.28	9.93		1.28	1.38		17.50	21.00	
Recovered Production Emissions[1]	NA	2.98		NA	2.78		NA	2.99	
Total emissions:	**9.69**	**20.70**		**2.69**	**11.95**		**18.91**	**31.78**	
	Pre	**Post**	**Compare to Threshold**	**Pre**	**Post**	**Compare to Threshold**	**Pre**	**Post**	**Compare to Threshold**
Threshold:			**15**			**10**			**25**
EMISSIONS Increase (TPY)]	**9.69**	**20.70**	**11.01**	**2.69**	**11.95**	**9.26**	**18.91**	**31.78**	**12.86**

Note 1: Recovered Production Emissions determined on separate spreadsheet by increasing production rates at units that benefit from the Coke Screens Project

Particulate Emissions from Recovered Production Due to the Coke Screens Project

Reference ID	Process Area	Emission Source	Difference (ton/year) PM2.5	PM10	TSP	CO	NOx	SO2	VOC	Pb	CO2e	Comments
101.1	Coke Bunker Baghouse	Coke Bunker Baghouse Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	No longer use the bunker. Still controls Vactor truck dump station
102	Vactor Truck Vent - Coke Bunker BH Unloading	Vactor Truck Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Base on increase of throughput of 0.79% increase for each Vactor Truck. Increase in hours is a smaller %, so this is conservative. Consolidate all Vactor Truck Vent units together as is done on the base spreadsheet.
108.4	Dryer BH	Dryer Baghouse Stack	2.93E-02	2.93E-02	2.93E-02	5.19E-02	7.34E-01	1.95E-03	1.88E-02	0.00E+00	8.80E+02	Combustion - CO2e emissions increase assumed proportional to NOx emissions based on AP-42 emission factors
109	Vactor Truck Vent - Dryer BH Unloading	Vactor Truck Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
112.1	105 Baghouse	105 Baghouse Stack	1.35E-03	1.35E-03	1.35E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
116	Vactor Truck Vent - 105 BH Unloading	Vactor Truck Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
119.1	Coke Handling Baghouse (C&Q)	Coke Handling Baghouse Stack	8.16E-03	8.16E-03	8.16E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
121	Vactor Truck Vent - C&Q BH Unloading	Vactor Truck Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
134.2	Bulk Storage Bin Baghouse (Coke Fines BH)	Bulk Storage Bin Baghouse Stack	8.65E-06	8.65E-06	8.65E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
202.1	104 Baghouse	104 Baghouse Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	No change to nodule production
310	Kiln Hydrosonics	Kiln Hydrosonics Stacks (4)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	No change to nodule production
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
314	Cooler Spray Tower	Cooler Spray Tower Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	No change to nodule production
403	Nodule Reclaim Baghouse	Nodule Reclaim Baghouse Stack	1.34E-01	1.34E-01	1.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
409	Nodule Crushing and Screening Scrubber	Nodule Crushing and Screening Scrubber Stack	1.29E+00	1.44E+00	1.44E+00	0.00E+00	0.00E+00	5.36E+00	0.00E+00	1.55E-03	0.00E+00	
429	SDM Bin Vent	SDM Bin Vent Stack	1.63E-01	1.63E-01	1.63E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
501	Scaleroom Baghouse	Scaleroom Baghouse Stack	1.45E-01	1.45E-01	1.45E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
523	Vactor Truck Vent - Scaleroom BH Unloading	Vactor Truck Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
523.1	Furnace Scaleroom	Scaleroom Vacuum System Exhaust	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
523.2	Vactor Truck Vent - Scaleroom Vacuum System	Vactor Truck Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
524	Main Furnace Baghouse	Main Furnace Baghouse Stack	3.70E-02	3.70E-02	3.70E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
530.2	Vactor Truck Vent - Main Stocking BH Unloading	Vactor Truck Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
544	No. 7 CO Dust Baghouse	No. 7 CO Dust Baghouse Stack	8.17E-03	8.17E-03	8.17E-03	8.27E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
544.1	#7 CO Dust Collection Bypass	#7 CO Dust Collection Bypass Stack	2.93E-05	3.90E-05	8.26E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
545	#7 Vent	#7 Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	No change
545.1	#7 Explosion Seal Vent	#7 Explosion Seal Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Post CS Project will result in fewer venting events. Leave this at zero to represent the conservative estimate of 1 hour of venting annually.
546	#7 THFC	#7 THFC Stack	3.38E-01	3.56E-01	3.56E-01	2.32E-01	8.30E-01	7.73E-01	0.00E+00	0.00E+00	2.32E-04	
554	#304 Coke Fines Bin Vent	#304 Coke Fines Bin Vent Stack	3.00E-04	4.28E-04	4.28E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
555	#305 Coke Fines Bin Vent	#305 Coke Fines Bin Vent Stack	7.01E-04	1.00E-03	1.00E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
557	#7 Natural Gas Burner	Treater Heat Vent	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ESP takes off gas from furnace and removes PM like a control device.
559.1	#7 Phos Collection Tank Explosion Seal	#7 Phos Collection Tank Explosion Seal Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Already assumed at 8760
560, 584	#7 & #8 CO Flare	#7 & #8 CO Flare Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
568	No. 8 CO Dust Baghouse	No. 8 CO Dust Baghouse Stack	1.71E-02	1.71E-02	1.71E-02	3.03E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Already at 8760 hrs/yr
568.1	#8 CO Dust Collection Bypass	#8 CO Dust Collection Bypass Stack	1.58E-03	2.11E-03	4.46E-03	3.52E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
569	#8 Vent	#8 Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
569.1	#8 Explosion Seal Vent	#8 Explosion Seal Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Post CS Project will result in fewer venting events. Leave this at zero to represent the conservative estimate of 1 hour of venting annually.
570	#8 THFC	#8 THFC Stack	2.94E-01	3.10E-01	3.10E-01	2.16E-01	8.30E-01	7.77E-01	0.00E+00	0.00E+00	2.16E-04	
578	#306 Coke Fines Bin Vent	#306 Coke Fines Bin Vent Stack	2.91E-04	4.16E-04	4.16E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
579	#307 Coke Fines Bin Vent	#307 Coke Fines Bin Vent Stack	1.65E-03	2.35E-03	2.35E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
581	#8 Natural Gas Burner	Treater Heat Vent	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ESP takes off gas from furnace and removes PM like a control device.
583.1	#8 Phos Collection Tank Explosion Seal	#8 Phos Collection Tank Explosion Seal Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Already assumed at 8760
592	No. 9 CO Dust Baghouse	No. 9 CO Dust Baghouse Stack	2.02E-02	2.02E-02	2.02E-02	1.47E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
592.1	#9 CO Dust Collection Bypass	#9 CO Dust Collection Bypass Stack	3.31E-03	4.42E-03	9.34E-03	3.52E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
593	#9 Vent	#9 Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
593.1	#9 Explosion Seal Vent	#9 Explosion Seal Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Post CS Project will result in fewer venting events. Leave this at zero to represent the conservative estimate of 1 hour of venting annually.
594	#9 THFC	#9 THFC Stack	2.82E-01	2.97E-01	2.97E-01	2.28E-01	9.50E-01	9.43E-01	0.00E+00	0.00E+00	2.28E-04	
602	#308 Coke Fines Bin Vent	#308 Coke Fines Bin Vent Stack	9.40E-04	1.34E-03	1.34E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

603	#309 Coke Fines Bin Vent	#309 Coke Fines Bin Vent Stack	3.49E-03	4.99E-03	4.99E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
605	#9 Natural Gas Burner	Treater Heat Vent	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ESP takes off gas from furnace and removes PM like a control device. Already assumed at 8760
607.1	#9 Phos Collection Tank Explosion Seal	#9 Phos Collection Tank Explosion Seal Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
608	#9 CO Flare	#9 CO Flare Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
610	Vactor Truck Vent - Dust Container Unloading	Vactor Truck Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
714	CO Phos Trap Seal Pot	CO Phos Trap Seal Pot	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
804	Boiler House	Boiler Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
855.2	Vactor Truck Vent - Lab BH Unloading	Vactor Truck Vent Stack	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
1100	CO Main	Phos Condenser Tank Seal Pot	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
——	Vactor Truck Vent	Vactor Truck Vent Stack (Total)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
			2.78	2.98	2.99	53.97	3.34	7.85	0.02	1.55E-03	880.38	

Determination of BH Emissions after Reconfiguration for Coke Screens Project

Past Emissions Testing	Test Date	Run 1(gr/dscf)	Run 2(gr/dscf)	Run 3(gr/dscf)	Average	Ave Lbs/Hr
305 Scaleroom BH (formerly 119.1 Coke Handling BH)	2008	0.00094	0.00071	0.00058	0.00074	0.13
307 Coke Screens BH (Formerly 501 Scaleroom BH)	2002	0.00290	0.00110	0.00540	0.0031	0.4

Point Source	Hours Operation (hrs/yr)	New Flowrate cu ft/min	Flow Rate at Standard Conditions dscf/m	BH Emissions gr/dscf	Potential Emissions from BH (lb/hr)	(TN/YR)	Temp °K	Temp °F	Stack Height Feet	Stack Diameter Meters	Moisture %
305 Scaleroom BH (formerly 119 Coke Handling BH)	8760	57800	52143	0.00148	0.661	2.90	321.0	118.1	18.3	1.219	1.6
307 Coke Screen BH (formerly 501 Scaleroom BH)	8760	29000	27992	0.00465	1.116	4.89	300.0	80.3	18.3	0.975	1.6
Total point source emissions						7.7839					

Flow rate conversion from acf to dscf

52143
27992

Pre-Project PM10 Particulate Emissions Calculations

Production Information	Units	2003	2004	2003-2004 Average
Dried coke	ton/yr	17,719.00	11,378.00	14,548.50
Dried coke fines	ton/yr	96.90	68.00	82.45
Dried Quartz	ton/yr	197,152.50	281,032.00	239,092.25
Dried Coke & Quartzite	ton/yr	214,871.50	292,410.00	253,640.75
Coke to Furnace	ton/yr	148,369.00	150,305.28	149,337.14
Coke Fines to Furnace	ton/yr	1,111.74	996.21	1,053.98
Undried coke	ton/yr	130,650.00	138,927.28	134,788.64
Undried Quartzite	ton/yr	72,611.82	-	36,305.91
Quartzite to Furnace	ton/yr	240,861.00	239,829.27	240,345.14
Nodules to Furnace	ton/yr	968,809.87	990,297.78	979,553.83
Nodules - Fines to Furnace	ton/yr	418,530.18	419,795.00	419,162.59
Nodules - Medium to Furnace	ton/yr	156,167.18	403,649.00	279,908.09
Nodules - Coarse to Furnace	ton/yr	392,534.93	165,378.00	278,956.47
Colliers (Pet) Coke to Furnace	ton/yr	73,041.48	68,740.58	70,891.03
SW (Coal) Coke to Furnace	ton/yr	74,194.14	80,567.49	77,380.82
Coke Bunker BH Throughput	ton/yr	13,370.41	20,059.80	16,715.11
Coke Bunker BH Hours	hr/yr	737.30	848.40	792.85
Coke Handling (C&Q) BH Throughput	ton/yr	148,369.00	150,305.28	149,337.14
Coke Handling (C&Q) BH Hours	hr/yr	6,638.50	7,489.38	7,063.94
Scaleroom BH Throughput	ton/yr	1,358,039.87	1,379,436.12	1,368,738.00
Scaleroom BH Hours	hr/yr	7,275.40	7,370.07	7,322.74
Coke screened by contractor	ton/yr	2,000.00	2,000.00	2,000.00
Bulk Storage Bin BH Throughput	ton/yr	1,111.74	996.21	1,053.98
Bulk Storage Bin BH Hours	hr/yr	8,760.00	8,760.00	8,760.00
Vactor Truck Vent	hr/yr	116.67	116.67	116.67

Type	ID	Emissions Point/Source	Control Device	Actual Hours (hours)	Actual Throughput (ton/year)	Stack Test (Method 5) Lbs/Hr	Actual Emissions (tons/year)	Actual Emissions (ton/year)	To be conservative, Use the Lower of the two Methods	
Point Sources										
	119.1	Coke Handling Baghouse Stack		7,063.94	149,337.14	0.13	0.46	0.075	0.021	lbs/hr
	501	Scaleroom Baghouse Stack		7,322.74	1,368,738.00	0.40	1.46	1.34	0.366	lbs/hr
				Point Source Total:			1.92	1.415		

Type	ID	Emissions Point/Source	Control Device		Actual Throughput (ton/year)		Particulate EF (lb/ton)	Actual Emissions (ton/year)	EF Equation	EF Equation Variables V1	V2	V3	EF (lb/ton)	Adjustment Factor^1	Particulate EF (lb/ton)
Fugitive Sources															
Coke Bunker Area															
	103.1	Coke Bunker Unloading	Coke Bunker BH	NA	149,337.14	NA	0.000706577	0.0528	1	0.35	7.6	4.1	0.0007066	1.00	0.000706577
	103.2	Coke Bunker Fines Unloading	Coke Bunker BH	NA	149,337.14	NA	0.000254607	0.0190	1	0.35	7.6	8.5	0.0002546	1.00	0.000254607
Coke Handling															
	128.1	Oversize Coke Unloading - Dried Coke		NA	14,548.50	NA	0.013443077	0.0978	1	0.35	7.6	0.5	0.0134431	1.00	0.013443077
	128.2	Oversize Coke Unloading - Undried Coke		NA	134,788.64	NA	0.000706577	0.0476	1	0.35	7.6	4.1	0.0007066	1.00	0.000706577
	128.2	Oversize Coke Unloading - Dried Coke Fines		NA	82.45	NA	0.002887546	0.0001	1	0.35	7.6	1.5	0.0028875	1.00	0.002887546
	128.3	Oversize Coke Unloading - Undried Coke Fines		NA	971.53	NA	0.000254607	0.0001	1	0.35	7.6	8.5	0.0002546	1.00	0.000254607
	130.1	Belt 827 Fugitives - Dried Coke	Coke Handling BH	NA	14,548.50	NA	0.004032923	0.0293	1	0.35	7.6	0.5	0.0134431	0.30	0.004032923
	130.2	Belt 827 Fugitives - Undried Coke	Coke Handling BH	NA	134,788.64	NA	0.000211973	0.0143	1	0.35	7.6	4.1	0.0007066	0.30	0.000211973
	130.2	Belt 827 Fugitives - Dried Coke Fines	Coke Handling BH	NA	82.45	NA	0.000866264	0.0000	1	0.35	7.6	1.5	0.0028875	0.30	0.000866264
	130.3	Belt 827 Fugitives - Undried Coke Fines	Coke Handling BH	NA	971.53	NA	7.63821E-05	0.0000	1	0.35	7.6	8.5	0.0002546	0.30	7.63821E-05
	133.2	Belt 828 Fugitives - Dried Coke Fines	Coke Handling BH	NA	82.45	NA	0.000866264	0.0000	1	0.35	7.6	1.5	0.0028875	0.30	0.000866264
	133.3	Belt 828 Fugitives - Undried Coke Fines	Coke Handling BH	NA	971.53	NA	7.63821E-05	0.0000	1	0.35	7.6	8.5	0.0002546	0.30	7.63821E-05
	147	Air Conveyor Feed Tank	Coke Handling BH	NA	1,053.98	NA	0.000160554	0.0001	1	0.35	7.6	5.0	0.0005352	0.30	0.000160554
	149	Bulk Storage Bin Dumping Chute	Coke Handling BH	NA	1,053.98	NA	0.000535179	0.0003	1	0.35	7.6	5.0	0.0005352	1.00	0.000535179
Scaleroom	494	Bin 1 Dumping Chute	Scaleroom BH	NA	240,345.14	NA	0.005093973	0.6122	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	495	Bins 2 & 3 Dumping Chutes (2)	Scaleroom BH	NA	279,908.09	NA	0.005093973	0.7129	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	496	Bins 4 & 5 Dumping Chutes (2)	Scaleroom BH	NA	419,162.59	NA	0.005093973	1.0676	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	497	Bins 6 & 7 Dumping Chutes (2)	Scaleroom BH	NA	278,956.47	NA	0.005093973	0.7105	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	498	Bins 8 & 9 Dumping Chutes (2)	Scaleroom BH	NA	77,380.82	NA	0.005093973	0.1971	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	499	Bin 10 Dumping Chute	Scaleroom BH	NA	70,891.03	NA	0.005093973	0.1806	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	500	Bin 11 Dumping Chute	Scaleroom BH	NA	1,053.98	NA	0.005093973	0.0027	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	503	Bin 1 leaks	Scaleroom BH	NA	240,345.14	NA	0.005093973	0.6122	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	506	Bins 2&3 leaks (nodules)	Scaleroom BH	NA	279,908.09	NA	0.005093973	0.7129	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	509	Bins 4&5 leaks (nodules)	Scaleroom BH	NA	419,162.59	NA	0.005093973	1.0676	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	512	Bins 6&7 leaks (nodules)	Scaleroom BH	NA	278,956.47	NA	0.005093973	0.7105	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	515	Bins 8&9 leaks	Scaleroom BH	NA	77,380.82	NA	0.005093973	0.1971	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	518	Bin 10 leaks	Scaleroom BH	NA	70,891.03	NA	0.005093973	0.1806	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
	521	Bin 11 leaks	Scaleroom BH	NA	1,053.98	NA	0.005093973	0.0027	1	0.35	7.6	1.0	0.005094	1.00	0.005093973

Post-Project Particulate PM10 Emissions Calculations

Type	ID	Emissions Point/Source	Process	Material	Control Device	PTE Hours (hours)	PTE Emissions (lb/hr)		PTE Emissions (ton/year)	Emissions for Modeling (Difference) (lb/hr)
	305	305 Scaleroom Baghouse	Coke Handling Baghouse (C&Q)	Coke, Quartzite, Nodule		8760	0.66		2.90	0.64
	307	307 Coke Screen Baghouse		Coke		8760	1.12		4.89	0.75
					Total:			Point Source Total:	7.78	

Type	ID	Emissions Point/Source	Process	Material	Control Device		PTE Throughput (ton/year)		Particulate EF (lb/ton)	PTE Emissions (lb/ton)
Fugitive Sources										
New with Coke Screens Project	#	East & West Coke Screens chute-Dried Coke			Coke Screens BH	8760	24862.2	NA	0.014617308	0.181709215
	#	East & West Coke Screens chute-undried Coke	Coke Handling	Coke	Coke Screens BH	8760	140885.8	NA	0.000768295	0.054120927
	#	East & West Coke Screens chute-Dried Coke Fines			Coke Screens BH	8760	3394.5	NA	0.003139769	0.005328972
	#	East & West Coke Screens chute-undried Coke Fines	Coke Handling	Coke	Coke Screens BH	8760	0	NA	0.000276846	0
	130.1	Belt 827 Fugitives - Dried Coke	Coke Handling	Coke	Coke Handling BH	8760	24862.2	NA	0.004385192	0.054512765
	130.15	Belt 827 Fugitives - Undried Coke	Coke Handling	Coke	Coke Handling BH	8760	140885.8	NA	0.000230488	0.016236278
	130.2	Belt 827 Fugitives - Dried Coke Fines	Coke Handling	Coke	Coke Handling BH	8760	3394.5	NA	0.000941931	0.001598692
	130.3	Belt 827 Fugitives - Undried Coke Fines	Coke Handling	Coke	Coke Handling BH	8760	0	NA	8.30539E-05	0
	133.2	Belt 828 Fugitives - Dried Coke Fines	Coke Handling	Coke	Coke Handling BH	8760	3394.5	NA	0.000941931	0.001598692
	133.3	Belt 828 Fugitives - Undried Coke Fines	Coke Handling	Coke	Coke Handling BH	8760	0	NA	8.30539E-05	0
	147	Air Conveyor Feed Tank	Coke Handling	Coke	Coke Handling BH	8760	3394.5	NA	0.000174578	0.000296302
	149	Bulk Storage Bin Dumping Chute	Coke Handling	Coke	Coke Handling BH	8760	3394.5	NA	0.000581926	0.000987673
	494	Bin 1 Dumping Chute	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	256168	NA	0.005538924	0.709447529
	495	Bins 2 & 3 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	404845.7	NA	0.005538924	1.121204857
	496	Bins 4 & 5 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	425079.9	NA	0.005538924	1.177242564
	497	Bins 6 & 7 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	255015.4	NA	0.005538924	0.706255398
	498	Bins 8 & 9 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.005538924	0.22951639
	499	Bin 10 Dumping Chute	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.005538924	0.22951639
	500	Bin 11 Dumping Chute	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	3394.5	NA	0.005538924	0.009400939
	503	Bin 1 leaks	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	256168.0	NA	0.005538924	0.709447529
	506	Bins 2&3 leaks (nodules)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	404845.7	NA	0.005538924	1.121204857
	509	Bins 4&5 leaks (nodules)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	425079.9	NA	0.005538924	1.177242564
	512	Bins 6&7 leaks (nodules)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	255015.4	NA	0.005538924	0.706255398
	515	Bins 8&9 leaks	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.005538924	0.22951639
	518	Bin 10 leaks	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.005538924	0.22951639
	521	Bin 11 leaks	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	3394.5	NA	0.005538924	0.009400939
	522.1	Belt 416 Fugitives	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	1506857.0	NA	0.001661677	1.251954938
					Total:		Fugitive Source Total:			9.93351
Point and Fugitive Total							Point and Fugitive Source Total:			17.71744

EF Equation	V1	V2	V3	EF (lb/ton)	Adjustment Factor[1]	Particulate EF (lb/ton)
	EF Equation Variables					
1	0.35	7.6	0.50	0.01461731	1.00	0.014617308
1	0.35	7.6	4.10	0.00076829	1.00	0.000768295
1	0.35	7.6	1.50	0.00313977	1.00	0.003139769
1	0.35	7.6	8.50	0.00027685	1.00	0.000276846
1	0.35	7.6	0.50	0.01461731	0.30	0.004385192
1	0.35	7.6	4.10	0.00076829	0.30	0.000230488
1	0.35	7.6	1.50	0.00313977	0.30	0.000941931
1	0.35	7.6	8.50	0.00027685	0.30	8.30539E-05
1	0.35	7.6	1.50	0.00313977	0.30	0.000941931
1	0.35	7.6	8.50	0.00027685	0.30	8.30539E-05
1	0.35	7.6	5.00	0.00058193	0.30	0.000174578
1	0.35	7.6	5.00	0.00058193	1.00	0.000581926
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	0.30	0.001661677

Footnote:

[1] Adjustment factor of 1.0 indicates uncontrolled fugitive source and 0.3 indicates fugitive source located in an enclosure, therefore reducing emissions by 70% per IDEQ guidance.

Pre-Project PM2.5 Particulate Emissions Calculations

Production Information	Units	2003	2004	Average
Dried coke	ton/yr	17,719.00	11,378.00	14,548.50
Dried coke fines	ton/yr	96.90	68.00	82.45
Dried Quartz	ton/yr	197,152.50	281,032.00	239,092.25
Dried Coke & Quartzite	ton/yr	214,871.50	292,410.00	253,640.75
Coke to Furnace	ton/yr	148,369.00	150,305.28	149,337.14
Coke Fines to Furnace	ton/yr	1,111.74	996.21	1,053.98
Undried coke	ton/yr	130,650.00	138,927.28	134,788.64
Undried Quartzite	ton/yr	72,611.82	-	36,305.91
Quartzite to Furnace	ton/yr	240,861.00	239,829.27	240,345.14
Nodules to Furnace	ton/yr	968,809.87	990,297.78	979,553.83
Nodules - Fines to Furnace	ton/yr	418,530.18	419,795.00	419,162.59
Nodules - Medium to Furnace	ton/yr	156,167.18	403,649.00	279,908.09
Nodules - Coarse to Furnace	ton/yr	392,534.93	165,378.00	278,956.47
Colliers (Pet) Coke to Furnace	ton/yr	73,041.48	68,740.58	70,891.03
SW (Coal) Coke to Furnace	ton/yr	74,194.14	80,567.49	77,380.82
Coke Bunker BH Throughput	ton/yr	13,370.41	20,059.80	16,715.11
Coke Bunker BH Hours	hr/yr	737.30	848.40	792.85
Coke Handling (C&Q) BH Throughput	ton/yr	148,369.00	150,305.28	149,337.14
Coke Handling (C&Q) BH Hours	hr/yr	6,638.50	7,489.38	7,063.94
Scaleroom BH Throughput	ton/yr	1,358,039.87	1,379,436.12	1,368,738.00
Scaleroom BH Hours	hr/yr	7,275.40	7,370.07	7,322.74
Coke screened by contractor	ton/yr	2,000.00	2,000.00	2,000.00
Bulk Storage Bin BH Throughput	ton/yr	1,111.74	996.21	1,053.98
Bulk Storage Bin BH Hours	hr/yr	8,760.00	8,760.00	8,760.00
Vactor Truck Vent	hr/yr	116.67	116.67	116.67

Type	ID	Emissions Point/Source	Control Device	Actual Hours (hours)	Actual Throughput (ton/year)	Actual Emissions (ton/year)	
Point Sources							
	119.1	Coke Handling Baghouse Stack		7,063.94	149,337.14	0.075	0.02 lbs/hr
	501	Scaleroom Baghouse Stack		7,322.74	1,368,738.00	1.34	0.37 lbs/hr
					Point Source Total:	1.415	

	ID	Emissions Point/Source	Control Device		Actual Throughput (ton/year)		Particulate EF (lb/ton)	Actual Emissions (ton/year)	EF Equation	EF Equation Variables			EF (lb/ton)	Adjustment Factor[1]	Particulate EF (lb/ton)
										V1	V2	V3			
Fugitive Sources															
Coke Bunker Area															
	103.1	Coke Bunker Unloading	Coke Bunker BH	NA	149,337.14	NA	0.000106996	0.0080	1	0.053	7.6	4.1	0.000107	1.00	0.000106996
	103.2	Coke Bunker Fines Unloading	Coke Bunker BH	NA	149,337.14	NA	3.85548E-05	0.0029	1	0.053	7.6	8.5	3.8555E-05	1.00	3.85548E-05
Coke Handling	124.1	107 Elevator Belt Fugitives - Dried Coke	Coke Handling BH	NA	14,548.50	NA	0.002035666	0.0148	1	0.053	7.6	0.5	0.00203567	1.00	0.002035666
	124.2	107 Elevator Belt Fugitives - Undried Coke	Coke Handling BH	NA	134,788.64	NA	0.000106996	0.0072	1	0.053	7.6	4.1	0.000107	1.00	0.000106996
	124.2	107 Elevator Belt Fugitives - Dried Coke Fines	Coke Handling BH	NA	82.45	NA	0.000437257	0.0000	1	0.053	7.6	1.5	0.00043726	1.00	0.000437257
	124.3	107 Elevator Belt Fugitives - Undried Coke Fines	Coke Handling BH	NA	971.53	NA	3.85548E-05	0.0000	1	0.053	7.6	8.5	3.8555E-05	1.00	3.85548E-05
	128.1	Oversize Coke Unloading - Dried Coke		NA	14,548.50	NA	0.002035666	0.0148	1	0.053	7.6	0.5	0.00203567	1.00	0.002035666
	128.2	Oversize Coke Unloading - Undried Coke		NA	134,788.64	NA	0.000106996	0.0072	1	0.053	7.6	4.1	0.000107	1.00	0.000106996
	128.2	Oversize Coke Unloading - Dried Coke Fines		NA	82.45	NA	0.000437257	0.0000	1	0.053	7.6	1.5	0.00043726	1.00	0.000437257
	128.3	Oversize Coke Unloading - Undried Coke Fines		NA	971.53	NA	3.85548E-05	0.0000	1	0.053	7.6	8.5	3.8555E-05	1.00	3.85548E-05
	130.1	Belt 827 Fugitives - Dried Coke	Coke Handling BH	NA	14,548.50	NA	0.0006107	0.0044	1	0.053	7.6	0.5	0.00203567	0.30	0.0006107
	130.2	Belt 827 Fugitives - Undried Coke	Coke Handling BH	NA	134,788.64	NA	3.20988E-05	0.0022	1	0.053	7.6	4.1	0.000107	0.30	3.20988E-05
	130.2	Belt 827 Fugitives - Dried Coke Fines	Coke Handling BH	NA	82.45	NA	0.000131177	0.0000	1	0.053	7.6	1.5	0.00043726	0.30	0.000131177
	130.3	Belt 827 Fugitives - Undried Coke Fines	Coke Handling BH	NA	971.53	NA	1.15664E-05	0.0000	1	0.053	7.6	8.5	3.8555E-05	0.30	1.15664E-05
	133.2	Belt 828 Fugitives - Dried Coke Fines	Coke Handling BH	NA	82.45	NA	0.000131177	0.0000	1	0.053	7.6	1.5	0.00043726	0.30	0.000131177
	133.3	Belt 828 Fugitives - Undried Coke Fines	Coke Handling BH	NA	971.53	NA	1.15664E-05	0.0000	1	0.053	7.6	8.5	3.8555E-05	0.30	1.15664E-05
	147	Air Conveyor Feed Tank	Coke Handling BH	NA	1,053.98	NA	2.43124E-05	0.0000	1	0.053	7.6	5.0	8.1041E-05	0.30	2.43124E-05
	149	**Bulk Storage Bin Dumping Chute**	Coke Handling BH	NA	1,053.98	NA	8.10413E-05	0.0000	1	0.053	7.6	5.0	8.1041E-05	1.00	8.10413E-05
Scaleroom	494	Bin 1 Dumping Chute	Scaleroom BH	NA	240,345.14	NA	0.000771373	0.0927	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
	495	Bins 2 & 3 Dumping Chutes (2)	Scaleroom BH	NA	279,908.09	NA	0.000771373	0.1080	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
	496	Bins 4 & 5 Dumping Chutes (2)	Scaleroom BH	NA	419,162.59	NA	0.000771373	0.1617	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
	497	Bins 6 & 7 Dumping Chutes (2)	Scaleroom BH	NA	278,956.47	NA	0.000771373	0.1076	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
	498	Bins 8 & 9 Dumping Chutes (2)	Scaleroom BH	NA	77,380.82	NA	0.000771373	0.0298	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
	499	Bin 10 Dumping Chute	Scaleroom BH	NA	70,891.03	NA	0.000771373	0.0273	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
	500	Bin 11 Dumping Chute	Scaleroom BH	NA	1,053.98	NA	0.000771373	0.0004	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
	503	Bin 1 leaks	Scaleroom BH	NA	240,345.14	NA	0.000771373	0.0927	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
	506	Bins 2&3 leaks (nodules)	Scaleroom BH	NA	279,908.09	NA	0.000771373	0.1080	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
	509	Bins 4&5 leaks (nodules)	Scaleroom BH	NA	419,162.59	NA	0.000771373	0.1617	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
	512	Bins 6&7 leaks (nodules)	Scaleroom BH	NA	278,956.47	NA	0.000771373	0.1076	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
	515	Bins 8&9 leaks	Scaleroom BH	NA	77,380.82	NA	0.000771373	0.0298	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373

518	Bin 10 leaks	Scaleroom BH	NA	70,891.03	NA	0.000771373	0.0273	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
521	Bin 11 leaks	Scaleroom BH	NA	1,053.98	NA	0.000771373	0.0004	1	0.053	7.6	1.0	0.00077137	1.00	0.000771373
522.1	Belt 416 Fugitives	Scaleroom BH	NA	1,370,290.08	NA	0.000231412	0.1586	1	0.053	7.6	1.0	0.00077137	0.30	0.000231412

Fugitive Source Total: 1.2752

Footnote: Adjustment factor of 1.0 indicates uncontrolled fugitive source and 0.3 indicates fugitive source located in an enclosure, therefore reducing emissions by 70% per

NOTE: Source for Emission Factors

Equation 1, Material Handling / Material Drop / Load-Out
AP-42, Section 13.2.4, January 1995

$EF = V1 \times 0.0032 \times [(V2/5)^{1.3} / (V3/2)^{1.4}]$

Variables:
- EF = Emission Factor (lb/ton)
- V1 = particle size multiplier (dimensionless, 0.35 for PM10, 0.74 for TSP)
- V2 = mean wind speed (mph)
- V3 = material moisture content

Constants:

C1 =	0.0032
C2 =	5
C3 =	1.3
C4 =	2
C5 =	1.4

Equation 2, Aggregate Handling And Storage Piles
AP-42, Section 13.2.4, November 2006

$EF = V1 \times 0.0032 \times [(V2/5)^{1.3} / (V3/2)^{1.4}]$

Variables:
- EF = Emission Factor (lb/ton)
- V1 = particle size multiplier (dimensionless, 0.35 for PM10, 0.74 for PM<30)
- V2 = mean wind speed (mph)
- V3 = material moisture content

Point and Fugitive Total

Point and Fugitive Source Total: 2.6902

Post-Project Particulate Emissions Calculations for PM2.5

Type	ID	Emissions Point/Source	Process	Material	Control Device	PTE Hours (hours)	PTE Throughput (ton/year)	PTE Emissions (lb/hr)	PTE Emissions (lb/ton)	PTE Emissions (ton/year)
Point Sources										
	305	305 Scaleroom Bughouse	Coke Handling Baghouse (C&Q)	Coke, Quartzite, Nodule		8760		0.66		2.90
	307	307 Coke Screen Bughouse		Coke		8760		1.12		4.8867
					Total:		Point Source Total:			7.78
Fugitive Sources										
	#	East & West Coke Screens chute-Dried Coke			Coke Screens BH	8760	24862.2	NA	0.002035666	0.025305566
	#	East & West Coke Screens chute-undried Coke	Coke Handling	Coke	Coke Screens BH	8760	140885.8	NA	0.000106996	0.007537101
	#	East & West Coke Screens chute-Dried Coke Fines			Coke Screens BH	8760	3394.5	NA	0.000437257	0.000742134
	#	East & West Coke Screens chute-undried Coke Fines	Coke Handling	Coke	Coke Screens BH	8760	0	NA	3.85548E-05	0
	130.1	Belt 827 Fugitives - Dried Coke	Coke Handling	Coke	Coke Handling BH	8760	24862.2	NA	0.0006107	0.00759167
	130.15	Belt 827 Fugitives - Undried Coke	Coke Handling	Coke	Coke Handling BH	8760	140885.8	NA	3.20988E-05	0.00226113
	130.2	Belt 827 Fugitives - Dried Coke Fines	Coke Handling	Coke	Coke Handling BH	8760	3394.5	NA	0.000131177	0.00022264
	130.3	Belt 827 Fugitives - Undried Coke Fines	Coke Handling	Coke	Coke Handling BH	8760	0	NA	1.15664E-05	0
	133.2	Belt 828 Fugitives - Dried Coke Fines	Coke Handling	Coke	Coke Handling BH	8760	3394.5	NA	0.000131177	0.00022264
	133.3	Belt 828 Fugitives - Undried Coke Fines	Coke Handling	Coke	Coke Handling BH	8760	0	NA	1.15664E-05	0
	147	Air Conveyor Feed Tank	Coke Handling	Coke	Coke Handling BH	8760	3394.5	NA	2.43124E-05	4.12642E-05
	149	Bulk Storage Bin Dumping Chute	Coke Handling	Coke	Coke Handling BH	8760	3394.5	NA	8.10413E-05	0.000137547
	494	Bin 1 Dumping Chute	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	256168	NA	0.000771373	0.098800556
	495	Bins 2 & 3 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	404845.7	NA	0.000771373	0.15614356
	496	Bins 4 & 5 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	425079.9	NA	0.000771373	0.1639476
	497	Bins 6 & 7 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	255015.4	NA	0.000771373	0.098356007
	498	Bins 8 & 9 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.000771373	0.031963388
	499	Bin 10 Dumping Chute	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.000771373	0.031963388
	500	Bin 11 Dumping Chute	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	3394.5	NA	0.000771373	0.001309213
	503	Bin 1 leaks	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	256168.0	NA	0.000771373	0.098800556
	506	Bins 2&3 leaks (nodules)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	404845.7	NA	0.000771373	0.15614356
	509	Bins 4&5 leaks (nodules)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	425079.9	NA	0.000771373	0.1639476
	512	Bins 6&7 leaks (nodules)	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	255015.4	NA	0.000771373	0.098356007
	515	Bins 8&9 leaks	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.000771373	0.031963388
	518	Bin 10 leaks	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.000771373	0.031963388
	521	Bin 11 leaks	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	3394.5	NA	0.000771373	0.001309213
	522.1	Belt 416 Fugitives	Scaleroom	Coke, Quartzite, Nodule	Coke Handling BH	8760	1506857.0	NA	0.000231412	0.17435235
					Total:		Fugitive Source Total:			1.38338
Point and Fugitive Total							Point and Fugitive Source Total:			6.27007

EF Equation	EF Equation Variables V1	V2	V3	EF (lb/ton)	Adjustment Factor[1]	Particulate EF (lb/ton)
1	0.053	7.6	0.50	0.00203567	1	0.002035666
1	0.053	7.6	4.10	0.000107	1	0.000106996
1	0.053	7.6	1.50	0.00043726	1	0.000437257
1	0.053	7.6	8.50	3.8555E-05	1	3.85548E-05
1	0.053	7.6	0.50	0.00203567	0.30	0.0006107
1	0.053	7.6	4.10	0.000107	0.30	3.20988E-05
1	0.053	7.6	1.50	0.00043726	0.30	0.000131177
1	0.053	7.6	8.50	3.8555E-05	0.30	1.15664E-05
1	0.053	7.6	1.50	0.00043726	0.30	0.000131177
1	0.053	7.6	8.50	3.8555E-05	0.30	1.15664E-05
1	0.053	7.6	5.00	8.1041E-05	0.30	2.43124E-05
1	0.053	7.6	5.00	8.1041E-05	1.00	8.10413E-05
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	1.00	0.000771373
1	0.053	7.6	1.00	0.00077137	0.30	0.000231412

Footnote: Adjustment factor of 1.0 indicates uncontrolled fugitive source and 0.3 indicates fugitive source located in an enclosure, therefore reducing emissions by 70% per IDEQ guidance.

Pre-Project PM (TSP) Particulate Emissions Calculations

Production Information	Units	2003	2004	2003-2004 Average
Dried coke	ton/yr	17,719.00	11,378.00	14,548.50
Dried coke fines	ton/yr	96.90	68.00	82.45
Dried Quartz	ton/yr	197,152.50	281,032.00	239,092.25
Dried Coke & Quartzite	ton/yr	214,871.50	292,410.00	253,640.75
Coke to Furnace	ton/yr	148,369.00	150,305.28	149,337.14
Coke Fines to Furnace	ton/yr	1,111.74	996.21	1,053.98
Undried coke	ton/yr	130,650.00	138,927.28	134,788.64
Undried Quartzite	ton/yr	72,611.82	-	36,305.91
Quartzite to Furnace	ton/yr	240,861.00	239,829.27	240,345.14
Nodules to Furnace	ton/yr	968,809.87	990,297.78	979,553.83
Nodules - Fines to Furnace	ton/yr	418,530.18	419,795.00	419,162.59
Nodules - Medium to Furnace	ton/yr	156,167.18	403,649.00	279,908.09
Nodules - Coarse to Furnace	ton/yr	392,534.93	165,378.00	278,956.47
Colliers (Pet) Coke to Furnace	ton/yr	73,041.48	68,740.58	70,891.03
SW (Coal) Coke to Furnace	ton/yr	74,194.14	80,567.49	77,380.82
Coke Bunker BH Throughput	ton/yr	13,370.41	20,059.80	16,715.11
Coke Bunker BH Hours	hr/yr	737.30	848.40	792.85
Coke Handling (C&Q) BH Throughput	ton/yr	148,369.00	150,305.28	149,337.14
Coke Handling (C&Q) BH Hours	hr/yr	6,638.50	7,489.38	7,063.94
Scaleroom BH Throughput	ton/yr	1,358,039.87	1,379,436.12	1,368,738.00
Scaleroom BH Hours	hr/yr	7,275.40	7,370.07	7,322.74
Coke screened by contractor	ton/yr	2,000.00	2,000.00	2,000.00
Bulk Storage Bin BH Throughput	ton/yr	1,111.74	996.21	1,053.98
Bulk Storage Bin BH Hours	hr/yr	8,760.00	8,760.00	8,760.00
Vactor Truck Vent	hr/yr	116.67	116.67	116.67

Type	ID	Emissions Point/Source	Control Device	Actual Hours (hours)	Actual Throughput (ton/year)	Stack Test (Method 5) Lbs/Hr	Actual Emissions	Actual Emissions (ton/year)
Point Sources								
	119.1	Coke Handling Baghouse Stack		7,063.94	149,337.14	0.13	0.46	0.075
	501	Scaleroom Baghouse Stack		7,322.74	1,368,738.00	0.40	1.46	1.34
					Point Source Total:		1.92	1.415 Assumed PM = PM10

Fugitive Sources	ID	Emissions Point/Source	Control Device	Actual Hours (hours)	Actual Throughput (ton/year)	Stack Test (Method 5) Lbs/Hr	Particulate EF (lb/ton)	Actual Emissions (ton/year)	EF Equation	EF Equation Variables V1	V2	V3	EF (lb/ton)	Adjustment Factor[1]	Particulate EF (lb/ton)
Coke Bunker Area															
	103.1	Coke Bunker Unloading	Coke Bunker BH	NA	149,337.14	NA	0.001493905	0.1115	1	0.74	7.6	4.1	0.0014939	1.00	0.001493905
	103.2	Coke Bunker Fines Unloading	Coke Bunker BH	NA	149,337.14	NA	0.000538312	0.0402	1	0.74	7.6	8.5	0.00053831	1.00	0.000538312
Coke Handling															
	128.1	Oversize Coke Unloading - Dried Coke		NA	14,548.50	NA	0.028422505	0.2068	1	0.74	7.6	0.5	0.0284225	1.00	0.028422505
	128.15	Oversize Coke Unloading - Undried Coke		NA	134,788.64	NA	0.001493905	0.1007	1	0.74	7.6	4.1	0.0014939	1.00	0.001493905
	128.2	Oversize Coke Unloading - Dried Coke Fines		NA	82.45	NA	0.006105097	0.0003	1	0.74	7.6	1.5	0.0061051	1.00	0.006105097
	128.3	Oversize Coke Unloading - Undried Coke Fines		NA	971.53	NA	0.000538312	0.0003	1	0.74	7.6	8.5	0.00053831	1.00	0.000538312
	130.1	Belt 827 Fugitives - Dried Coke	Coke Handling BH	NA	14,548.50	NA	0.008526751	0.0620	1	0.74	7.6	0.5	0.0284225	0.30	0.008526751
	130.15	Belt 827 Fugitives - Undried Coke	Coke Handling BH	NA	134,788.64	NA	0.000448171	0.0302	1	0.74	7.6	4.1	0.0014939	0.30	0.000448171
	130.2	Belt 827 Fugitives - Dried Coke Fines	Coke Handling BH	NA	82.45	NA	0.001831529	0.0001	1	0.74	7.6	1.5	0.0061051	0.30	0.001831529
	130.3	Belt 827 Fugitives - Undried Coke Fines	Coke Handling BH	NA	971.53	NA	0.000161494	0.0001	1	0.74	7.6	8.5	0.00053831	0.30	0.000161494
	133.2	Belt 828 Fugitives - Dried Coke Fines	Coke Handling BH	NA	82.45	NA	0.001831529	0.0001	1	0.74	7.6	1.5	0.0061051	0.30	0.001831529
	133.3	Belt 828 Fugitives - Undried Coke Fines	Coke Handling BH	NA	971.53	NA	0.000161494	0.0001	1	0.74	7.6	8.5	0.00053831	0.30	0.000161494
	147	Air Conveyor Feed Tank	Coke Handling BH	NA	1,053.98	NA	0.000339456	0.0002	1	0.74	7.6	5.0	0.00113152	0.30	0.000339456
	149	Bulk Storage Bin Dumping Chute	Coke Handling BH	NA	1,053.98	NA	0.00113152	0.0006	1	0.74	7.6	5.0	0.00113152	1.00	0.00113152
Scaleroom	494	Bin 1 Dumping Chute	Scaleroom BH	NA	240,345.14	NA	0.010770115	1.2943	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	495	Bins 2 & 3 Dumping Chutes (2)	Scaleroom BH	NA	279,908.09	NA	0.010770115	1.5073	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	496	Bins 4 & 5 Dumping Chutes (2)	Scaleroom BH	NA	419,162.59	NA	0.010770115	2.2572	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	497	Bins 6 & 7 Dumping Chutes (2)	Scaleroom BH	NA	278,956.47	NA	0.010770115	1.5022	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	498	Bins 8 & 9 Dumping Chutes (2)	Scaleroom BH	NA	77,380.82	NA	0.010770115	0.4167	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	499	Bin 10 Dumping Chute	Scaleroom BH	NA	70,891.03	NA	0.010770115	0.3818	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	500	Bin 11 Dumping Chute	Scaleroom BH	NA	1,053.98	NA	0.010770115	0.0057	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	503	Bin 1 leaks	Scaleroom BH	NA	240,345.14	NA	0.010770115	1.2943	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	506	Bins 2&3 leaks (nodules)	Scaleroom BH	NA	279,908.09	NA	0.010770115	1.5073	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	509	Bins 4&5 leaks (nodules)	Scaleroom BH	NA	419,162.59	NA	0.010770115	2.2572	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	512	Bins 6&7 leaks (nodules)	Scaleroom BH	NA	278,956.47	NA	0.010770115	1.5022	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	515	Bins 8&9 leaks	Scaleroom BH	NA	77,380.82	NA	0.010770115	0.4167	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	518	Bin 10 leaks	Scaleroom BH	NA	70,891.03	NA	0.010770115	0.3818	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	521	Bin 11 leaks	Scaleroom BH	NA	1,053.98	NA	0.010770115	0.0057	1	0.74	7.6	1.0	0.01077012	1.00	0.010770115
	522.1	Belt 416 Fugitives	Scaleroom BH	NA	1,370,290.08	NA	0.003231035	2.2137	1	0.74	7.6	1.0	0.01077012	0.30	0.003231035
					Fugitive Source Total:			17.4970							

Footnote: Adjustment factor of 1.0 indicates uncontrolled fugitive source and 0.3 indicates fugitive source located in an enclosure, therefore reducing emissions by 70% per

NOTE: Source for Emission Factors
Equation 1, Material Handling / Material Drop / Load-Out
AP-42, Section 13.2.4, January 1995

$EF = V1 \times 0.0032 \times [(V2/5)^{1.3} / (V3/2)^{1.4}]$

Variables:
EF = Emission Factor (lb/ton)
V1 = particle size multiplier (dimensionless, 0.35 for PM10, 0.74 for TSP)

Constants:
C1 = 0.0032
C2 = 5

V2 = mean wind speed (mph)
V3 = material moisture content

Equation 2, Aggregate Handling And Storage Piles
AP-42, Section 13.2.4, November 2006

$EF = V1 \times 0.0032 \times [(V2/5)^{1.3} / (V3/2)^{1.4}]$

Variables:
EF = Emission Factor (lb/ton)
V1 = particle size multiplier (dimensionless, 0.35 for PM10, 0.74 for PM<30)
V2 = mean wind speed (mph)
V3 = material moisture content

C3 =	1.3
C4 =	2
C5 =	1.4

Point and Fugitive Total

Point and Fugitive Source Total: **18.9120**

Post-Project Particulate PM (TSP) Emissions Calculations

Type	ID	Emissions Point/Source	Material	Control Device	PTE Hours (hours)	PTE Throughput (ton/year)	PTE Emissions (lb/hr)	PTE Emissions (lb/ton)	PTE Emissions (ton/year)
Point Source									
	305	305 Scaleroom Bughouse	Coke, Quartzite, Nodule		8760		0.66		2.90
	307	307 Coke Screen Bughouse	Coke & Quartzite		8760		1.12		4.89
				Total:		Point Source Total			7.78

Assumed PM = PM10

Type	ID	Emissions Point/Source	Material	Control Device		PTE Throughput (ton/year)		Particulate EF (lb/ton)	PTE Emissions (lb/ton)
Fugitive Sources									
	#	East & West Coke Screens chute-Dried Coke		Coke Screens BH	8760	24862.2	NA	0.030905165	0.384185198
	#	East & West Coke Screens chute-undried Coke	Coke	Coke Screens BH	8760	140885.8	NA	0.001624395	0.114427103
	#	East & West Coke Screens chute-Dried Coke Fines		Coke Screens BH	8760	3394.5	NA	0.006638368	0.01126697
	#	East & West Coke Screens chute-undried Coke Fines	Coke	Coke Screens BH	8760	0	NA	0.000585332	0
	130.1	Belt 827 Fugitives - Dried Coke	Coke	Coke Handling BH	8760	24862.2	NA	0.00927155	0.115255559
	130.15	Belt 827 Fugitives - Undried Coke	Coke	Coke Handling BH	8760	140885.8	NA	0.000487319	0.034328131
	130.2	Belt 827 Fugitives - Dried Coke Fines	Coke	Coke Handling BH	8760	3394.5	NA	0.00199151	0.003380091
	130.3	Belt 827 Fugitives - Undried Coke Fines	Coke	Coke Handling BH	8760	0	NA	0.0001756	0
	133.2	Belt 828 Fugitives - Dried Coke Fines	Coke	Coke Handling BH	8760	3394.5	NA	0.00199151	0.003380091
	133.3	Belt 828 Fugitives - Undried Coke Fines	Coke	Coke Handling BH	8760	0	NA	0.0001756	0
	147	Air Conveyor Feed Tank	Coke	Coke Handling BH	8760	3394.5	NA	0.000369107	0.000626467
	149	Bulk Storage Bin Dumping Chute	Coke	Coke Handling BH	8760	3394.5	NA	0.001230357	0.002088223
	494	Bin 1 Dumping Chute	Coke, Quartzite, Nodule	Coke Handling BH	8760	256168	NA	0.011710868	1.499974776
	495	Bins 2 & 3 Dumping Chutes (2)	Coke, Quartzite, Nodule	Coke Handling BH	8760	404845.7	NA	0.011710868	2.370547411
	496	Bins 4 & 5 Dumping Chutes (2)	Coke, Quartzite, Nodule	Coke Handling BH	8760	425079.9	NA	0.011710868	2.489027136
	497	Bins 6 & 7 Dumping Chutes (2)	Coke, Quartzite, Nodule	Coke Handling BH	8760	255015.4	NA	0.011710868	1.493225698
	498	Bins 8 & 9 Dumping Chutes (2)	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.011710868	0.485263224
	499	Bin 10 Dumping Chute	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.011710868	0.485263224
	500	Bin 11 Dumping Chute	Coke, Quartzite, Nodule	Coke Handling BH	8760	3394.5	NA	0.011710868	0.01987627
	503	Bin 1 leaks	Coke, Quartzite, Nodule	Coke Handling BH	8760	256168.0	NA	0.011710868	1.499974776
	506	Bins 2&3 leaks (nodules)	Coke, Quartzite, Nodule	Coke Handling BH	8760	404845.7	NA	0.011710868	2.370547411
	509	Bins 4&5 leaks (nodules)	Coke, Quartzite, Nodule	Coke Handling BH	8760	425079.9	NA	0.011710868	2.489027136
	512	Bins 6&7 leaks (nodules)	Coke, Quartzite, Nodule	Coke Handling BH	8760	255015.4	NA	0.011710868	1.493225698
	515	Bins 8&9 leaks	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.011710868	0.485263224
	518	Bin 10 leaks	Coke, Quartzite, Nodule	Coke Handling BH	8760	82874.0	NA	0.011710868	0.485263224
	521	Bin 11 leaks	Coke, Quartzite, Nodule	Coke Handling BH	8760	3394.5	NA	0.011710868	0.01987627
	522.1	Belt 416 Fugitives	Coke, Quartzite, Nodule	Coke Handling BH	8760	1506857.0	NA	0.00351326	2.646990441
				Total:		Fugitive Source Total:			21.00228
Point and Fugitive Total						Point and Fugitive Source Total:			28.78621

EF Equation	EF Equation Variables V1	V2	V3	EF (lb/ton)	Adjustment Factor[1]	Particulate EF (lb/ton)
1	0.74	7.6	0.50	0.030905165	1.00	0.030905165
1	0.74	7.6	4.10	0.001624395	1.00	0.001624395
1	0.74	7.6	1.50	0.006638368	1.00	0.006638368
1	0.74	7.6	8.50	0.000585332	1.00	0.000585332
1	0.74	7.6	0.50	0.030905165	0.30	0.00927155
1	0.74	7.6	4.10	0.001624395	0.30	0.000487319
1	0.74	7.6	1.50	0.006638368	0.30	0.00199151
1	0.74	7.6	8.50	0.000585332	0.30	0.0001756
1	0.74	7.6	1.50	0.006638368	0.30	0.00199151
1	0.74	7.6	8.50	0.000585332	0.30	0.0001756
1	0.74	7.6	5.00	0.001230357	0.30	0.000369107
1	0.74	7.6	5.00	0.001230357	1.00	0.001230357
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	1.00	0.011710868
1	0.74	7.6	1.00	0.011710868	0.30	0.00351326

Footnote: Adjustment factor of 1.0 indicates uncontrolled fugitive source and 0.3 indicates fugitive source located in an enclosure, therefore reducing emissions by 70% per IDEQ guidance.

APPENDIX C

TAPs Emission Calculations

Pre-Project TAP Emissions from Particulate Calculations

Production Information	Units	2003	2004	2003-2004 Average
Dried coke	ton/yr	17,719.00	11,378.00	14,548.50
Dried coke fines	ton/yr	96.90	68.00	82.45
Dried Quartz	ton/yr	197,152.50	281,032.00	239,092.25
Dried Coke & Quartzite	ton/yr	214,871.50	292,410.00	253,640.75
Coke to Furnace	ton/yr	148,369.00	150,305.28	149,337.14
Coke Fines to Furnace	ton/yr	1,111.74	996.21	1,053.98
Undried coke	ton/yr	130,650.00	138,927.28	134,788.64
Undried Quartzite	ton/yr	72,611.82	-	36,305.91
Quartzite to Furnace	ton/yr	240,861.00	239,829.27	240,345.14
Nodules to Furnace	ton/yr	968,809.87	990,297.78	979,553.83
Nodules - Fines to Furnace	ton/yr	418,530.18	419,795.00	419,162.59
Nodules - Medium to Furnace	ton/yr	156,167.18	403,649.00	279,908.09
Nodules - Coarse to Furnace	ton/yr	392,534.93	165,378.00	278,956.47
Colliers (Pet) Coke to Furnace	ton/yr	73,041.48	68,740.58	70,891.03
SW (Coal) Coke to Furnace	ton/yr	74,194.14	80,567.49	77,380.82
Coke Bunker BH Throughput	ton/yr	13,370.41	20,059.80	16,715.11
Coke Bunker BH Hours	hr/yr	737.30	848.40	792.85
Coke Handling (C&Q) BH Throughput	ton/yr	148,369.00	150,305.28	149,337.14
Coke Handling (C&Q) BH Hours	hr/yr	6,638.50	7,489.38	7,063.94
Scaleroom BH Throughput	ton/yr	1,358,039.87	1,379,436.12	1,368,738.00
Scaleroom BH Hours	hr/yr	7,275.40	7,370.07	7,322.74
Coke screened by contractor	ton/yr	2,000.00	2,000.00	2,000.00
Bulk Storage Bin BH Throughput	ton/yr	1,111.74	996.21	1,053.98
Bulk Storage Bin BH Hours	hr/yr	8,760.00	8,760.00	8,760.00
Vactor Truck Vent	hr/yr	116.67	116.67	116.67

Type	Actual Emissions (ton/year)					Actual Throughput (ton/year)		Particulate EF (lb/ton)	Actual Emissions (ton/year)	EF Equation	EF Equation Variables V1	V2	V3	EF (lb/ton)	Adjustment Factor[1]	EF (lb/ton)
Point Sources																
		119.1	Coke Handling Baghouse Stack		7,063.94	149,337.14	0.13	0.46								
	0.075	501	Scaleroom Baghouse Stack		7,322.74	1,368,738.00	0.40	1.46								
	1.34															
	1.415															
Fugitive Sources																
Coke Bunker Area																
		103.1	Coke Bunker Unloading	Coke Bunker BH	NA	149,337.14	NA	0.000706577	0.0528	1	0.35	7.6	4.1	0.0007066	1.00	0.000706577
		103.2	Coke Bunker Fines Unloading	Coke Bunker BH	NA	149,337.14	NA	0.000254607	0.0190	1	0.35	7.6	8.5	0.0002546	1.00	0.000254607
Coke Handling																
		128.1	Oversize Coke Unloading - Dried Coke		NA	14,548.50	NA	0.013443077	0.0978	1	0.35	7.6	0.5	0.0134431	1.00	0.013443077
		128.15	Oversize Coke Unloading - Undried Coke		NA	134,788.64	NA	0.000706577	0.0476	1	0.35	7.6	4.1	0.0007066	1.00	0.000706577
		128.2	Oversize Coke Unloading - Dried Coke Fines		NA	82.45	NA	0.002887546	0.0001	1	0.35	7.6	1.5	0.0028875	1.00	0.002887546
		128.3	Oversize Coke Unloading - Undried Coke Fines		NA	971.53	NA	0.000254607	0.0001	1	0.35	7.6	8.5	0.0002546	1.00	0.000254607
		130.1	Belt 827 Fugitives - Dried Coke	Coke Handling BH	NA	14,548.50	NA	0.004032923	0.0293	1	0.35	7.6	0.5	0.0134431	0.30	0.004032923
		130.15	Belt 827 Fugitives - Undried Coke	Coke Handling BH	NA	134,788.64	NA	0.000211973	0.0143	1	0.35	7.6	4.1	0.0007066	0.30	0.000211973
		130.2	Belt 827 Fugitives - Dried Coke Fines	Coke Handling BH	NA	82.45	NA	0.000866264	0.0000	1	0.35	7.6	1.5	0.0028875	0.30	0.000866264
		130.3	Belt 827 Fugitives - Undried Coke Fines	Coke Handling BH	NA	971.53	NA	7.63821E-05	0.0000	1	0.35	7.6	8.5	0.0002546	0.30	7.63821E-05
		133.2	Belt 828 Fugitives - Dried Coke Fines	Coke Handling BH	NA	82.45	NA	0.000866264	0.0000	1	0.35	7.6	1.5	0.0028875	0.30	0.000866264
		133.3	Belt 828 Fugitives - Undried Coke Fines	Coke Handling BH	NA	971.53	NA	7.63821E-05	0.0000	1	0.35	7.6	8.5	0.0002546	0.30	7.63821E-05
		147	Air Conveyor Feed Tank	Coke Handling BH	NA	1,053.98	NA	0.000160554	0.0001	1	0.35	7.6	5.0	0.0005352	0.30	0.000160554
		149	Bulk Storage Bin Dumping Chute	Coke Handling BH	NA	1,053.98	NA	0.000535179	0.0003	1	0.35	7.6	5.0	0.0005352	1.00	0.000535179
Scaleroom		494	Bin 1 Dumping Chute	Scaleroom BH	NA	240,345.14	NA	0.005093973	0.6122	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		495	Bins 2 & 3 Dumping Chutes (2)	Scaleroom BH	NA	279,908.09	NA	0.005093973	0.7129	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		496	Bins 4 & 5 Dumping Chutes (2)	Scaleroom BH	NA	419,162.59	NA	0.005093973	1.0676	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		497	Bins 6 & 7 Dumping Chutes (2)	Scaleroom BH	NA	278,956.47	NA	0.005093973	0.7105	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		498	Bins 8 & 9 Dumping Chutes (2)	Scaleroom BH	NA	77,380.82	NA	0.005093973	0.1971	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		499	Bin 10 Dumping Chute	Scaleroom BH	NA	70,891.03	NA	0.005093973	0.1806	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		500	Bin 11 Dumping Chute	Scaleroom BH	NA	1,053.98	NA	0.005093973	0.0027	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		503	Bin 1 leaks	Scaleroom BH	NA	240,345.14	NA	0.005093973	0.6122	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		506	Bins 2&3 leaks (nodules)	Scaleroom BH	NA	279,908.09	NA	0.005093973	0.7129	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		509	Bins 4&5 leaks (nodules)	Scaleroom BH	NA	419,162.59	NA	0.005093973	1.0676	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		512	Bins 6&7 leaks (nodules)	Scaleroom BH	NA	278,956.47	NA	0.005093973	0.7105	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		515	Bins 8&9 leaks	Scaleroom BH	NA	77,380.82	NA	0.005093973	0.1971	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		518	Bin 10 leaks	Scaleroom BH	NA	70,891.03	NA	0.005093973	0.1806	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		521	Bin 11 leaks	Scaleroom BH	NA	1,053.98	NA	0.005093973	0.0027	1	0.35	7.6	1.0	0.005094	1.00	0.005093973
		522.1	Belt 416 Fugitives	Scaleroom BH	NA	1,370,290.08	NA	0.001528192	1.0470	1	0.35	7.6	1.0	0.005094	0.30	0.001528192
	8.2756															

Average Concentration of TAP	Collier Coke (mg/kg)*	Sweetwater Coke (mg/kg)*	Collier Coke (%)*	Sweetwater Coke (%)*	Lemont Calcined Coke**	Enid Calcined Coke**	Rodeo Calcined Coke**	Sweetwater Coal Coke**
Antimony	2.50	2.50	0.0003%	0.0003%	n/a	n/a	n/a	n/a
Arsenic	5.00	5.00	0.0005%	0.0005%	n/a	n/a	n/a	n/a
Barium	2.50	142.33	0.0003%	0.0142%	n/a	n/a	n/a	n/a
Beryllium	1.00	1.00	0.0001%	0.0001%	n/a	n/a	n/a	n/a
Cadmium	2.00	1.00	0.0002%	0.0001%	n/a	n/a	n/a	n/a
Chromium	16.67	32.67	0.0017%	0.0033%	0.0002%	0.0001%	0.0003%	0.0006%
Fluoride as F	665.33	151.67	0.0665%	0.0152%	n/a	n/a	n/a	n/a
Molybdenum	6.00	2.50	0.0006%	0.0003%	n/a	n/a	n/a	n/a
Phosphorous	2,340.00	1,676.67	0.2340%	0.1677%	0.0008%	0.0008%	0.0033%	0.0443%
Selenium	5.00	5.00	0.0005%	0.0005%	n/a	n/a	n/a	n/a
Silver	2.50	2.50	0.0003%	0.0003%	n/a	n/a	n/a	n/a
Thallium	2.50	2.50	0.0003%	0.0003%	n/a	n/a	n/a	n/a
Tin	5.00	5.00	0.0005%	0.0005%	n/a	n/a	n/a	n/a
Zirconium	5.00	5.00	0.0005%	0.0005%	n/a	n/a	n/a	n/a

*From January 2006 Coke Analysis
**From September 2010 Coke Evaluation
***1 mg/kg = 1 ppm

POINT SOURCE TAP EMISSIONS	Max TAP Content, wt %	Emissions	
Antimony	0.0003%	3.54E-06	tons/year
Arsenic	0.0005%	7.08E-06	tons/year
Barium	0.0142%	2.01E-04	tons/year
Beryllium	0.0001%	1.42E-06	tons/year
Cadmium	0.0002%	2.83E-06	tons/year
Chromium	0.0033%	4.62E-05	tons/year
Fluoride as F	0.0665%	9.41E-04	tons/year
Molybdenum	0.0006%	8.49E-06	tons/year
Phosphorous	0.2340%	3.31E-03	tons/year
Selenium	0.0005%	7.08E-06	tons/year
Silver	0.0003%	3.54E-06	tons/year
Thallium	0.0003%	3.54E-06	tons/year
Tin	0.0005%	7.08E-06	tons/year
Zirconium	0.0005%	7.08E-06	tons/year

FUGITIVE SOURCE TAP EMISSIONS	Max TAP Content, wt %	Emissions	
Antimony	0.0003%	2.07E-05	tons/year
Arsenic	0.0005%	4.14E-05	tons/year
Barium	0.0142%	1.18E-03	tons/year
Beryllium	0.0001%	8.28E-06	tons/year
Cadmium	0.0002%	1.66E-05	tons/year
Chromium	0.0033%	2.70E-04	tons/year
Fluoride as F	0.0665%	5.51E-03	tons/year
Molybdenum	0.0006%	4.97E-05	tons/year
Phosphorous	0.2340%	1.94E-02	tons/year
Selenium	0.0005%	4.14E-05	tons/year
Silver	0.0003%	2.07E-05	tons/year
Thallium	0.0003%	2.07E-05	tons/year
Tin	0.0005%	4.14E-05	tons/year
Zirconium	0.0005%	4.14E-05	tons/year

TOTAL TAP EMISSIONS		
	tons/year	pounds/hour
Antimony	2.42E-05	5.53E-06
Arsenic	4.85E-05	1.11E-05
Barium	1.38E-03	3.15E-04
Beryllium	9.69E-06	2.21E-06
Cadmium	1.94E-05	4.42E-06
Chromium	3.17E-04	7.23E-05
Fluoride as F	6.45E-03	1.47E-03
Molybdenum	5.81E-05	1.33E-05
Phosphorous	2.27E-02	5.18E-03
Selenium	4.85E-05	1.11E-05
Silver	2.42E-05	5.53E-06
Thallium	2.42E-05	5.53E-06
Tin	4.85E-05	1.11E-05
Zirconium	4.85E-05	1.11E-05

Post-Project TAP Emissions from Particulate Calculations

Type	Potential to Emit Emissions (ton/year)						PTE Throughput (ton/year)		Particulate EF (lb/ton)	PTE Emissions (lb/ton)	
Point Sources											
		305	305 Scaleroom Bughouse			8760		0.66		2.90	37.2%
	7.78	307	307 Coke Screen Bughouse			8760		1.12		4.89	62.8%
Fugitive Sources											
		#	East & West Coke Screens chute-Dried Coke			8760	24862.2	NA	0.014617308	0.181709215	
		#	East & West Coke Screens chute-undried Coke	Coke Handling	Coke	8760	140885.8	NA	0.000768295	0.054120927	
		#	East & West Coke Screens chute-Dried Coke Fines			8760	3394.5	NA	0.003139769	0.005328972	
		#	East & West Coke Screens chute-undried Coke Fines	Coke Handling	Coke	8760	0	NA	0.000276846	0	
		130.1	Belt 827 Fugitives - Dried Coke	Coke Handling	Coke	8760	24862.2	NA	0.004385192	0.054512765	
		130.15	Belt 827 Fugitives - Undried Coke	Coke Handling	Coke	8760	140885.8	NA	0.000230488	0.016236278	
		130.2	Belt 827 Fugitives - Dried Coke Fines	Coke Handling	Coke	8760	3394.5	NA	0.000941931	0.001598692	
		130.3	Belt 827 Fugitives - Undried Coke Fines	Coke Handling	Coke	8760	0	NA	8.30539E-05	0	
		133.2	Belt 828 Fugitives - Dried Coke Fines	Coke Handling	Coke	8760	3394.5	NA	0.000941931	0.001598692	
		133.3	Belt 828 Fugitives - Undried Coke Fines	Coke Handling	Coke	8760	0	NA	8.30539E-05	0	
		147	Air Conveyor Feed Tank	Coke Handling	Coke	8760	3394.5	NA	0.000174578	0.000296302	
		149	Bulk Storage Bin Dumping Chute	Coke Handling	Coke	8760	3394.5	NA	0.000581926	0.000987673	
		494	Bin 1 Dumping Chute	Scaleroom	Coke, Quartzite, Nodule	8760	256168	NA	0.005538924	0.709447529	
		495	Bins 2 & 3 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	8760	404845.7	NA	0.005538924	1.121204857	
		496	Bins 4 & 5 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	8760	425079.9	NA	0.005538924	1.177242564	
		497	Bins 6 & 7 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	8760	255015.4	NA	0.005538924	0.706255398	
		498	Bins 8 & 9 Dumping Chutes (2)	Scaleroom	Coke, Quartzite, Nodule	8760	82874.0	NA	0.005538924	0.22951639	
		499	Bin 10 Dumping Chute	Scaleroom	Coke, Quartzite, Nodule	8760	82874.0	NA	0.005538924	0.22951639	
		500	Bin 11 Dumping Chute	Scaleroom	Coke, Quartzite, Nodule	8760	3394.5	NA	0.005538924	0.009400939	
		503	Bin 1 leaks	Scaleroom	Coke, Quartzite, Nodule	8760	256168.0	NA	0.005538924	0.709447529	
		506	Bins 2&3 leaks (nodules)	Scaleroom	Coke, Quartzite, Nodule	8760	404845.7	NA	0.005538924	1.121204857	
		509	Bins 4&5 leaks (nodules)	Scaleroom	Coke, Quartzite, Nodule	8760	425079.9	NA	0.005538924	1.177242564	
		512	Bins 6&7 leaks (nodules)	Scaleroom	Coke, Quartzite, Nodule	8760	255015.4	NA	0.005538924	0.706255398	
		515	Bins 8&9 leaks	Scaleroom	Coke, Quartzite, Nodule	8760	82874.0	NA	0.005538924	0.22951639	
		518	Bin 10 leaks	Scaleroom	Coke, Quartzite, Nodule	8760	82874.0	NA	0.005538924	0.22951639	
		521	Bin 11 leaks	Scaleroom	Coke, Quartzite, Nodule	8760	3394.5	NA	0.005538924	0.009400939	
	9.93351	522.1	Belt 416 Fugitives	Scaleroom	Coke, Quartzite, Nodule	8760	1506857.0	NA	0.001661677	1.251954938	

3.85

EF Equation	EF Equation Variables V1	V2	V3	EF (lb/ton)	Adjustment Factor[1]	Particulate EF (lb/ton)
1	0.35	7.6	0.50	0.01461731	1.00	0.014617308
1	0.35	7.6	4.10	0.00076829	1.00	0.000768295
1	0.35	7.6	1.50	0.00313977	1.00	0.003139769
1	0.35	7.6	8.50	0.00027685	1.00	0.000276846
1	0.35	7.6	0.50	0.01461731	0.30	0.004385192
1	0.35	7.6	4.10	0.00076829	0.30	0.000230488
1	0.35	7.6	1.50	0.00313977	0.30	0.000941931
1	0.35	7.6	8.50	0.00027685	0.30	8.30539E-05
1	0.35	7.6	1.50	0.00313977	0.30	0.000941931
1	0.35	7.6	8.50	0.00027685	0.30	8.30539E-05
1	0.35	7.6	5.00	0.00058193	0.30	0.000174578
1	0.35	7.6	5.00	0.00058193	1.00	0.000581926
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	1.00	0.005538924
1	0.35	7.6	1.00	0.00553892	0.30	0.001661677

Average Concentration of TAP	Collier Coke (mg/kg)*	Sweetwater Coke (mg/kg)*	Collier Coke (%)*	Sweetwater Coke (%)*	Lamont Calcined Coke**	Enid Calcined Coke**	Rodeo Calcined Coke**	Sweetwater Coal Coke**
Antimony	2.50	2.50	0.0003%	0.0003%	n/a	n/a	n/a	n/a
Arsenic	5.00	5.00	0.0005%	0.0005%	n/a	n/a	n/a	n/a
Barium	2.50	142.33	0.0003%	0.0142%	n/a	n/a	n/a	n/a
Beryllium	1.00	1.00	0.0001%	0.0001%	n/a	n/a	n/a	n/a
Cadmium	2.00	1.00	0.0002%	0.0001%	n/a	n/a	n/a	n/a
Chromium	16.67	32.67	0.0017%	0.0033%	0.0002%	0.0001%	0.0003%	0.0006%
Fluoride as F	665.33	151.67	0.0665%	0.0152%	n/a	n/a	n/a	n/a
Molybdenum	6.00	2.50	0.0006%	0.0003%	n/a	n/a	n/a	n/a
Phosphorous	2,340.00	1,676.67	0.2340%	0.1677%	0.0008%	0.0008%	0.0033%	0.0443%
Selenium	5.00	5.00	0.0005%	0.0005%	n/a	n/a	n/a	n/a
Silver	2.50	2.50	0.0003%	0.0003%	n/a	n/a	n/a	n/a
Thallium	2.50	2.50	0.0003%	0.0003%	n/a	n/a	n/a	n/a
Tin	5.00	5.00	0.0005%	0.0005%	n/a	n/a	n/a	n/a
Zirconium	5.00	5.00	0.0005%	0.0005%	n/a	n/a	n/a	n/a

*From January 2006 Coke Analysis
**From September 2010 Coke Evaluation
***1 mg/kg = 1 ppm

POINT SOURCE TAP EMISSIONS	Max TAP Content, wt %	Emissions	
Antimony	0.0003%	1.95E-05	tons/year
Arsenic	0.0005%	3.89E-05	tons/year
Barium	0.0142%	1.11E-03	tons/year
Beryllium	0.0001%	7.78E-06	tons/year
Cadmium	0.0002%	1.56E-05	tons/year
Chromium	0.0033%	2.54E-04	tons/year
Fluoride as F	0.0665%	5.18E-03	tons/year
Molybdenum	0.0006%	4.67E-05	tons/year
Phosphorous	0.2340%	1.82E-02	tons/year
Selenium	0.0005%	3.89E-05	tons/year
Silver	0.0003%	1.95E-05	tons/year
Thallium	0.0003%	1.95E-05	tons/year
Tin	0.0005%	3.89E-05	tons/year
Zirconium	0.0005%	3.89E-05	tons/year

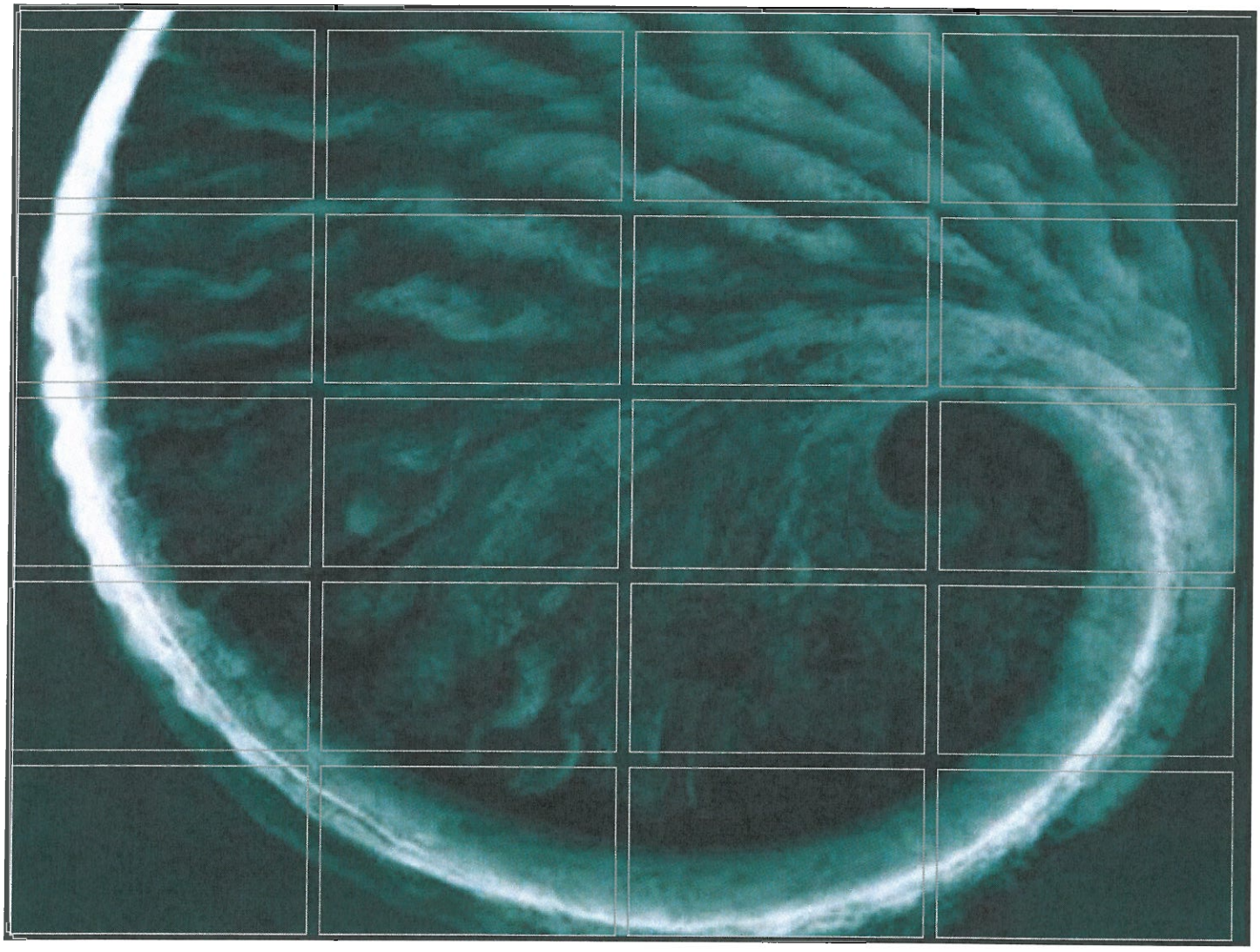
FUGITIVE SOURCE TAP EMISSIONS	Max TAP Content, wt %	Emissions	
Antimony	0.0003%	2.48E-05	tons/year
Arsenic	0.0005%	4.97E-05	tons/year
Barium	0.0142%	1.41E-03	tons/year
Beryllium	0.0001%	9.93E-06	tons/year
Cadmium	0.0002%	1.99E-05	tons/year
Chromium	0.0033%	3.24E-04	tons/year
Fluoride as F	0.0665%	6.61E-03	tons/year
Molybdenum	0.0006%	5.96E-05	tons/year
Phosphorous	0.2340%	2.32E-02	tons/year
Selenium	0.0005%	4.97E-05	tons/year
Silver	0.0003%	2.48E-05	tons/year
Thallium	0.0003%	2.48E-05	tons/year
Tin	0.0005%	4.97E-05	tons/year
Zirconium	0.0005%	4.97E-05	tons/year

	TOTAL TAP EMISSIONS tons/year	pounds/hour	Idaho EL pounds/hour
Antimony	4.43E-05	1.01E-05	0.033
Arsenic	8.86E-05	2.02E-05	1.50E-06
Barium	2.52E-03	5.76E-04	0.033
Beryllium	1.77E-05	4.05E-06	2.80E-05
Cadmium	3.54E-05	8.09E-06	3.70E-06
Chromium	5.79E-04	1.32E-04	0.033
Fluoride as F	1.18E-02	2.69E-03	0.167
Molybdenum	1.06E-04	2.43E-05	0.667
Phosphorous	4.15E-02	9.47E-03	0.007
Selenium	8.86E-05	2.02E-05	0.013
Silver	4.43E-05	1.01E-05	0.007
Thallium	4.43E-05	1.01E-05	0.007
Tin	8.86E-05	2.02E-05	0.133
Zirconium	8.86E-05	2.02E-05	0.333

	Difference Between Pre and Post Project Emissions pounds/hour	Idaho EL pounds/hour
Antimony	4.58E-06	0.033
Arsenic	9.16E-06	1.50E-06
Barium	2.61E-04	0.033
Beryllium	1.83E-06	2.80E-05
Cadmium	3.67E-06	3.70E-06
Chromium	5.99E-05	0.033
Fluoride as F	1.22E-03	0.167
Molybdenum	1.10E-05	0.667
Phosphorous	4.29E-03	0.007
Selenium	9.16E-06	0.013
Silver	4.58E-06	0.007
Thallium	4.58E-06	0.007
Tin	9.16E-06	0.133
Zirconium	9.16E-06	0.333

APPENDIX D

Technical Support Document – Air Quality Impact Analyses for Particulate Emissions from the Coke Screens Project



Technical Support Document

Air Quality Impact Analyses for Particulate Emissions from Coke Screens Project

P4 Production, LLC Plant
Caribou County, Soda Springs, Idaho

August 2012

Delivering sustainable solutions in a more competitive world

ERM

Air Quality Impact Analyses for Particulate Emissions from Coke Screens Project

P4 Production, LLC Plant
Caribou County, Soda Springs, Idaho

August 2012

Project # 0161019

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TABLE OF CONTENTS

1.0 INTRODUCTION

P4 Production, LLC (P4) is submitting an air permit application for improvements to the coke screening and blending equipment, including replacement of the existing inclined coke screen with two new horizontal screens (the "Coke Screens Project").

This document presents the results of an air quality impact analysis performed based on a dispersion modeling protocol approved by the Idaho Department of Environmental Quality (DEQ). The analysis included dispersion modeling for particulate emissions (PM_{10} and $PM_{2.5}$) resulting from new and modified emission units associated with the proposed Coke Screens Project at the P4 plant located in Soda Springs, Idaho. The modeling analysis was required as part of a permit-to-construct (PTC) application (IDAPA 58.01.01.200).

The P4 facility is located at 1853 Highway 34 on the northern end of the city of Soda Springs, Idaho 83276. The UTM coordinates at the approximate center of the property are 451917.3 m E, 4726308.5 m N (NAD 83, zone 12). The operating area of the P4 Plant encompasses 540 acres and the plant processes locally mined phosphate ore to produce elemental phosphorus. An aerial view of the facility is provided in Figure 1.

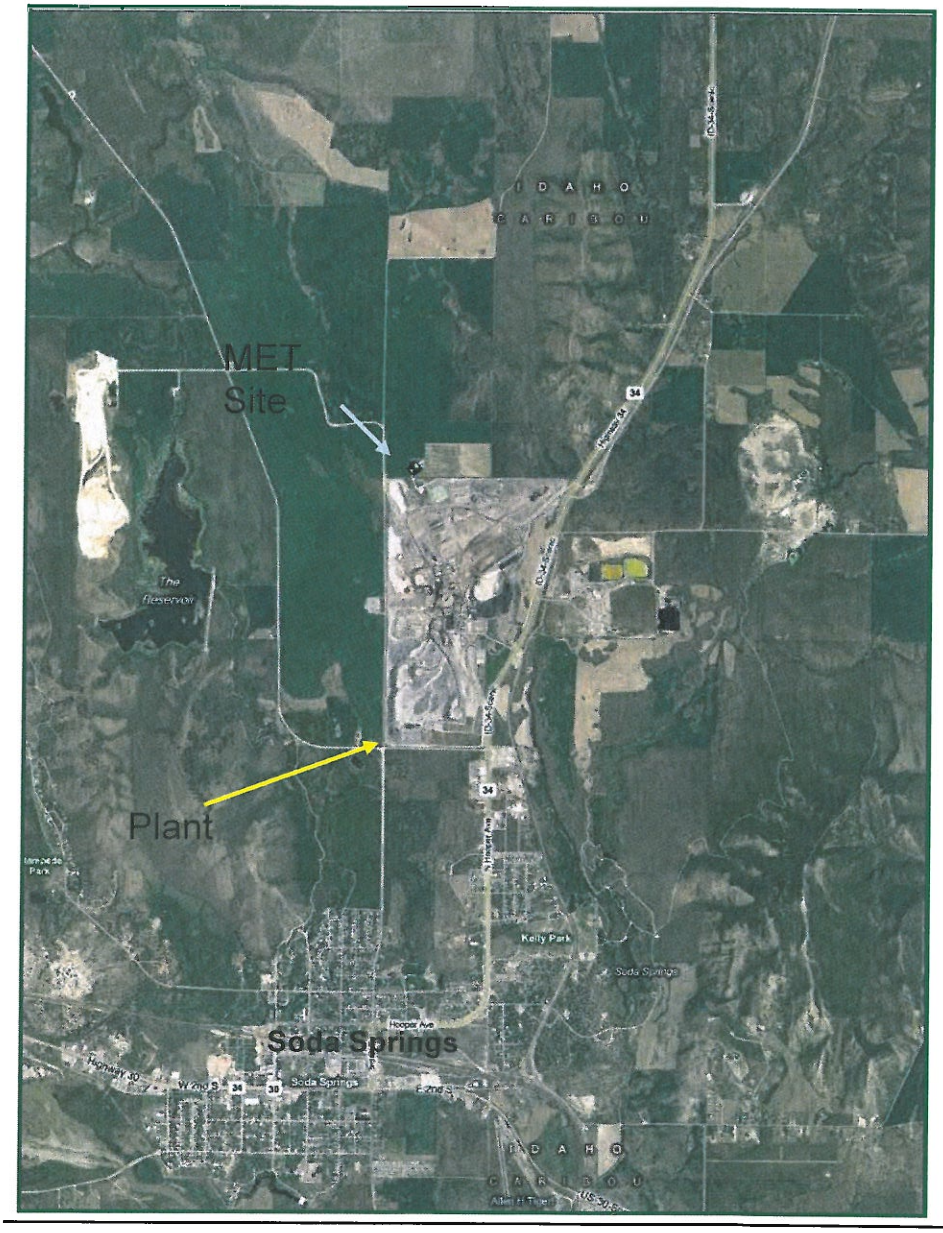
The dispersion modeling analysis included atmospheric dispersion modeling using a U.S. EPA-approved model to simulate the downwind transport and predicted off-site concentrations of PM_{10} and $PM_{2.5}$. In addition, the downwind transport and predicted off-site concentration of arsenic, the only toxic air pollutant (TAP) with a potential to emit exceeding the IDAPA screening emission levels (EL) as described in Idaho Administrative Procedure Act (IDAPA) 35.01.01.585, was also modeled.

Maximum hourly emissions of PM_{10} and $PM_{2.5}$ and annual emissions of $PM_{2.5}$ were estimated for the Coke Screens Project. Modeled particulate concentrations for the modification were compared against state significant contribution levels (SCLs) and EPA significant impact levels (SILs). For arsenic, the maximum predicted concentration was compared against the (IDAPA) acceptable ambient concentration (AAC) as defined in IDAPA 35.01.01.585.

Section 2.0 presents a brief description of the Coke Screens Project. Section 3.0 provides a description of the dispersion model protocol, including databases, characterization of the study area, and an emissions inventory of fumigation scenarios for the air quality impacts assessment. Section 4.0 reports the results of the ambient air quality impact analysis and provides interpretation, analysis, and comparison of the predicted concentrations with the applicable State AAC for arsenic.

Figure 1

Aerial View of the P4 Plant – Soda Springs, ID



2.0 *PROJECT DESCRIPTION*

The proposed Coke Screens Project being permitted in this application will include:

- The replacement of a 50 ton/hour coke screen with two new 65 ton/hour coke screens and structure;
- The installation of a coke fines collection bin, a coke fines truck loading station, a coke conveyor tail pulley, and a coke conveyor discharge enclosure;
- The removal of the existing conveyor 107 and the upper portion of the 105 belt and set up of a new coke conveyor and distributor;
- The installation of a new 105 head pulley, a bucket elevator and a prescreen truck load out;
- The utilization, but reconfiguration of two existing baghouses;
- The removal of the Bulk Storage Bin Baghouse with control changed to the 305 Scaleroom Baghouse; and
- The removal of the old boiler and dryer building.

The former 119.1 Coke Handling Baghouse will be reconfigured as the 305 Scaleroom Baghouse utilizing its full 57,800 cfm capacity. The former 501 Scaleroom Baghouse will become the 307 Coke Screens Baghouse and will be configured to 29,000 cfm controlling the new 65 ton coke screens. These processes are further described in the Coke Screens Project process description in Section 2.2 of this application.

3.0 *DISPERSION MODEL, DATABASES, AND ANALYSES FOR AIR QUALITY IMPACT EVALUATION*

Air quality modeling analyses were performed to assess the ambient air quality impact of the proposed project. The dispersion modeling analysis included atmospheric dispersion modeling using a U.S. EPA-approved model to simulate the downwind transport and predicted off-site concentrations of PM_{10} and $PM_{2.5}$. In addition, the downwind transport and predicted off-site concentration of arsenic, the only toxic air pollutant (TAP) with a potential to emit exceeding the IDAPA screening emission levels (EL) as described in Idaho Administrative Procedure Act (IDAPA) 35.01.01.585, was also modeled.

Maximum hourly emissions were estimated for PM_{10} and $PM_{2.5}$ and annual emissions were estimated for $PM_{2.5}$ and arsenic. Modeled particulate concentrations for the modification were compared against state significant contribution levels (SCLs) and EPA significant impact levels (SILs). For arsenic, the maximum predicted concentration was compared against the acceptable ambient concentration (AAC) as defined in IDAPA 35.01.01.585. Specifically, dispersion modeling analyses were performed to demonstrate compliance with the IDAPA AAC of 0.00023 $\mu g/m^3$ for annual average arsenic concentrations off-site.

A detailed description of the modeling approach and data requirements for the assessment of the air quality impact due to the increase in emissions from the proposed project is included below.

3.1 *DESCRIPTION OF AIR QUALITY DISPERSION MODEL*

The air quality modeling analyses employed the AMS/EPA Regulatory Model (AERMOD), version 12060. The following settings were used in the AERMOD model:

- complex terrain – receptor elevations and hill scales
- rural dispersion coefficients
- regulatory default model parameters, including:
  - calm correction
  - buoyancy induced dispersion
  - final plume rise
  - default wind profile coefficients
  - default vertical potential temperature gradients

- stack-tip downwash
- direction specific building downwash

AERMOD allows for simulation of multiple sources (and source types) simultaneously, while making the correct accounting for building downwash and building cavity effects.

The BPIPPRM program (04274) was used to assess the influence of building wake effects. Each source location and height above ground was input into the BPIPPRM program along with locations and heights of nearby structures. The BPIPPRM program determined the wind direction specific building parameters used by the AERMOD model to account for downwash effects of nearby buildings, including cavity effects.

3.2 *DATABASES FOR AIR QUALITY EVALUATION*

The databases required for input to the dispersion model included source emission data, meteorological data, receptor points, and terrain heights for all sources, buildings, and receptors.

3.2.1 *Emission Inventory Data*

The emission inventories for the emission increases from the proposed project are described in greater detail in Section 3.0 of the permit application.

Table 1 provides the emission rates used in the modeling. Note that the emission rates shown in Table 1 are the net emission increase for PM_{10} and $PM_{2.5}$ associated with the proposed project, as well as the net emissions increase for arsenic, the only TAP with a PTE exceeding the applicable EL.

Figures 2a and 2b depict the location of the building structures and new sources in relation to the property boundary and as configured in the model.

Table 1
Emission Inventory of the Modification Sources

Point Sources

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (ft)	Temperature (°F)	Exit Velocity (fps)	Stack Diameter (ft)	PM10 (lb/hr)	PM2.5 (lb/hr)	ARSENIC (lb/hr)
305	Scaleroom BH	451866.3	4726326.5	1827.8	18.3	300	76.69	4.00	0.64	0.64	2.70E-06
307	Coke Screen BH	451869.3	4726326.5	1827.8	18.3	321	60.14	3.20	0.75	0.75	4.57E-06

Area Sources

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (ft)	Easterly Length (ft)	Northerly Length (m)	Angle from North	Vertical Dimension (m)	PM10 (lb/hr)	PM2.5 (lb/hr)	ARSENIC (lb/hr)
FUGITIVE	Coke Screens Fugitives	451855.3	4726348.48	1827.79	40	26.25	--	--	--	0.3785	0.0247	1.89E-06

Figure 2a
Emissions Sources in Relation to Building Structures and Property Boundary

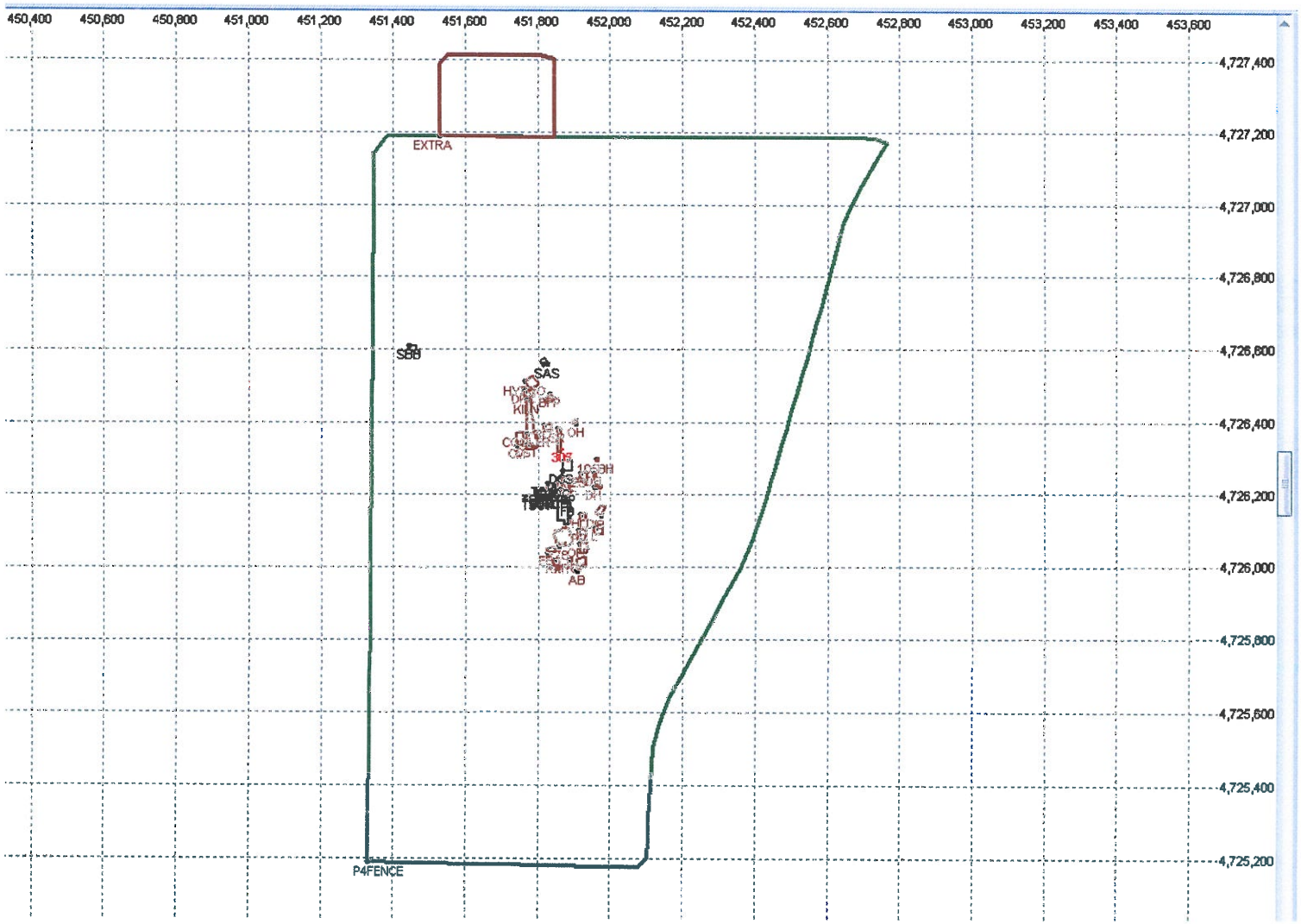
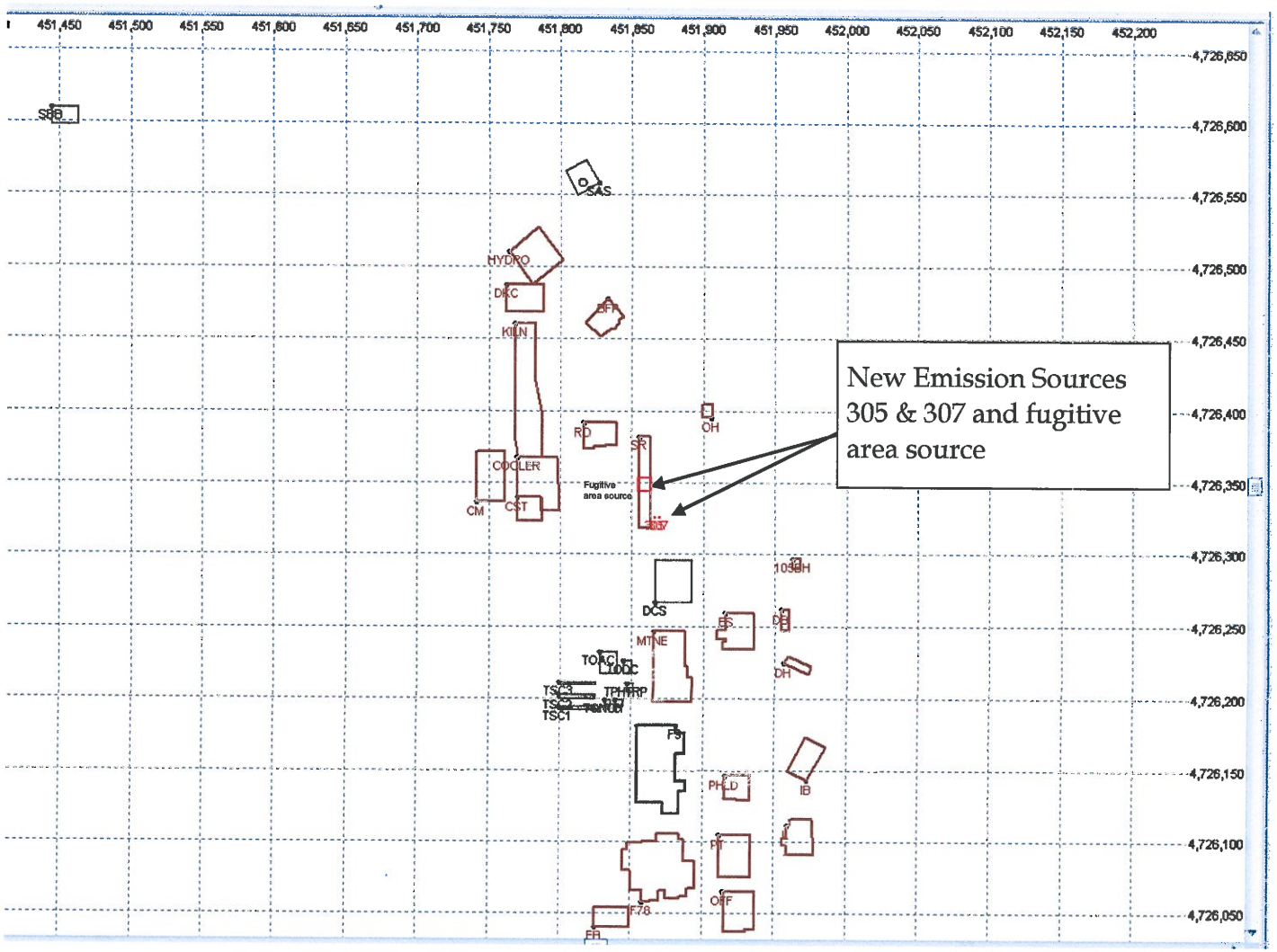


Figure 2b
Emissions Sources in Relation to Building Structures



3.2.2 *Meteorological Data*

The meteorological database used in the dispersion model consisted of five years (2004 - 2008) of on-site surface observations (supplemented by nearby Pocatello, Idaho surface data) and coincident upper air observations from the Boise Air Terminal, Idaho National Weather Service site. This data was provided by DEQ and processed with AERMET version 06341.

3.2.3 *Receptor Grids*

The dispersion modeling analyses was performed using a receptor grid (refer to Figure 3) consisting of 7,854 receptors, extending to 10 kilometers from the plant. The maximum predicted concentrations were in the near-field, on, or close to the facility fence-line. The receptor spacing used in the modeling is as follows:

1. 50-meter (m) spacing along the facility fence-line;
2. 50-meter (m) spacing fence-line to 300m;
3. 100-m spacing from 300m to 3,000 m;
4. 500-m spacing from 3,000 m to 5,000 m; and
5. 1000-m spacing from 5,000 m to 10,000 m

Once the maximum impact point was identified in the above receptor grid, the maximum impacts were refined within a grid with 10-meter spacing (refer to Figure 4). The maximum impact points for each pollutant and averaging times are provided at the end of this section in Tables 5 through 8.

The latest version of the AERMAP program (version 11103), with NED terrain files, was used to develop hill scale and terrain elevation inputs for each receptor. All coordinates were based on the NAD83 datum. Rural dispersion was assumed.

3.3 *METHODOLOGY FOR AIR QUALITY MODELING*

Model simulations were performed to calculate 24-hour average concentrations for $PM_{2.5}$ and PM_{10} and annual concentration for $PM_{2.5}$ and arsenic, with the AERMOD dispersion model for the historical 5-year meteorological database previously identified. The modeling results were

compared to the applicable SLC and SIL concentrations for PM_{10} and $PM_{2.5}$ and the arsenic AAC of 0.000232 $\mu g/m^3$.

Figure 3
Receptor Grid for Ambient Air Quality Impact Analyses

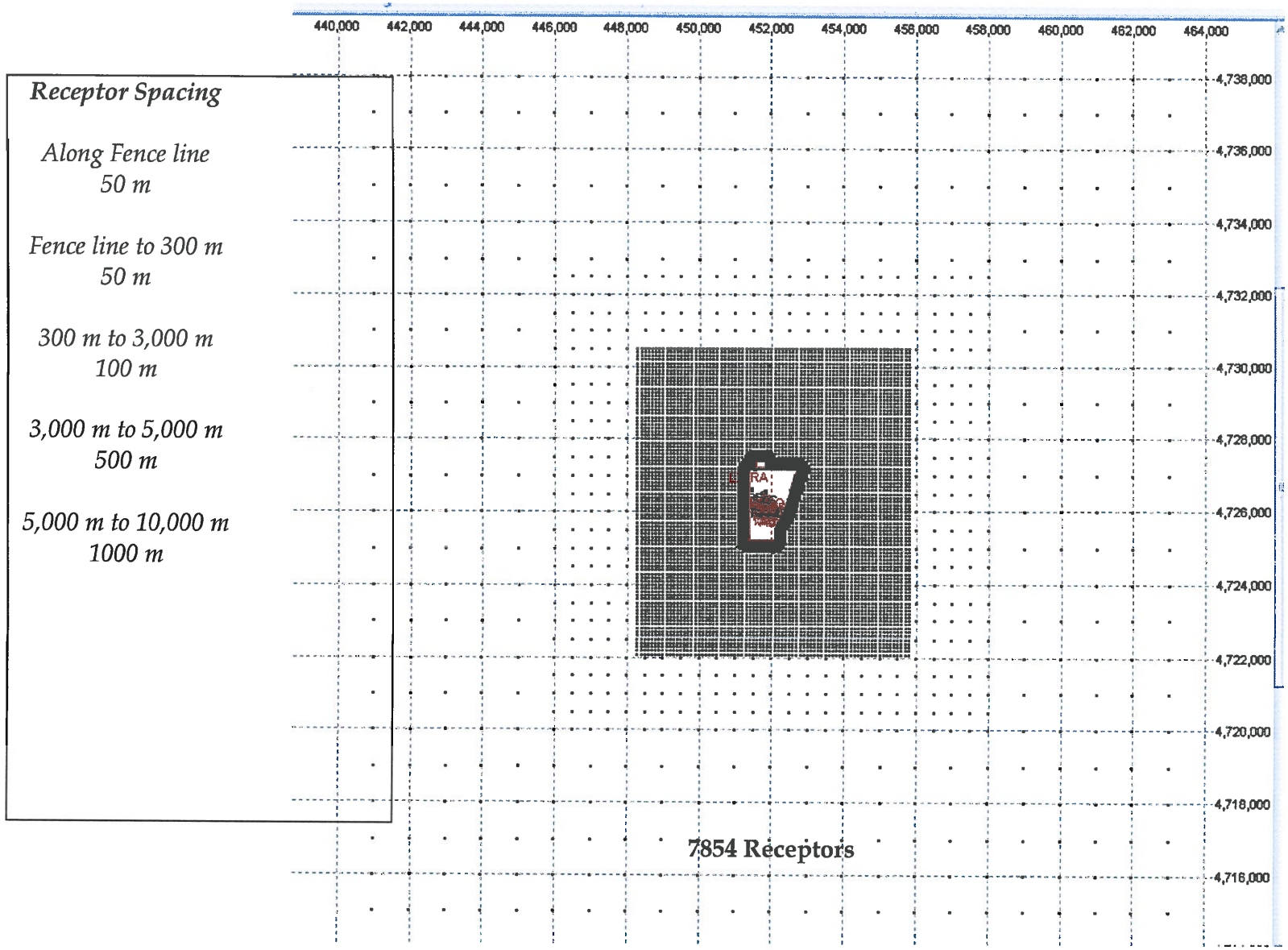
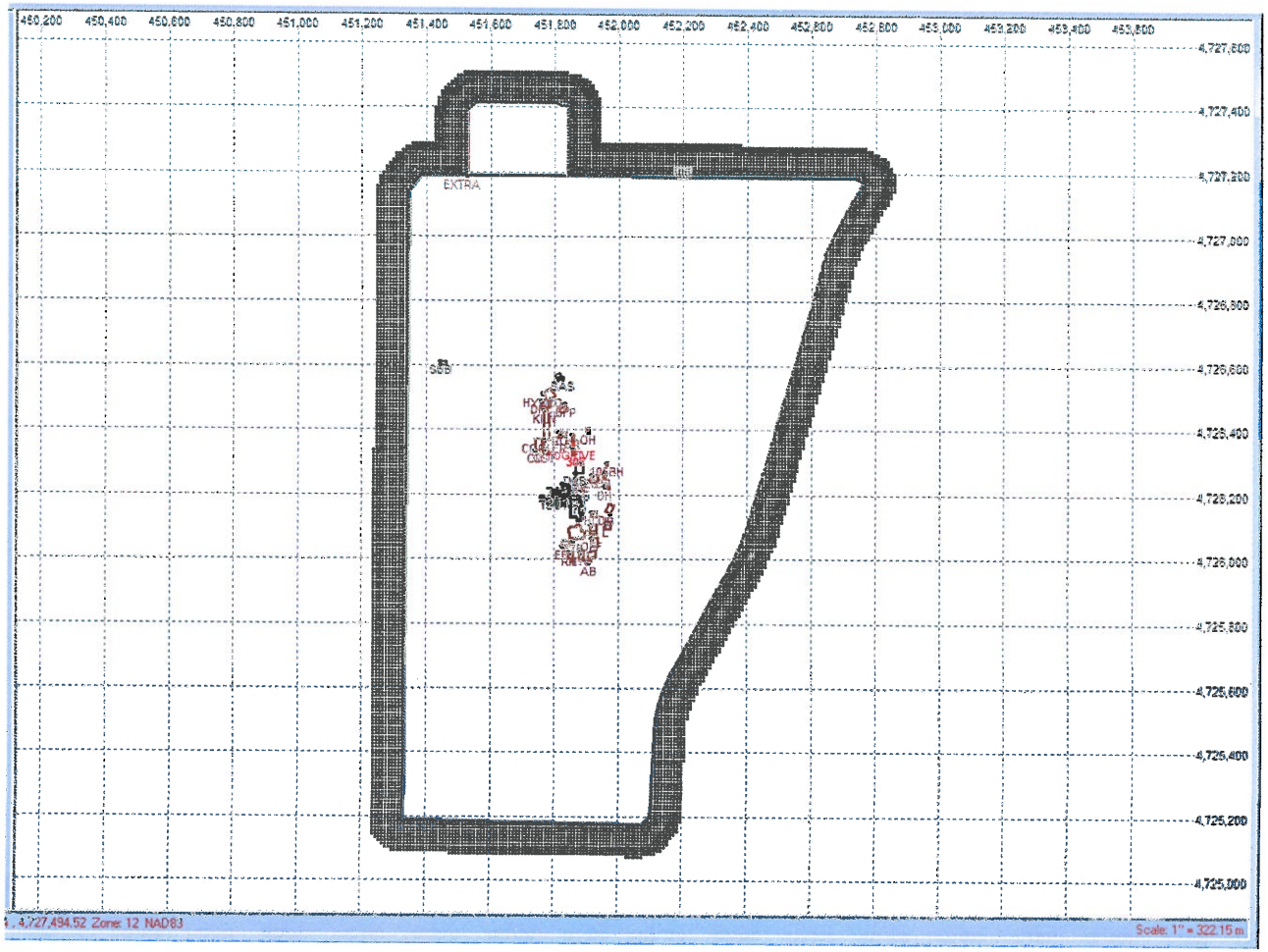


Figure 4
10-meter Receptor Grid for Final Refinement Ambient Air Quality Impact Analyses



7726 Receptors

Figure 5
Location of 24-hour Average PM_{10} Maximum Impacts

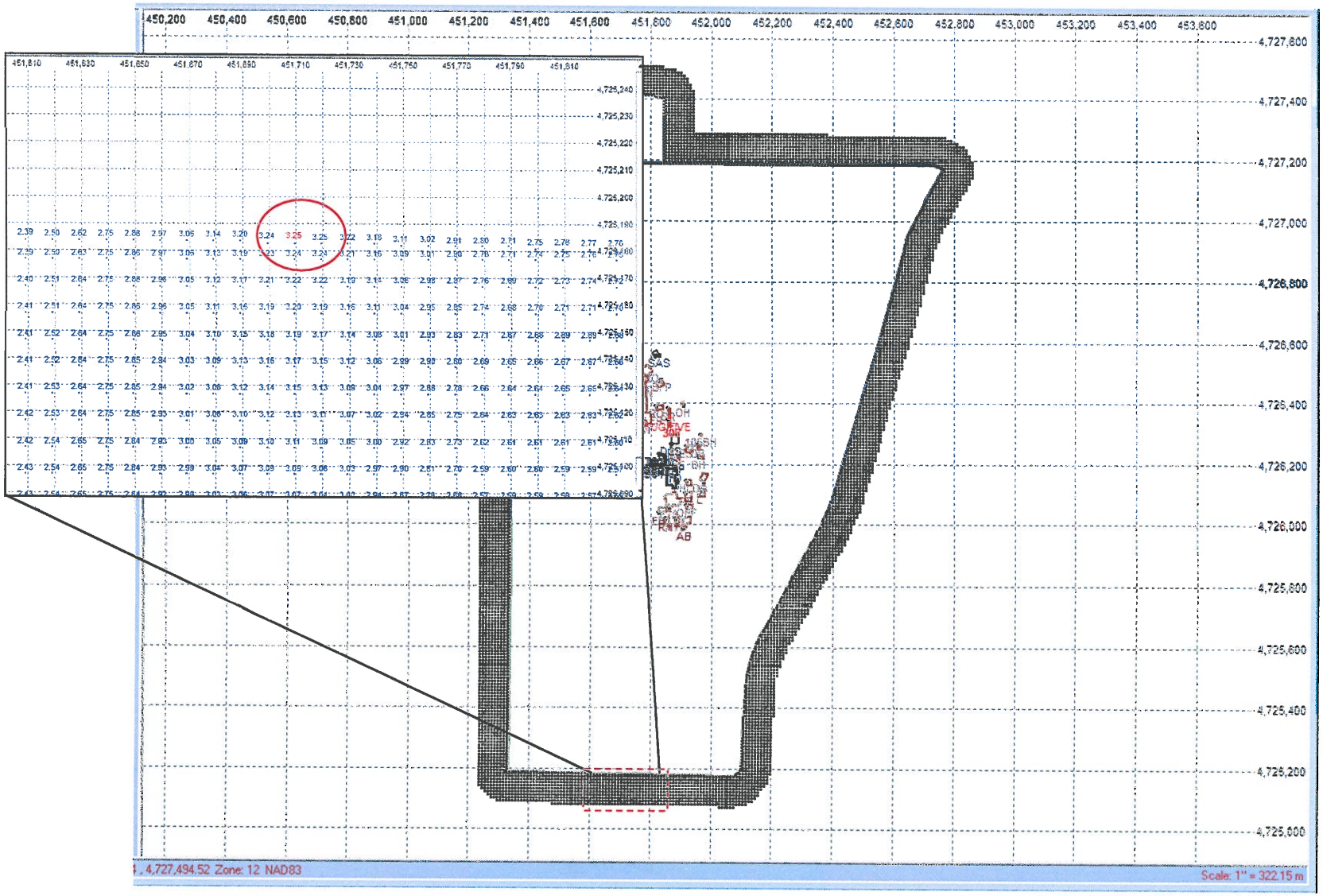


Figure 6
Location of 24-hour Average $PM_{2.5}$ Maximum Impacts

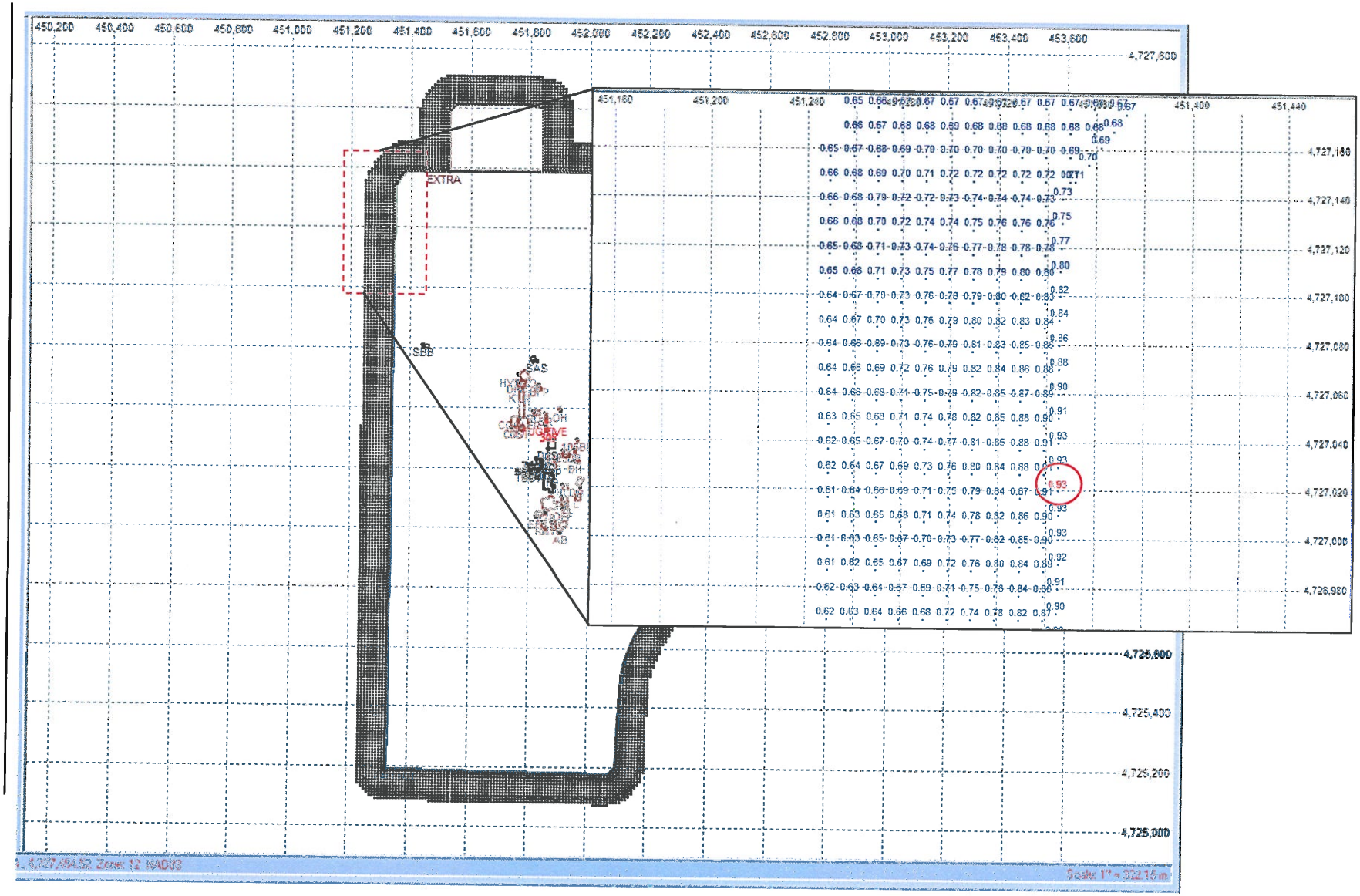


Figure 7
Location of Annual Average $PM_{2.5}$ Maximum Impacts

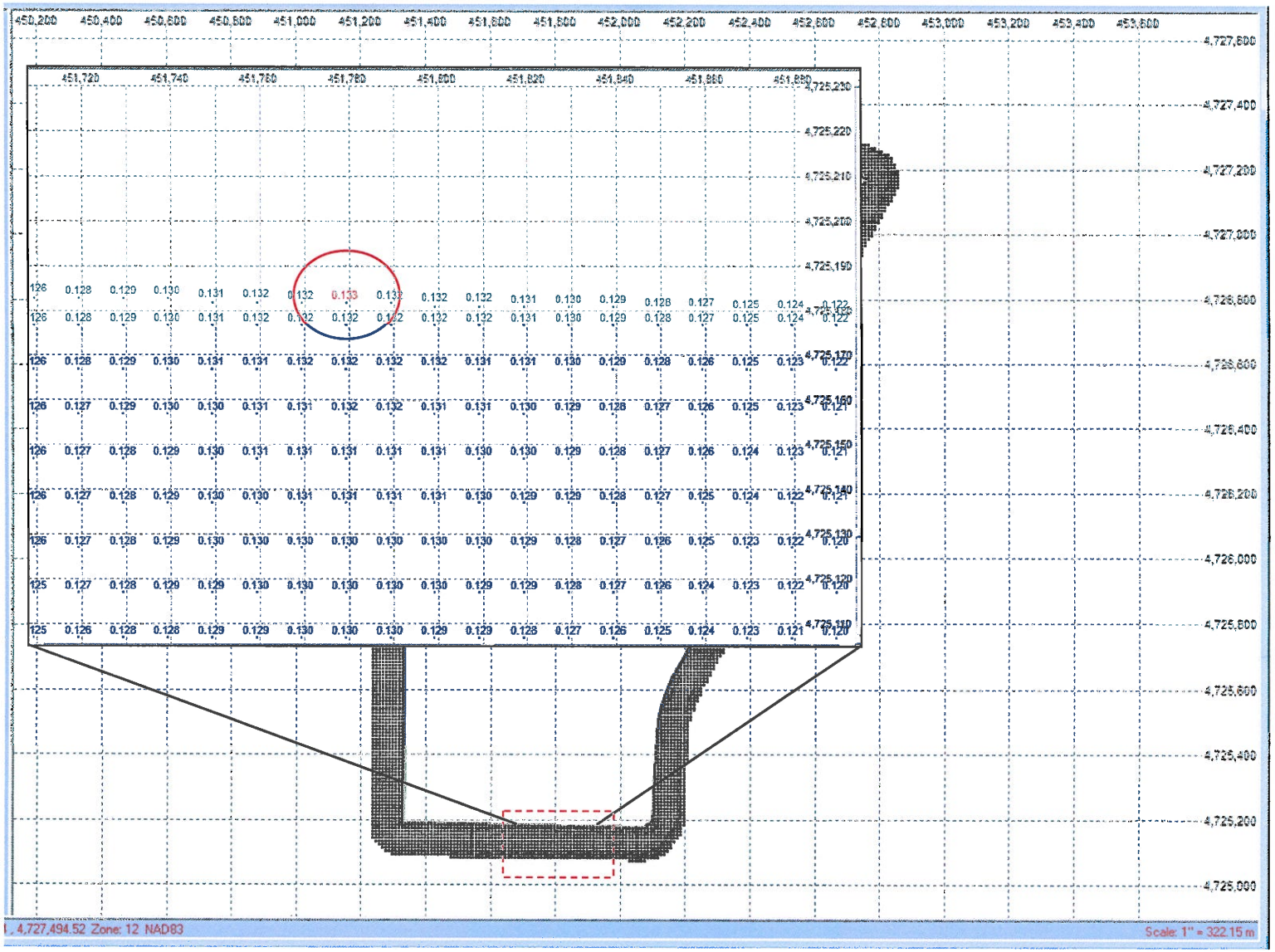
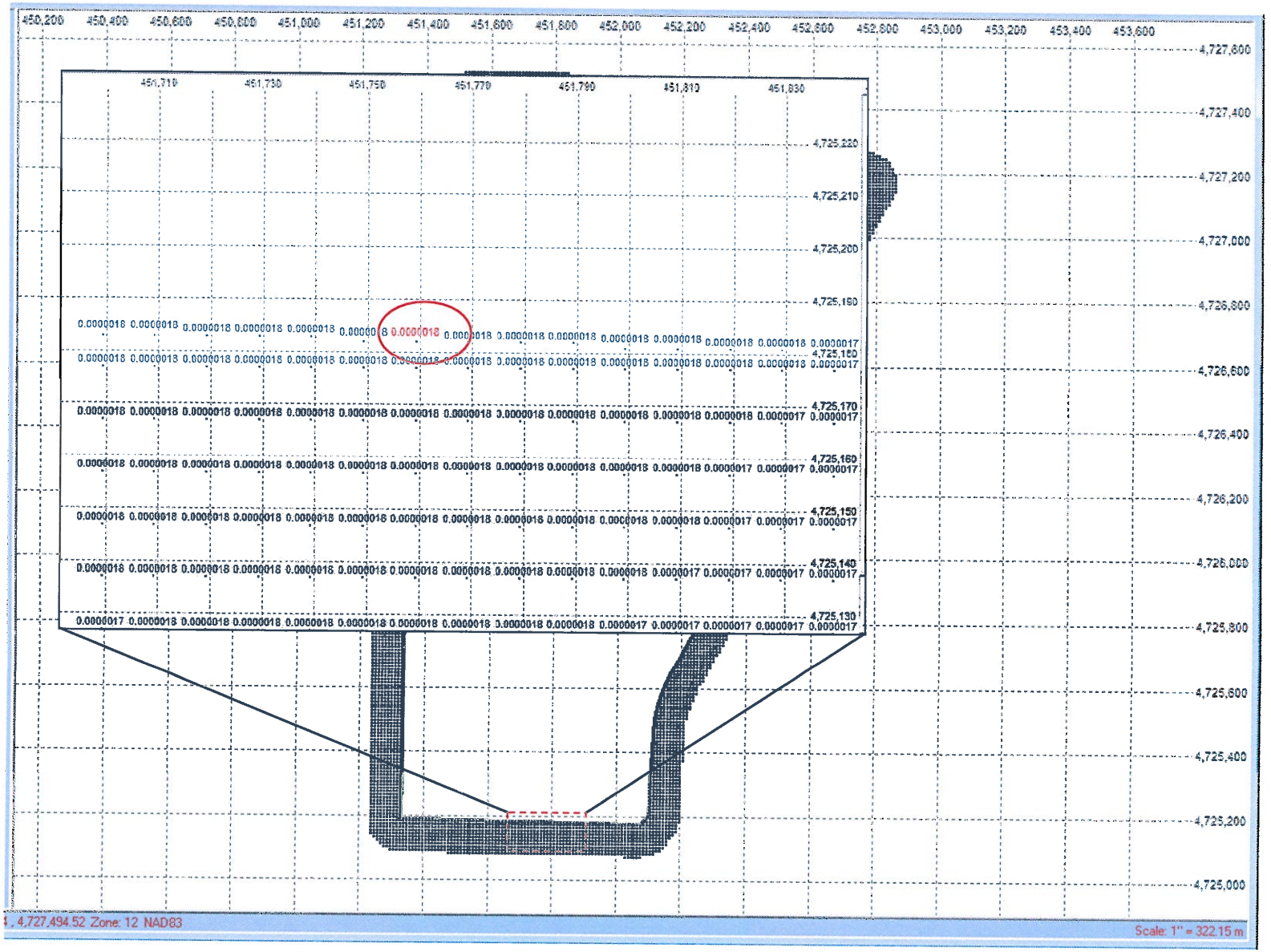


Figure 8
Location of Annual Average Arsenic Maximum Impacts



4.0 AMBIENT AIR QUALITY IMPACT ASSESSMENT

A summary of the air quality dispersion modeling analyses supporting the proposed PTC at the P4 plant is presented below. A compact disk of the model input and output is included with this report.

4.1 SUMMARY OF MODELING RESULTS

The maximum predicted 24-hour average concentration for PM_{10} is 3.25 $\mu g/m^3$. The maximum predicted 24-hour average concentration for $PM_{2.5}$ is 0.932 $\mu g/m^3$. The maximum predicted annual average concentration for $PM_{2.5}$ is 0.133 $\mu g/m^3$. Since these concentrations are below the applicable SCL and SIL, additional dispersion modeling is not required.

The maximum predicted annual average arsenic concentration is 0.00000184 $\mu g/m^3$. This shows compliance with the annual arsenic AAC of 0.000232 $\mu g/m^3$.

Pollutant	Averaging Time	Maximum Concentration ($\mu g/m^3$)	Location X (m)	Location Y (m)
PM_{10}	24-hour	3.25	451709.3	4725182.9
$PM_{2.5}$	24-hour	0.932	451345.3	4727019.5
$PM_{2.5}$	Annual	0.133	451779.3	4725181.5
Arsenic	Annual	0.00000184	451729.3	4725182.5

APPENDIX E

Prior Explanation of IDEQ TAPs that May Be Emitted or Excluded From Emissions from the Soda Springs Facility

APPENDIX E

Future Potential Toxic Air Pollutant Emissions

Consistent with Consent Order paragraph 7.D.ii, this appendix addresses potential emissions of toxic air pollutants (TAPs) regulated under 58.01.01.585 and .586 that were not already addressed as Idaho PSD pollutants. Future potential emissions of those TAPs that are also Idaho PSD pollutants are presented in Table 6 of Section 4.5. The emission estimates are provided electronically on a compact disc provided in Appendix C.

Senior process engineers at P4 estimated emissions of chemical species regulated by IDAPA 58.01.01.585 and 586. First, the engineers applied process knowledge to identify pollutants that might possibly be emitted at the plant. The preliminary species considered were all pollutants from:

1) The revised Title V permit application database
2) PSD and criteria priority pollutants
3) A complete review of all species in the Idaho TAPs (Toxic Air Pollutants) list
4) A complete review of all species in the federal EPA Hazardous Air Pollutants list
5) Laboratory analyses

Based on process knowledge, pollutants that were not likely to be emitted at the facility were removed from further consideration. Next, all remaining species were compared to all available plant sampling data. In completing this task, all source lists were reviewed for accuracy of species descriptions and CAS numbers. This was done to determine applicability and to be certain P4 engineers understood the correct definition of each species on the regulatory lists (e.g., was the species of concern an element, compounds containing that element, or a specific compound only). In two cases (calcium carbonate and calcium sulfate), P4 found the CAS number on the Idaho TAP list to be inconsistent with the species description. A follow-up with the IDEQ determined that the CAS numbers were incorrect and that the species description was the compound that was regulated. For all other species, P4 defaulted to the official CAS number when the description was unclear.

For the purposes of critically accessing and refining our master list of potential species, P4 divided the species candidates into the following groups.

1) Species believed to be in one or more of the streams within the process and/or emission sources based on either process knowledge and/or at least some analytical results.
2) Species that could be in one or more of the streams or emission sources, but P4 has no definitive process knowledge or reliable analytical results to substantiate this possibility. This would include species that were found to be below

analytical detection limits or those for which the sampling and analytical results are considered unreliable. Many of the species in this group were analyzed for in a few streams judged most likely and found to be below detection limits. This grouping also includes some species that to P4's knowledge have never been measured.

3) Species that P4 does not believe exist within the Soda Springs phosphorus process. Examples include ammonia, vinyl chloride, bromine, chlorine and iodine gases, and free elemental metals such as cobalt, nickel, silicon, tantalum etc.
4) Species that may exist within the plant but are not considered "in process" materials.

The following chemical species fall into groups 2, 3, and 4 above and were eliminated from further consideration:

Species	CAS #	Group	Regulatory list
1. Elemental magnesium metal	7439-95-4	3	Title V database
2. Elemental nickel metal	7440-02-0	3	TAPS
3. VOC	na	2	Criteria Poll & Title V
4. Vinyl chloride	75-01-4	3	PSD, TAPS,
5. Ammonia	7664-41-7	3	TAPS
6. Sodium tetraborates	1303-96-4	3	TAPS
7. Bromine gas	7726-95-6	3	TAPS
8. Calcium sulfate	7778-18-9	3	TAPS
9. Chlorine gas	7782-50-5	3	TAPS
10. Fluorine gas	7782-41-4	3	TAPS
11. Germanium tetrahydride	7782-65-2	2	TAPS
12. Elemental Hafnium	7440-58-6	2	TAPS
13. Hydrogen chloride	7647-01-0	2	TAPS
14. Indium & compounds	7440-74-6	2	TAPS
15. Iodine gas	7553-56-2	2	TAPS
16. Iron salts (soluble)	7439-86-6	2 & 3	TAPS
17. Lithium Hydride	7580-67-8	2	TAPS
18. Osmium tetraoxide	20816-12-0	2	TAPS
19. Phenol	108-95-2	2	TAPS
20. Platinium & soluble compounds	440-06-4	2	TAPS
21. Rhodium & compounds	740-16-6	2	TAPS
22. Elemental silicon metal	7440-21-3	3	TAPS
23. Sodium hydroxide	1310-73-2	3	TAPS
24. Elemental Tantalum	7440-25-7	2	TAPS
25. Tellurium & compounds	13494-80-9	2	TAPS
Tungsten & compounds as W	7440-33-7	2	TAPS
26. Elemental Zinc	7440-66-6	3	TAPS
27. Coal tar volatiles	na	2	TAPS
28. Misc lab chemicals	misc	4	TAPS
29. Glycols	several	4	TAPS
30. Mineral wool fibers	na	4	TAPS
31. Fiberglass fibers & dust	na	4	TAPS

The remaining species on the potential candidate list were further pursued. Information on the chemical form of species in our raw materials and by-product were evaluated where possible. The following assumptions were made regarding the remaining species.

Silica

Silica is found in phosphate ore and the majority has been observed as quartz (SiO). Phyllosilicates and Ca-Al-Fe silicates are also abundant with minor amounts of ten other silicate minerals observed. Cristobalite has not been observed in phosphate ore. For purposes of emission estimates 50% of Silica in the ore is assumed to be quartz (CAS # 14808-60-7). All plant silica will also be assumed to be in this mineralogical form.

Nickel (elemental only)

Nickel has been found in phosphate ore mainly in the form of pentlandite $(Fe,Ni)_9S_8$, Heideite $(Fe,Cr)1+x(Ti,Fe)_2S_4$), and Fe-Ni sulphide minerals. This pollutant class applies to elemental nickel only. P4 has no knowledge or data that suggest elemental nickel is generated in the plant process. For this reason nickel was excluded from further TAPs analysis.

Zinc (elemental only)

Zinc has been found in phosphate ore mainly in grains of sphalerite (ZnS). This pollutant class applies to elemental zinc only. P4 has no knowledge or data that suggest elemental zinc is generated in the plant process. For this reason this CAS# was excluded from further TAPs analysis.

Zinc Oxide fumes or dust as ZnO

Zinc has been found in phosphate ore mainly in grains of sphalerite (ZnS). It was assumed this pollutant class applies to sources processing zinc or zinc oxide products and does not include dust with trace amounts of other zinc compounds. P4 has no knowledge or data that suggest zinc oxide fumes are generated in the plant process. For this reason zinc oxide fumes were excluded from further TAPs analysis.

Aluminum

Aluminum has been observed in phosphate ore mainly in the form of Al-phosphate (wavellite). Other aluminum-rich minerals found within deposits include illite, feldspar and other Al-bearing silicates. This CAS# includes elemental aluminum, oxides and soluble salts. These forms tend to be insoluble. P4 has no knowledge or data that would suggest elemental aluminum or oxides are generated in our plant. For these reasons Aluminum was excluded from further TAPs analysis.

Barium

Barium has been observed in phosphate ore primarily in the form of barite ($BaSO_4$) and Ba-Sulphides. Barite is insoluble while the sulfides tend to be soluble or decompose in water. For this reason, 50% of the barium compounds in the plant ore will be assumed soluble and emissions reported.

Boron and Compounds

Trace amounts of boron have been analyzed in phosphate ore but has not been found or identified in a discrete mineral phase. While it is possible that part of the boron is present in one or more of the reportable forms none of the listed boron compounds are known to be in the ore or generated in the plant. For this reason boron was excluded from further TAPs analysis.

Calcium Compounds

The majority of calcium in phosphate ore has been observed to be calcium phosphate. Only a minor component of calcium has been observed to occur as calcite ($CaCO_3$) or as Ca-silicates. Ca-silicates are present throughout the ore but commonly associated with other elements forming discrete mineral phases with Ca-Al-Fe silicates being the most abundant. For this reason, only slag and ferrophos were assumed to contain calcium silicate (synthetic) for purposes of emissions estimates. The quantity of calcite was calculated based on the ore carbonate analysis and the observation that most carbonate occur in phosphate ore as calcite. No CaO or $CaSO_4$ calcium has been observed in the ore so only CaO brought in with other raw materials was considered for further TAPs analysis.

Copper (fume, dust, mist) as Cu

Copper has been observed as discrete grains of chalcopyrite ($CuFeS_2$) and covellite (CuS) in phosphate ore. It was assumed this pollutant class applies to sources processing copper products and does not include dust with trace amounts of these compounds. P4 has no knowledge or data that suggest copper fumes are generated in the plant process. For this reason, copper was excluded from further TAPs analysis.

Cobalt metal, dust and fumes as Co

Trace amounts of cobalt have been analyzed in plant materials. The mineralogical form has not been identified in discrete mineral phases. It was assumed this pollutant class applies to sources processing cobalt products and does not include dust with trace amounts of cobalt compounds. P4 has no knowledge or data that suggest cobalt fumes are generated in the plant process. For this reason, cobalt was excluded from further TAPs analysis.

Upon completion of this analysis, estimates for the following Idaho TAP compounds were prepared.

Idaho TAPs Compound	CAS #
Antimony & compounds as Sb	7440-36-0
Arsenic & compounds as As	7440-38-2
Cadmium & compounds as Cd	7440-43-9
Chromium, metal, II, III	7440-47-3
Manganese & compounds as Mn	7439-96-5
Phosphine	7803-51-2
Phosphorus (P) (elemental)	7723-14-0
Selenium & compounds as Se	7782-49-2
Barium & soluble compounds, as Ba	7440-39-3
Calcium Carbonates	471-34-1
Calcium Hydroxide	1305-62-0
Calcium Oxide	1305-78-8
Calcium Silicate (synthetic)	1344-95-2
Carbonyl sulfide as COS	463-58-1
Coal dust (<5% silica)	NA
cyanide & compounds as CN	592-01-8
Molybdenum & Compounds as Mo	7439-98-7
Phosphoric acid (H3PO4)	7664-38-2
Phosphorus pentaoxide (P2O5) ID	1314-56-3
Silica (quartz)	14808-60-7
Silver & compounds as Ag	7440-22-4
Thallium & soluble compounds as Tl	7440-28-0
Tin & most compounds as Sn	7440-31-5
Uranium & compounds as U	7440-61-1
Zirconium & compounds as Zr	7440-67-7

The emissions estimates developed are considered a reasonable and accurate representation of potential air emissions from the Soda Springs phosphorus plant. They were prepared by P4's senior engineering staff using operations and field test data where available and engineering judgment based on general process knowledge where test data was very limited or not available at all. When it was considered reasonable that a source could possibly contain a pollutant but no test data was available or reasonable method to estimate the quantity, it is shown as either "no data" or "unknown". When a source is shown as " referenced", this means that its emission contributions are included with the estimate for another source. An example would be a conveyor transfer point's collected emissions being included with a single value for all points serviced by a dust collector.

With a task of this magnitude and the limited time available, it is possible that inadvertent errors may have been included. P4 Production reserves the right to correct, revise, or update any of theses estimates should an error be found or new credible data become available.

Vanadium (reparable dust, fumes) as V_2O_5

Vanadium has been observed mainly in the form of V-oxides and oxides consisting of vanadium with variable proportions of other elements. Phyllosilicates also were found to host vanadium. It was assumed this pollutant class applies to sources processing vanadium products and does not include dust with trace amounts of vanadium compounds. P4 has no knowledge or data that suggest vanadium fumes are generated in the plant process. For this reason, vanadium was excluded from further TAPs analysis.

Magnesium Oxide fumes as MgO

Magnesium has been observed in phosphate ore mainly in the form of Ca-Mg silicates and Ca-Mg-Al silicates and to a lesser degree in calcite ($CaCO_3$) and glauconite ($(K, Na,Ca)_{.5-1}(Fe^{3+},Al, Fe^{2},-Mg)_2(Si,Al)_4O_{10}(OH)_2$-$nH_2O$) minerals. It was assumed this pollutant class applies to sources processing magnesium or magnesium oxide products and does not include dust with trace amounts of these compounds. P4 has no knowledge or data that suggest magnesium oxide fumes are generated in the plant process. For this reason, magnesium oxide was excluded from further TAPs analysis.

Iron Oxide Fumes as Fe

Iron has been observed in more than twenty different mineral phases in phosphate ore. These phases include Fe-oxides, Fe-Ti oxides and Fe-V oxides. It was assumed this pollutant class applies to sources processing iron or iron oxide products and does not include dust with trace amounts of iron compounds. P4 has no knowledge or data that suggest iron oxide fumes are generated in the plant process. For this reason, iron oxide fumes were excluded from further TAP analysis.

APPENDIX F

Fan Curves for the Baghouses in the Coke Screens Project at the Soda Springs Facility

BF2610 (308)

43-22 MRO # 43222 Quantile Dust Coll Fan

"Buffalo"

BUFFALO FORGE CO. **PERFORMANCE CURVES** BUFFALO, N.Y.

FOR MONSANTO CO. (PROJECT 3136) - CORPORATE ENGINEERING PROCUREMENT

SIZE & TYPE 980 H-20 SWSI 23.8

1180 RPM 95. °F [illegible] IN.HG - 0.0570 LB/CU FT

PD 65823
ORDER 77K-865
DATE 2/19/77
BY JG

PERFORMANCE BASED ON ES-73003
47.25 INCH DIAMETER WHEEL
8.21 SQ FT OUTLET AREA

MONSANTO COMPANY — Order No. [illegible]
CORPORATE ENGR. DEPT. — Project (CEA) No. [illegible]
Location: [illegible] Area [illegible]
Equipment No. [illegible]
Description: [illegible]
Reviewed by: J. D. Hutchison Date 4-28-77
☐ Make Corrections noted ☐ Leave as Shown ☒ Final

28,000 CFM

PRESSURE-INCHES WATER GAUGE

CAPACITY - 1000 CFM

EFFICIENCY IN PERCENT

HORSEPOWER

75 90 115

F2600(306)

4/3.22 MR0# 43122 Lacke Dust Coll. Fan

"Buffalo"

BUFFALO FORGE CO. **PERFORMANCE CURVES** BUFFALO, N.Y.

FOR MONSANTO CO. (PROJECT 3136) - CORPORATE ENGINEERING PROCUREMENT

SIZE & TYPE 980 H-36 SWSI 23.8

1180 RPM 95. °F [redacted] IN.HG 0.0570 LB/CU FT

PD 65819
ORDER 77K-866
DATE 2/19/77
BY JG

PERFORMANCE BASED ON ES 73005
50.75 INCH DIAMETER WHEEL
13.5 SQ FT OUTLET CONE

MONSANTO COMPANY Order No. [illegible]
CORPORATE ENGR. DEPT. Project (CEA) No. [illegible]
Location [illegible] Area [illegible]
Equipment No. [illegible]
Description [illegible]
Reviewed by [illegible] Date [illegible]
☒ Make Corrections noted ☐ Leave as Shown ☒ Final

54,000 CFM

HP

SP

SE

PRESSURE-INCHES WATER GAUGE

EFFICIENCY IN PERCENT

BRAKE HORSEPOWER

CAPACITY - 1000 CFM

20 40 60 80 100 120 140 160 180

0 5 10 15 20

0 50 100 150 200 250