# Statement of Basis

**Final**

**P4 Production, L.L.C.**
**Blackfoot Bridge Mine**
**Soda Springs, Idaho**
**Facility ID No. 029-00035**
**Permit to Construct P-2009.0135**

CZ

**December 30, 2010**
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**Permit Writer**

**The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.**

## ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

| | |
|---|---|
| BACT | Best Available Control Technology |
| CAM | Compliance Assurance Monitoring |
| CFR | Code of Federal Regulations |
| CO | carbon monoxide |
| DEQ | Department of Environmental Quality |
| EL | screening emission levels |
| EPA | U.S. Environmental Protection Agency |
| HAP | hazardous air pollutants |
| IDAPA | a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act |
| km | kilometers |
| lb/hr | pounds per hour |
| lb/qtr | pound per quarter |
| MACT | Maximum Achievable Control Technology |
| NAAQS | National Ambient Air Quality Standard |
| NAICS | North American Industry Classification System |
| NESHAP | National Emission Standards for Hazardous Air Pollutants |
| $NO_2$ | nitrogen dioxide |
| $NO_X$ | nitrogen oxides |
| NSPS | New Source Performance Standards |
| O&M | operations and maintenance |
| PM | particulate matter |
| $PM_{10}$ | particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers |
| PSD | Prevention of Significant Deterioration |
| PTC | permit to construct |
| PTE | potential to emit |
| Rules | Rules for the Control of Air Pollution in Idaho |
| SCL | significant contribution limits |
| SIC | Standard Industrial Classification |
| SIP | State Implementation Plan |
| $SO_2$ | sulfur dioxide |
| $SO_X$ | sulfur oxides |
| T/yr | tons per consecutive 12-calendar month period |
| TAP | toxic air pollutants |
| UTM | Universal Transverse Mercator |
| VOC | volatile organic compounds |

## FACILITY INFORMATION

### *Description*

The vegetation is cleared from the disturbance area. After the removal of the vegetation, the topsoil is removed and either stockpiled or placed upon overburden disposal areas prepared for final mine reclamation. After the topsoil is removed, the overburden is drilled, blasted (when necessary) and removed by a typical truck/shovel fleet of mining equipment. Once the overburden is removed, phosphate ore is blasted (when necessary), segregated, and recovered from three separate open mine pits: North, Middle, and South Pits. The ore is then loaded by the track-mounted excavators (shovels) and transported via off highway mining trucks to the feed-hopper area.

From the feed-hopper, ore will be conveyed to the double-deck screen where the material is sized and sent either to the primary crusher, the crusher bypass, or onto the loadout (tipple). The ore that has been through the double-deck screen and is between 2" and 6" will either be placed on the crusher feed belt or placed on the crusher bypass conveyor. The ore in the crusher bypass pile, based on ore quality, will be reclaimed and either rejected as waste and hauled back to the active overburden disposal area or will be transported back to the ore stockpile and eventually run through the system again. The horizontal impact crusher feed consists of ore from the bottom screen deck having a size range of 2" – 6". This ore will be crushed to 2" and conveyed back to the screen. Any material still larger than 2" will be sent as a re-circulating load back to the crusher for another round of crushing. Design indicates 10% of the material will re-circulate to the crusher. The ore that passes through the screens and is 2" minus will be conveyed back to the truck loadout bin. The ore train haul trucks will then be loaded and transport ore to the chemical processing facility.

Dust conditions within the ore loadout will be minimized by the inherent moisture content of the ore, which is approximately 12%. Dust from the unpaved haul roads leading in the feed-hopper and service areas will be minimized by routine utilization of water trucks.

### *Permitting History*

This is the initial permit for the Blackfoot Bridge Mine.

### *Application Scope*

This permit is the initial PTC for this facility.

The applicant has proposed to install and operate a phosphate ore mine approximately ten miles north of Soda Springs.

### *Application Chronology*

| | |
|---|---|
| November 2, 2009 | DEQ received an application |
| November 12, 2009 | DEQ received an application fee |
| November 19 – December 4, 2009 | DEQ provided an opportunity to request a public comment period on the application and proposed permitting action. |
| December 8, 2009 | DEQ determined that the application was complete. |
| December 18, 2009 | DEQ made available the draft permit and statement of basis for peer and Regional Office review. |
| January 13, 2010 | DEQ made available the draft permit and statement of basis for applicant review. |
| July 12, 2010 | DEQ received the processing fee. |
| October 13, 2010 | Revised emission inventory and modeling received from facility. |

| | |
|---|---|
| December 17, 2010 | DEQ issued second facility draft permit. |
| December 29, 2010 | DEQ received comments from facility |

## TECHNICAL ANALYSIS

### *Emissions Units and Control Devices*

The facility does not use control devices for the fugitive emissions. Dust control methods are used as described in the facility's Fugitive Dust Control Plan.

### *Emissions Inventories*

The emissions were estimated using EPA AP-42 factors.

For dozing operations, the factor from AP-42 Table 11.9-1 for total suspended particulates (TSP) for overburden was used. For $PM_{10}$, the scaling factor in the table was used with the factor for </= 15µm. AP-42 Table 11.9-3 shows typical silt and moisture values when calculating the TSP emissions estimate, if actual values are not available. It was estimated that the average silt content was appropriate to use in the equation, and that the moisture content would be higher than average but still in the range of tested values. The emission factor derived from the equation applies to all bulldozing done at the facility. The emissions were estimated by the facility by multiplying the emission factor by six (four for overburden and two for excavation), which is the number of dozers used at the facility. The annual emissions were estimated using 8,760 hours per year of operation.

Blasting and drilling operations were estimated using AP-42 Table 11.9-1 and Table 11.9-4. The drilling emission factor was for TSP. There is no published factor in AP-42 for $PM_{10}$. The scaling factor (from TSP to $PM_{10}$ for blasting is 0.5. The scaling factor used in the application for drilling was 0.5. The emissions were also reduced by 50% for using water control. The $NO_x$, CO, and $SO_2$ emission estimates for blasting were calculated based on AP-42 Table 13.3-1 for explosives detonation using the emission factors from the explosive that will be used, which is ANFO.

For crushing, the emission factors for controlled crushing were used. A permit condition was written to require the installation, operation, and maintenance of water suppressant spray systems on the crusher and screen. The throughput for crushing and screening was estimated at maximum capacity for 8,760 hours per year, so no throughput limit is required.

For paved roads, because of discrepancies in AP-42, emissions were estimated using the unpaved road factors from AP-42 and estimated control efficiencies according to the type of control used as described in a memo dated March 10, 2008 written by the State of Utah Department of Environmental Quality addressing emission factors for paved and unpaved haul roads (Appendix A). The emissions were estimated using 90% control for paving the road. Water spray will be used on paved and unpaved roads.

A summary of the estimated emissions of criteria pollutants from the facility is provided in the following table.

**Table 1 EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS – CONTROLLED EMISSIONS (POTENTIAL TO EMIT)**

| Source | $PM_{10}$[c] | | $SO_2$ | | $NO_X$ | | CO | |
|---|---|---|---|---|---|---|---|---|
| | lb/hr[a] | T/yr[b] | lb/hr[a] | T/yr[b] | lb/hr[a] | T/yr[b] | lb/hr[a] | T/yr[b] |
| Dozers | 3.0 | 13.3 | | | | | | |
| Blasting | 1.72 | 7.51 | 0.596 | 2.61 | 5.06 | 22.18 | 19.96 | 87.42 |
| Drilling | 1.95 | 8.54 | | | | | | |
| Crushers and screens | 1.6 | 7.1 | | | | | | |
| Wind erosion | 6.25 | 27.36 | | | | | | |
| Transfer points, truck loading, steam shoveling | 1.8 | 7.9 | | | | | | |
| Paved roads | 0.1 | 0.6 | | | | | | |
| Unpaved roads | 13.51 | 51.40 | | | | | | |
| Generator | 0.21 | 0.9 | 1.04 | 4.5 | 6.80 | 29.8 | 3.68 | 16.1 |
| Total | 30.14 | 124.61 | 1.64 | 7.11 | 11.86 | 51.98 | 23.64 | 103.5 |

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.
c) Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers, including condensable particulate as defined in IDAPA 58.01.01.006.81.

The estimated emissions of HAP and TAP are not expected to exceed applicable emissions screening levels (EL). No emission factors for TAP have been identified by the EPA in the AP-42 documents for mining operations.

The emissions inventories for this facility are included in Appendix B.

### *Ambient Air Quality Impact Analyses*

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP).

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action.

## REGULATORY ANALYSIS

### *Attainment Designation (40 CFR 81.313)*

The facility is located in Caribou County, which is designated as attainment or unclassifiable for $PM_{2.5}$, $PM_{10}$, $SO_2$, $NO_2$, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

### *Permit to Construct (IDAPA 58.01.01.201)*

The proposed project does not meet the permit to construct exemption criteria in IDAPA 58.01.01.220–223. Therefore, a permit to construct is required in accordance with IDAPA 58.01.01.201. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

### *Tier II Operating Permit (IDAPA 58.01.01.401)*

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

## Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

The facility is not classified as a major facility as defined in IDAPA 58.01.01.008.10. The facility is a natural minor facility, because without limits on the potential to emit, the emissions of regulated air pollutants are below major source thresholds. Therefore, the requirements of IDAPA 58.01.01.300–399 are not applicable to this permitting action.

Under the definition of Major Facility in IDAPA 58.01.01.008.10.c, the rule states:

*A facility (as defined in Section 006) is major if the facility meets any of the following criteria: . . .*

(break in section)

*c. The facility emits or has the potential to emit one hundred (100) tons per year or more of any regulated air pollutant. The fugitive emissions shall not be considered in determining whether the facility is major unless the facility belongs to one (1) of the following categories:*

*i. Designated facilities.*

*ii. All other source categories regulated by 40 CFR Part 60, 40 CFR Part 61 or 40 CFR Part 63, but only with respect to those air pollutants that have been regulated for that category and only if determined by rule by the Administrator of EPA pursuant to Section 302(j) of the Clean Air Act.*

Section 302(j) of the Clean Air Act is as follows:

*(j) Except as otherwise expressly provided, the terms "major stationary source" and "major emitting facility" mean any stationary facility or source of air pollutants which directly emits, or has the potential to emit, one hundred tons per year or more of any air pollutant (including any major emitting facility or source of fugitive emissions of any such pollutant, as determined by rule by the Administrator).*

Section 302(j) is referring to designated facilities. This mine is not a designated facility. Therefore, IDAPA 58.01.01.008.10.c.i does not apply.

Applicability for IDAPA 58.01.01.008.10.c.ii is assessed as follows: The facility is regulated by 40 CFR Part 60 Subpart OOO. The source categories include the affected facilities, and not any other sources. In this permit, the affected facilities are the crusher, the screen, and the transfer points. None of the other sources of fugitive emissions are included in this exception. The only air pollutant that is regulated is particulate matter (PM) as regulated by opacity standards. The second part of IDAPA 58.01.01.008.10.c.ii defines applicability requirements as being for source categories that have been determined by rule pursuant to Section 302(j), which is for designated facilities.

Because this facility is not a designated facility, and the requirement of IDAPA 58.01.01.008.10.c.ii requires both NSPS applicability and being a designated facility, fugitive emissions are not included in the determination of a major facility. Because all of the emissions are fugitive, and none are included towards the determination of major, the facility has been determined to not be a major facility.

## PSD Classification (40 CFR 52.21)

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

40 CFR 52.21 ..... Prevention of Significant Deterioration of Air Quality

To assess PSD applicability, it is necessary to determine the emissions from the entire facility. Because ore from the mine will be supplied to the P4 Production, L.L.C. elemental phosphorus production facility (P4), the determination must be made about whether the new mine is considered the same facility as the phosphorus production facility.

The term "facility" is defined by IDAPA 58.01.01.006.40 as: *"All of the pollutant-emitting activities which belong to the same industrial grouping, are located on one (1) or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same Major Group (i.e. which have the same two-digit code) as described in the Standard Industrial Classification Manual. The fugitive emissions shall not be considered in determining whether a permit is required unless required by federal law."*

Consistent with the PSD regulations and interpretation, this definition requires **all three** of the following factors to exist in order for the Mine and P4 to constitute a single "facility." All of the pollutant-emitting activities must:

1. belong to the same industrial grouping,
2. be located on one or more contiguous or adjacent properties, and
3. be under common control of the same person (or persons under common control)

In this case, the two facilities are not contiguous or adjacent, so the mine and P4 are not the same facility.

In Section IX of the preamble to the final PSD Rule (45 FR 52695, August 7, 1980), EPA provides the following information regarding how far apart activities which encompass a long line operation, such as a railroad, must be in order to be treated separately:

*Many commenters urged EPA to clarify the extent to which the final definition of those terms encompasses the activities along a "long-line" operation, such as a pipeline or electrical power line. For example, some urged EPA to add to the definition the provision that the properties for such operations are neither contiguous nor adjacent. To add such a provision is unnecessary. EPA has stated in the past and now confirms that it does not intend "source" to encompass activities that would be many miles apart along a long-line operation. For instance, EPA would not treat all of the pumping stations along a multistate pipeline as one "source." EPA is unable to say precisely at this point how far apart activities must be in order to be treated separately. The agency can answer that question only through case-by-case determinations. One commenter asked, however, whether EPA would treat a surface coal mine and an electrical generator separated by 20 miles and linked by a railroad as one "source," if the mine the generator, and the railroad were all under common control. EPA confirms that it would not. First, the mine and the generator would be too far apart. Second, each would fall into a different two digit SIC category.*

Since the DEQ has an EPA-approved PSD program, it will be necessary for DEQ to make a case-by-case determination regarding "how far apart activities must be in order to be treated separately" for purposes of meeting the requirements of PSD.

Facts for this case are presented as follows. The operational areas under consideration, including the transportation links between them, are: 1) the P4 production facility (P4); 2) the tipple area (which is part of the Mine); 3) the Blackfoot Bridge Mine. The distance between P4 and the Mine is approximately 10 miles. Lastly, based on the maps included in the application, the straight line distance between P4 and the Mine is approximately seven miles, and complex terrain separates the two facilities.

A similar approach with regard to the term "adjacent" appears to have been taken by the Texas Natural Resource Conservation Commission (TNRCC), Air Permits Division, in a document titled *Definition of a Site, Draft*, March 2002 - "For NSR permitting purposes, contiguous or adjacent properties are considered to be separated by only an intervening road, railroad, right-of-way, waterway, or the like. Generally, properties located less than one-fourth mile apart are considered contiguous or adjacent. The one-fourth mile limit has been established based on consideration of air quality impacts in cases where emissions

properties directly and measurably affected each other such that it is impossible to separate, differentiate, or detect ground level concentrations attributable to the properties separately."

The comments included a copy and references to the May 21, 1998 memo from EPA Region 8 to Utah DEQ. As noted in the memo, the Utah DEQ issued a determination for Great Salt Lake Minerals Corporation (GSLM) in which a pump station located 21.5 miles from the processing plant was a support facility to the plant (i.e., both units are part of the same "source"). However, on February 14, 2001, the Utah DEQ issued a letter which reversed this decision on the basis that the two activities are too far apart. The letter states ". . . it has been determined that the two locations do in fact represent two separate sources for the purposes of Title V and NSR/PSD permitting."

DEQ has determined that the Blackfoot Bridge Mine facility and the P4 elemental phosphorus production facility are not "contiguous or adjacent" to each other for purposes of applying the definition of the term "facility." These two facilities are too far apart. Since P4 and the Mine are not contiguous or adjacent, they cannot be considered to be "one facility" as defined by IDAPA 58.01.01.006.40. This case-by-case determination applies specifically to P4 and the Mine.

The issue of whether or not the Mine is a support facility to P4 is not addressed because the contiguous/adjacent part of the facility definition is not met. Since all three parts of the facility definition must be met, it is not necessary to address the other two parts of the definition (i.e., same industrial grouping/support facility and the issue of common control).

## NSPS Applicability (40 CFR 60)

The facility is not subject to the requirements of 40 CFR 60, Subpart NN - New Source Performance Standards (NSPS) for Phosphate Rock Plants

40 CFR Part 60, Subpart NN does not apply to the Blackfoot Bridge Mine, as follows.

*§ 60.400 Applicability and designation of affected facility.*

*(a) The provisions of this subpart are applicable to the following affected facilities used in phosphate rock plants which have a maximum plant production capacity greater than 3.6 megagrams per hour (4 tons/hr): dryers, calciners, grinders, and ground rock handling and storage facilities, except those facilities producing or preparing phosphate rock solely for consumption in elemental phosphorus production.*

*(Break in Section)*

*§ 60.401 Definitions.*

*(a) Phosphate rock plant means any plant which produces or prepares phosphate rock product by any or all of the following processes: Mining, beneficiation, crushing, screening, cleaning, drying, calcining, and grinding.*

The Blackfoot Bridge Mine produces phosphate rock product by mining, crushing, and screening. Therefore, it is a phosphate rock plant.

The Blackfoot Bridge Mine does not have dryers, calciners, grinders, or ground rock handling and storage facilities. Also, the Mine is preparing phosphate rock solely for consumption in elemental phosphorus production. Therefore, the provisions of this subpart are not applicable

The facility is subject to the requirements of 40 CFR 60, Subpart OOO - NSPS for Nonmetallic Mineral Processing Plants

*§ 60.670 Applicability and designation of affected facility.*

*(a)(1) Except as provided in paragraphs (a)(2), (b), (c), and (d) of this section, the provisions of this subpart are applicable to the following affected facilities in fixed or portable nonmetallic mineral processing plants: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station. Also, crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in recycled asphalt pavement and subsequent affected facilities up to, but not including, the first storage silo or bin are subject to the provisions of this subpart.*

The definition of nonmetallic mineral processing plant is as follows:

*Nonmetallic mineral processing plant means any combination of equipment that is used to crush or grind any nonmetallic mineral wherever located, including lime plants, power plants, steel mills, asphalt concrete plants, portland cement plants, or any other facility processing nonmetallic minerals except as provided in §60.670 (b) and (c).*

Nonmetallic mineral is defined as follows:

*Nonmetallic mineral means any of the following minerals or any mixture of which the majority is any of the following minerals:*

*(1) Crushed and Broken Stone, including Limestone, Dolomite, Granite, Traprock, Sandstone, Quartz, Quartzite, Marl, Marble, Slate, Shale, Oil Shale, and Shell.*

*(2) Sand and Gravel.*

*(3) Clay including Kaolin, Fireclay, Bentonite, Fuller's Earth, Ball Clay, and Common Clay.*

*(4) Rock Salt.*

*(5) Gypsum (natural or synthetic).*

*(6) Sodium Compounds, including Sodium Carbonate, Sodium Chloride, and Sodium Sulfate.*

*(7) Pumice.*

*(8) Gilsonite.*

*(9) Talc and Pyrophyllite.*

*(10) Boron, including Borax, Kernite, and Colemanite.*

*(11) Barite.*

*(12) Fluorospar.*

*(13) Feldspar.*

*(14) Diatomite.*

*(15) Perlite.*

*(16) Vermiculite.*

*(17) Mica.*

*(18) Kyanite, including Andalusite, Sillimanite, Topaz, and Dumortierite.*

Shale is crushed at the mine.

Exceptions are as follows:

*(2) The provisions of this subpart do not apply to the following operations: All facilities located in underground mines; plants without crushers or grinding mills above ground; and wet material processing operations (as defined in §60.671).*

The mine is above ground, it has a crusher, and it is not a wet material processing operation.

*(b) An affected facility that is subject to the provisions of subparts F or I of this part or that follows in the plant process any facility subject to the provisions of subparts F or I of this part is not subject to the provisions of this subpart.*

Subparts F is for Portland cement plants, and subpart I is for hot mix asphalt plants, neither of which apply to this facility.

*(c) Facilities at the following plants are not subject to the provisions of this subpart:*

*(1) Fixed sand and gravel plants and crushed stone plants with capacities, as defined in §60.671, of 23 megagrams per hour (25 tons per hour) or less;*

*(2) Portable sand and gravel plants and crushed stone plants with capacities, as defined in §60.671, of 136 megagrams per hour (150 tons per hour) or less; and*

*(3) Common clay plants and pumice plants with capacities, as defined in §60.671, of 9 megagrams per hour (10 tons per hour) or less.*

The crusher has a capacity of 250 tons per hour, so it is over the exemption criteria for any of these categories.

*(d)(1) When an existing facility is replaced by a piece of equipment of equal or smaller size, as defined in §60.671, having the same function as the existing facility, and there is no increase in the amount of emissions, the new facility is exempt from the provisions of §§60.672, 60.674, and 60.675 except as provided for in paragraph (d)(3) of this section.*

*(2) An owner or operator complying with paragraph (d)(1) of this section shall submit the information required in §60.676(a).*

*(3) An owner or operator replacing all existing facilities in a production line with new facilities does not qualify for the exemption described in paragraph (d)(1) of this section and must comply with the provisions of §§60.672, 60.674 and 60.675.*

This is a new facility and no equipment is being replaced.

Because no exemptions apply, the facility is a nonmetallic mineral processing plant and this standard applies.

*(e) An affected facility under paragraph (a) of this section that commences construction, modification, or reconstruction after August 31, 1983, is subject to the requirements of this part.*

Construction is being commenced after August 31, 1983.

*(f) Table 1 of this subpart specifies the provisions of subpart A of this part 60 that do not apply to owners and operators of affected facilities subject to this subpart or that apply with certain exceptions.*

Table 1 is as follows:

*Table 1 to Subpart OOO—Exceptions to Applicability of Subpart A to Subpart OOO*

| ***Subpart A reference*** | ***Applies to subpart OOO*** | ***Explanation*** |
|---|---|---|
| *60.4, Address* | *Yes* | *Except in §60.4(a) and (b) submittals need not be submitted to both the EPA Region and delegated State authority (§60.676(k)).* |
| *60.7, Notification and recordkeeping* | *Yes* | *Except in (a)(1) notification of the date construction or reconstruction commenced (§60.676(h)).* |
| | | *Also, except in (a)(6) performance tests involving only Method 9 (40 CFR part 60, Appendix A–4) require a 7-day advance notification instead of 30 days (§60.675(g)).* |
| *60.8, Performance tests* | *Yes* | *Except in (d) performance tests involving only Method 9 (40 CFR part 60, Appendix A–4) require a 7-day advance notification instead of 30 days (§60.675(g)).* |
| *60.11, Compliance with standards and maintenance requirements* | *Yes* | *Except in (b) under certain conditions (§§60.675(c)), Method 9 (40 CFR part 60, Appendix A–4) observation is reduced from 3 hours to 30 minutes for fugitive emissions.* |
| *60.18, General control device* | *No* | *Flares will not be used to comply with the emission limits.* |

The provisions of subpart A are written in the permit. The exemptions from Table 1 to Subpart OOO were incorporated into the subpart A table in the permit.

This rule applies to each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station. The Mine's crusher, screen, ore input hopper, truck dumping, truck loadout hopper, and conveyors are subject to this subpart because they meet the applicable criteria under § 60.671. The nonmetallic mineral crusher will be processing phosphate ore.

There will be one horizontal impact crusher subject to this subpart:

(1) Blackfoot Bridge Mine (BFB Mine)
Manufacturer: HAZEMAG
Model No: APS – 1313/KH
SN: Not Available – the equipment has not been purchased. Information will be provided following purchase.
Constructed: 2009 or later – construction to commence following the receipt of all permits, licensing, and authorization.
Maximum Capacity: 250Tons/Hour

There will be one double deck screen subject to this subpart:

(1) Blackfoot Bridge Mine (BFB Mine)
Manufacturer: Hewitt Robins
Model No: 8X20 Double Deck VX-16
SN: Not Available – the equipment has not been purchased. Information will be provided following purchase.
Constructed: 2009 or later – construction to commence following the receipt of all permits, licensing, and authorization.

Maximum Capacity: 80 sq feet

*§ 60.672 **Standard for particulate matter (PM).***

*(a) Affected facilities must meet the stack emission limits and compliance requirements in Table 2 of this subpart within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.8. The requirements in Table 2 of this subpart apply for affected facilities with capture systems used to capture and transport particulate matter to a control device.*

There are no stacked sources at this facility.

*(b) Affected facilities must meet the fugitive emission limits and compliance requirements in Table 3 of this subpart within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.11. The requirements in Table 3 of this subpart apply for fugitive emissions from affected facilities without capture systems and for fugitive emissions escaping capture systems.*

Table 3 is shown as follows:

*Table 3 to Subpart OOO—Fugitive Emission Limits*

| *For * * **** | *The owner or operator must meet the following fugitive emissions limit for grinding mills, screening operations, bucket elevators, transfer points on belt conveyors, bagging operations, storage bins, enclosed truck or railcar loading stations or from any other affected facility (as defined in §§60.670 and 60.671) * * **** | *The owner or operator must meet the following fugitive emissions limit for crushers at which a capture system is not used * * **** | *The owner or operator must demonstrate compliance with these limits by conducting * * **** |
|---|---|---|---|
| *Affected facilities (as defined in §§60.670 and 60.671) that commenced construction, modification, or reconstruction after August 31, 1983 but before April 22, 2008* | *10 percent opacity* | *15 percent opacity* | *An initial performance test according to §60.11 of this part and §60.675 of this subpart.* |
| *Affected facilities (as defined in §§60.670 and 60.671) that commence construction, modification, or reconstruction on or after April 22, 2008* | *7 percent opacity* | *12 percent opacity* | *An initial performance test according to §60.11 of this part and §60.675 of this subpart; and Periodic inspections of water sprays according to §60.674(b) and §60.676(b); and* |
| | | | *A repeat performance test according to §60.11 of this part and §60.675 of this subpart within 5 years from the previous performance test for fugitive emissions from affected facilities without water sprays. Affected facilities controlled by water carryover from upstream water sprays that are inspected according to the requirements in §60.674(b) and §60.676(b) are exempt from this 5-year repeat testing requirement.* |

This facility is being constructed after April 22, 2008, so the limit on the screen and transfer points is 7% opacity. The limit on the crusher is 12% opacity. Permit conditions are written to incorporate these limits and testing requirements.

*(c) [Reserved]*

*(d) Truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this section.*

The mine's truck dumping is therefore exempt.

*(e) If any transfer point on a conveyor belt or any other affected facility is enclosed in a building, then each enclosed affected facility must comply with the emission limits in paragraphs (a) and (b) of this section, or the building enclosing the affected facility or facilities must comply with the following emission limits:*

*(1) Fugitive emissions from the building openings (except for vents as defined in §60.671) must not exceed 7 percent opacity; and*

*(2) Vents (as defined in §60.671) in the building must meet the applicable stack emission limits and compliance requirements in Table 2 of this subpart.*

*(f) Any baghouse that controls emissions from only an individual, enclosed storage bin is exempt from the applicable stack PM concentration limit (and associated performance testing) in Table 2 of this subpart but must meet the applicable stack opacity limit and compliance requirements in Table 2 of this subpart. This exemption from the stack PM concentration limit does not apply for multiple storage bins with combined stack emissions.*

This facility does not have buildings with applicable fugitive emissions or any baghouses.

Section 60.673 refers to reconstruction, which is not requested by the facility in this permitting action.

Section 60.674 regulates wet scrubbers and baghouses, which the mine does not use.

Section 60.675 regulates test methods and procedures which will be followed when the facility conducts the required testing.
Section 60.676 specifies the requirements for reporting. Many of the sections require reporting for emissions control that the facility does not use, so it is not applicable.

The facility is subject to the requirements of 40 CFR 60 Subpart IIII – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, and 40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

40 CFR 60, Subpart IIII ..... Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

***§ 60.4200 Am I subject to this Subpart?***

*(a) The provisions of this Subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (3) of this section. For the purposes of this Subpart, the date that construction commences is the date the engine is ordered by the owner or operator.*

*(2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005 where the stationary CI ICE are:*

*(i) Manufactured after April 1, 2006 and are not fire pump engines, or*

*(ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.*

*(3) Owners and operators of stationary CI ICE that modify or reconstruct their stationary CI ICE after July 11, 2005.*

*(b) The provisions of this Subpart are not applicable to stationary CI ICE being tested at a stationary CI ICE test cell/stand.*

*(c) If you are an owner or operator of an area source subject to this Subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this Subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this Subpart applicable to area sources.*

*(d) Stationary CI ICE may be eligible for exemption from the requirements of this Subpart as described in 40 CFR part 1068, Subpart C (or the exemptions described in 40 CFR part 89, Subpart J and 40 CFR part 94, Subpart J, for engines that would need to be certified to standards in those parts), except that owners and operators, as well as manufacturers, may be eligible to request an exemption for national security.*

The 600 kW (~800 bhp) IC engine was constructed, modified or reconstructed on or after 2010, which is after July 11, 2005. Therefore the engine is subject to the Subpart.

There have been discussions about the differences between 40 CFR 60, Subpart IIII and Non-road Diesel Engine requirements, 40 CFR 1068.30. According to CFR 1068.30, Non-road engine means that, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

Also, according to 40 CFR 1068.30 (2)(iii), an internal combustion engine is not a non-road engine if it:

- Will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source.
- A location is any single site at a building, structure, facility, or installation.
- Any engine (or engines) that replace an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period.
-

The conclusions were that the requirements for non-road engines and Subpart IIII were very similar with a few exceptions. Those exceptions are the installation of a non-resettable hour meter, the maintenance schedule, the use of colored fuel, and the timeframe that stipulated whether or not a unit was stationary or non-road. If an engine stays in one place longer than 12 months, it is considered a stationary source and subject to Subpart IIII.

*§ 60.4201 What emission standards must I meet for non-emergency engines if I am a stationary CI internal combustion engine manufacturer?*

The Permittee is not the manufacturer of the IC engine and therefore this requirement is not applicable.

*§ 60.4202 What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?*

The Permittee is not the manufacturer of the IC engine and the engine is not used for emergency purposes. Therefore, this requirement is not applicable.

*§ 60.4203 How long must my engines meet the emission standards if I am a stationary CI internal combustion engine manufacturer?*

The Permittee is not the manufacturer of the IC engine and therefore this requirement is not applicable.

*§ 60.4204 What emission standards must I meet for non-emergency engines if I am an owner or operator of a stationary CI internal combustion engine?*

*(a) Owners and operators of pre-2007 model year non-emergency stationary CI ICE with a displacement of less than 10 liters per cylinder must comply with the emission standards in table 1 to this Subpart. Owners and operators of pre-2007 model year non-emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder must comply with the emission standards in 40 CFR 94.8(a)(1).*

*(b) Owners and operators of 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the emission standards for new CI engines in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable.*

The displacement on this engine is 18.13 liters, which is less than 30 liters, so this part of the regulation applies. The emission standards referenced in this section are the manufacturer's requirements.

*§ 60.4205 What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?*

The Permittee is not using the IC engine for emergency purposes. Therefore, this requirement is not applicable.

*§ 60.4206 How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?*

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

*§ 60.4207 What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this Subpart?*

(a) Beginning October 1, 2007, owners and operators of stationary CI ICE subject to this Subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this Subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for non-road diesel fuel.

40 CFR 80.510(b)

*Beginning June 1, 2010 . Except as otherwise specifically provided in this subpart, all NR and LM diesel fuel is subject to the following per-gallon standards:*

*(1) Sulfur content.*

*(i) 15 ppm maximum for NR diesel fuel.*

*(ii) 500 ppm maximum for LM diesel fuel.*

*(2) Cetane index or aromatic content, as follows:*

*(i) A minimum cetane index of 40; or*

*(ii) A maximum aromatic content of 35 volume percent.*

The genset has a displacement of 18.13 liters and it uses diesel fuel. Therefore, it must meet the requirements for non-road diesel fuel.

*§ 60.4208 What is the deadline for importing or installing stationary CI ICE produced in the previous model year?*

*(a) After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.*

*(b) After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 KW (25 HP) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines.*

*(c) After December 31, 2014, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 19 KW (25 HP) and less than 56 KW (75 HP) that do not meet the applicable requirements for 2013 model year non-emergency engines.*

*(d) After December 31, 2013, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 56 KW (75 HP) and less than 130 KW (175 HP) that do not meet the applicable requirements for 2012 model year non-emergency engines.*

*(e) After December 31, 2012, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 130 KW (175 HP), including those above 560 KW (750 HP), that do not meet the applicable requirements for 2011 model year non-emergency engines.*

*(f) After December 31, 2016, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 560 KW (750 HP) that do not meet the applicable requirements for 2015 model year non-emergency engines.*

*(g) In addition to the requirements specified in §§60.4201, 60.4202, 60.4204, and 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (f) of this section after the dates specified in paragraphs (a) through (f) of this section.*

The Permittee is installing a 2010 model engine that meets the applicable requirements for that model year.

*§ 60.4209 What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?*

The Permittee is not installing an emergency IC engine. Thus, a non-resettable meter is not required and the engine does not have a diesel particulate filter. These requirements are not applicable to the unit, but the unit must comply with 60.4211.

*§ 60.4210 What are my compliance requirements if I am a stationary CI internal combustion engine manufacturer?*

The Permittee is not the manufacturer of the IC engine and therefore this requirement is not applicable.
*§ 60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?. . .*

*(break in section)*

*(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b) or §60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this Subpart and must comply with the emission standards specified in §60.4205(c), you must comply by purchasing an engine certified to the emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's specifications.*

The Permittee is subject to 60.4204(b). Therefore the engine must be installed and configured according to the manufacturer's specifications. This requirement is included in the PTC.

*§ 60.4212 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder?*

*Owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (d) of this section.*

A performance test on the IC engine is not required. Therefore, this requirement is not applicable to the Permittee and the 800 bhp IC engine.

*§ 60.4213 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of greater than or equal to 30 liters per cylinder?*

A performance test on the IC engine is not required. Therefore, this requirement is not applicable to the Permittee and the 800 bhp IC engine.

*§ 60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?*
*(a) Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the requirements of paragraphs (a)(1) and (2) of this section. . . .*

(break in section)

*(c) If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached.*

The applicable IC engine does not meet the criteria set forth in the Subpart requiring notification unless it is uncertified, greater than 175 bhp and was reconstructed or modified on or after July 11, 2005. The engine is less than 3,000 HP. If the engine that is purchased has a diesel particulate filter, these sections apply.

### NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

### MACT Applicability (40 CFR 63)

The facility is not subject to any MACT standards in 40 CFR Part 63.

### CAM Applicability (40 CFR 64)

The facility is not classified as a major source (refer to Title V Classification section). Because the facility does not require a Title V permit, the requirements of CAM are not applicable.

### Permit Conditions Review

This section describes the permit conditions for this initial permit.

Initial Permit Condition 5

*NSPS 40 CFR 60, Subpart OOO - Crusher Opacity Limit*

*The PM emissions from the crusher shall not exhibit more than 12% opacity in accordance with 40 CFR 60.672(b)(Table 3). Opacity shall be determined in accordance with 40 CFR 60.675 and Table 1 to Subpart OOO. Affected facilities must meet the fugitive emission limits and compliance requirements in Table 3 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under 40 CFR 60.11.*

This is a limit from the regulation.

Initial Permit Condition 6

*NSPS 40 CFR 60, Subpart OOO - Screening and Conveying Opacity Limit*

*The PM emissions from any transfer point on belt conveyors or from the screening operation shall not exhibit greater than 7% opacity in accordance with 40 CFR 60.672(b)(Table 3). Opacity shall be determined in accordance with 40 CFR 60.675 and Table 1 to Subpart OOO. Affected facilities must meet the fugitive emission limits and compliance requirements in Table 3 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under 40 CFR 60.11.*

Limit from regulation.

Initial Permit Condition 7

*Control of Fugitive Dust Emissions – Water Suppressant Systems*

*The permittee shall install, operate, and maintain water suppressant systems on the horizontal impact crusher and double deck screen to minimize fugitive dust emissions.*

This was added because additional controls were needed to reduce the particulate emissions such that the NAAQS are not exceeded as demonstrated by air dispersion modeling.

Initial Permit Condition 8

*Reasonable Control of Fugitive Dust Emissions – Fugitive Dust Control Plan*

See permit for full text. This plan specifies controls for emissions of fugitive dust to be in compliance with IDAPA 58.01.01.650 and to ensure that the emission factors used in the emissions estimations for emissions values used for air dispersion modeling remain representative of the maximum actual emissions.

Initial Permit Condition 9

*Fugitive Dust Complaints*

*The permittee shall maintain records of all fugitive dust complaints received. The permittee shall take appropriate corrective action as expeditiously as practicable after receipt of a valid complaint. The records shall include, at a minimum, the date that each complaint was received and a description of the following: the complaint, the permittee's assessment of the validity of the complaint, any corrective action taken, and the date the corrective action was taken.*

This permit condition provides documentation of fugitive dust complaints and how they were responded to.

Initial Permit Condition 10

*Fugitive Dust Monitoring – Periodic Inspections*

*The permittee shall conduct monthly facility-wide inspection of potential sources of fugitive dust emissions, during daylight hours and under normal operating conditions to ensure that the methods used to reasonably control fugitive dust emissions are effective. If fugitive dust emissions are not being reasonably controlled, the permittee shall take corrective action as expeditiously as practicable. The permittee shall maintain records of the results of each fugitive dust emission inspection. The records shall include, at a minimum, the date of each inspection and a description of the following: the permittee's assessment of the conditions existing at the time fugitive dust emissions were present (if observed), any corrective action taken in response to the fugitive dust emissions, and the date the corrective action was taken. A compilation of the most recent two years of records shall be kept onsite and shall be made available to DEQ representatives upon request.*

This permit condition requires that the facility monitor and maintain the fugitive dust control.

Initial Permit Condition 11

*Fugitive Dust Monitoring - Recordkeeping*

*The permittee shall monitor and maintain records of the frequency and the method(s) used (i.e., water, chemical dust suppressants, etc.) to reasonably control fugitive dust emissions. A compilation of the most recent two years of records shall be kept onsite and shall be made available to DEQ representatives upon request.*

This permit condition requires that the facility monitor and maintain records of the fugitive dust control frequency and methods that were used.

Initial Permit Condition 12

*40 CFR 60, Subpart OOO - 60.675 Performance Test Requirements*

*For the crusher, screen, and transfer points identified in this permit, the permittee shall conduct an initial performance test in accordance with 40 CFR 60.675, IDAPA 58.01.01.157, and Performance Testing General Provisions in this permit. The performance test shall be conducted to demonstrate compliance with the applicable standards for particulate matter as defined in 40 CFR 60.672.*

*In accordance with 40 CFR 60.675 and Table 3 to Subpart OOO, the owner or operator must demonstrate compliance with the 40 CFR 60 Subpart OOO fugitive emission limits by conducting a repeat performance test according to 40 CFR 60.11 and 40 CFR 60.675 within 5 years from the previous performance test for fugitive emissions from affected facilities without water sprays. Affected facilities controlled by water carryover from upstream water sprays that are inspected according to the requirements in 40 CFR 60.674(b) and 40 CFR 60.676(b) are exempt from this 5-year repeat testing requirement.*

This is a requirement of the applicable NSPS.

Initial Permit Condition 13

*Reporting*

*NSPS 40 CFR 60, Subpart A –General Provisions*

*The permittee shall comply with the requirements of 40 CFR 60, Subpart A – General Provisions. A summary of applicable requirements for affected facilities is provided in Table 2.*

The table in the permit outlines the requirements for NSPS reporting.

Initial Permit Condition 14

This condition provides a brief synopsis of the engine used by the facility.

Initial Permit Condition 15

This condition states that the facility must install and operate an IC engine that is tier certified and that documentation stating such is maintained onsite.

Initial Permit Condition 16

The permittee needs to operate and maintain the diesel engine according to manufacturer procedures. This is required in accordance with 40 CFR 60, Subpart IIII specifically sections 60.4206 and 60.4211(a).

Initial Permit Condition 17

This regulates the content of sulfur, centane, and/or aromatic content as required by the non-road engine fuel specifications.

Initial Permit Condition 18

If the engine is equipped with a particulate filter, it must be installed with a backpressure monitor in accordance with 40 CFR 60, Subpart IIII, specifically section 60.4209.

Initial Permit Condition 19

This is to keep track of the sulfur, centane, and/or aromatic content of the fuel to show compliance with the fuel limitation.

Initial Permit Condition 20

If the engine has a particulate filter, records of any corrective action must be maintained when the backpressure monitor notifies the operator that a high backpressure limit has been approached. This condition is in accordance with 40 CFR 60.4214(c).

Initial Permit Condition 21

All reports and notifications need to be sent to the appropriate DEQ Regional Office. This condition provides the mailing address. Also specified is required reporting.

Initial Permit Condition 22

The duty to comply general compliance provision requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101.

Initial Permit Condition 23

The maintenance and operation general compliance provision requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211.

Initial Permit Condition 24

The obligation to comply general compliance provision specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01.

Initial Permit Condition 25

The inspection and entry provision requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108.

Initial Permit Condition 26

The construction and operation notification provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.

Initial Permit Condition 27

The performance testing notification of intent provision requires that the permittee notify DEQ at least 15 days prior to any performance test to provide DEQ the option to have an observer present, in accordance with IDAPA 58.01.01.157.03.

Initial Permit Condition 28

The performance test protocol provision requires that any performance testing be conducted in accordance with the procedures of IDAPA 58.01.01.157, and encourages the permittee to submit a protocol to DEQ for approval prior to testing.

Initial Permit Condition 29

The performance test report provision requires that the permittee report any performance test results to DEQ within 30 days of completion, in accordance with IDAPA 58.01.01.157.04-05.

Initial Permit Condition 30

The monitoring and recordkeeping provision requires that the permittee maintain sufficient records to ensure compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

Initial Permit Condition 31

The excess emissions provision requires that the permittee follow the procedures required for excess emissions events, in accordance with IDAPA 58.01.01.130.

Initial Permit Condition 32

The certification provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

Initial Permit Condition 33

The false statement provision requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

Initial Permit Condition 34

The tampering provision requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

Initial Permit Condition 35

The transferability provision specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

Initial Permit Condition 36

The severability provision specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

## PUBLIC REVIEW

### *Public Comment Opportunity*

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

# APPENDIX A – EMISSIONS INVENTORIES

State of Utah

Department of
Environmental Quality

Richard W. Sprott
*Executive Director*

DIVISION OF AIR QUALITY
Cheryl Heying
*Director*

JON M. HUNTSMAN, JR.
*Governor*

GARY HERBERT
*Lieutenant Governor*

# MEMORANDUM

**TO:** **Permitting Branch**

**FROM:** **Regg Olsen**

**DATE:** **March 10, 2008**

**SUBJECT: Emission Factors for Paved and Unpaved Haul Roads**

1. The question of how to deal with the emission factors for paved and unpaved haul roads has risen when using AP-42 emission factors. Using current AP-42 emission factors shows higher emission rates for paved roads than unpaved roads. This does not seem practical; we also want to encourage sources to pave roads when appropriate, not remove paved haul roads to get lower calculated emissions!

2. With these problems, sources have taken the task upon themselves to search out the best solution which at times has developed additional problems as they try to document and we try to validate their approach. We have also been concerned with consistency across industry. This memo is intended to provide some assistance on the issue for permit engineers and sources alike. Every Approval Order is a case-by-case determination and site specific with conditions unique to the site; implementation of this document will be likewise.

3. Beginning with the date of this memo, permit engineers should allow applicants to use the recommended equation found in AP-42 13.2.2 for Unpaved Haul Roads and add the appropriate control efficiencies outlined below to that equation. Due to the flexibility this approach provides, the UDAQ will strictly adhere to the outlined control efficiencies. A source can still choose to use the AP-42 equation for Paved Haul Roads found in AP-42, 13.2.1 if they choose, but the approach outlined in this memo can serve as an alternative.

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T.D.D. (801) 536-4414 • *www.deq.utah.gov*

4. The equation for unpaved haul roads is found in AP-42 13.2.2 and is:

$$E = k\,(s/12)^a (W/3)^b$$

where,
k, a and b are empirical constants found in AP-42
E = size-specific emission factor (lb/VMT)
s = surface material silt content (%)
W = mean vehicle weight (tons)

The "s" factor above, the surface material silt content should be determined for each site for Option 1 and 2 below. For Options 3, 4, and 5, due to the nature of the control, the default value of 4.8% shall be used.

5. Control Options

| Control | Control Efficiency (%) |
|---|---|
| Basic Watering | 70 |
| Basic Watering and Road Base | 75 |
| Chemical Suppressant and Watering | 85 |
| Pave Road Surface with Sweeping and Watering | 90 |
| Pave Road with Vacuum Sweeping and Watering | 95 |

OPTION 1. Basic Watering, 70% -

This option is performed with natural soil in place and applying water, when warranted to obtain and never exceed a 20% opacity limit at the densest point of the plume behind the vehicle.

OPTION 2. Basic Watering and Road Base, 75% -

Cover unpaved roads with low silt content material (i.e., recycled asphalt, recycled concrete, recycled road base, or gravel to a minimum depth of four inches) and watering occurs as needed to adhere to a 20% opacity limit at the densest point of the plume behind the vehicle.

OPTION 3. Chemical Suppressant and Watering, 85% -

In AP-42, Section 13.2.2 Unpaved Roads on page 13.2.2-13 it states:

*The control effectiveness of chemical dust suppressants appears to depend on (a) the dilution rate used in the mixture; (b) the application rate (volume of solution per unit road surface area); (c) the time between applications; (d) the size, speed and amount of traffic during the period between applications; and (e) meteorological conditions (rainfall, freeze/thaw cycles, etc.) during the period. Other factors that affect the performance of dust suppressants include other traffic characteristics (e. g., cornering, track-on from unpaved areas, etc.) and road characteristics (e. g., bearing strength, grade, etc.). The variables in*

*the above factors and differences between individual dust control products make the control efficiencies of chemical dust suppressants difficult to estimate. Past field testing of emissions from controlled unpaved roads has shown that chemical dust suppressants provide a PM-10 control efficiency of about 80 percent when applied at regular intervals of 2 weeks to 1 month.*

This paragraph states that chemical suppression can obtain 80% control efficiency. By adding water as needed, we can add an additional 5% control, bringing the total control efficiency to 85%.

OPTION 4. Pave Road Surface with Sweeping and Watering, 90% -

Paving of the road surface would involve applying a surface of asphalt or concrete in order to make a relatively flat surface that can easily be swept and flushed with water. This option would involve having a sweeper on site and sweeping of the road surface followed by a water flush.

OPTION 5. Pave Road with Vacuum Sweeping and Watering, 95% -

Paving of the road surface would involve applying a surface of asphalt or concrete in order to make a relatively flat surface that can easily be swept, vacuumed, and flushed with water. This option would involve having a vacuum sweeper on site that would travel each paved road surface followed by a water truck to flush the surface.

6. The greatest variable in applying these controls is the frequencies of watering, sweeping, and/or vacuuming. Factors such as the number of vehicles passing across different segments of road and seasonal conditions, such as evaporation rate, precipitation and temperature can dictate when a surface is or is not controlled. The frequencies of watering, vacuuming, and sweeping will be on a case by case basis as conditions warrant and based on the location of the source (attainment area vs. non-attainment area, etc).

7. These factors and the controls associated with them are established as a minimum requirement. Along with the controls stated above, additional site specific controls could be required. For example, due to the size and location a source, they could be required to add a cattle guard or rumble strips in between the sections of unpaved and paved roads to minimize track out. Installing road base on the shoulders of paved road could also be added to control track out onto the paved haul road sections.

8. In addition to each of the factors and controls above, a 15 mph speed limit should also be required on all haul roads at the facility.

9. Questions concerning this memo should be directed to either your Section or Branch Manager.

cc: Air Standards Branch
Technical Analysis Section (Inventory)

**Blackfoot Bridge Mine Emissions**

| Source | TSP Emission Rates | | | PM10 Emission Rates | | |
|---|---|---|---|---|---|---|
| | Actual Annual Emissions (tons/yr) | Potential to Emit | | Actual Annual Emissions (tons/yr) | Potential to Emit | |
| | | Hourly (lbs/hr) | Annual (tons/yr) | | Hourly (lbs/hr) | Annual (tons/yr) |
| Dozers | 17.6 | 16.3 | 71.5 | 3.3 | 3.0 | 13.3 |
| Blasting and Drilling | 4.0 | 7.2 | 31.5 | 2.0457 | 3.7 | 16.1 |
| Crushers / Screens | 2.7 | 4.7 | 20.6 | 0.9 | 1.6 | 7.1 |
| Wind Erosion | 91.2 | 20.8 | 91.2 | 27.4 | 6.2 | 27.4 |
| Misc. Sources | 2.2 | 3.8 | 16.8 | 1.0 | 1.8 | 7.9 |
| Paved Roads | 2.4 | 0.6 | 2.4 | 0.6 | 0.1 | 0.6 |
| Unpaved Roads | 97.6 | 49.3 | 187.5 | 26.8 | 13.5 | 51.4 |
| **Total** | **217.7** | **102.7** | **421.6** | **62.0** | **30.0** | **123.7** |
| | | | | | | |
| Lead Emissions | | | | | | |
| Annual (tons/year) | 0.0047 | 0.0022 | 0.0092 | 0.0014 | 0.0007 | 0.0027 |
| Monthly (lb/month) | 0.7909 | ---- | 1.5318 | 0.2252 | ---- | 0.4495 |

**Blackfoot Bridge Mine Emissions**

| Source | NOx Emission Rates | | | CO Emission Rates | | | SO2 Emission Rates | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual Annual Emissions (tons/yr) | Potential to Emit | | Actual Annual Emissions (tons/yr) | Potential to Emit | | Actual Annual Emissions (tons/yr) | Potential to Emit | |
| | | Hourly (lbs/hr) | Annual (tons/yr) | | Hourly (lbs/hr) | Annual (tons/yr) | | Hourly (lbs/hr) | Annual (tons/yr) |
| Dozers | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Blasting and Drilling | 3.2 | 5.1 | 22.2 | 12.5 | 20.0 | 87.4 | 0.372 | 0.596 | 2.6 |
| Crushers / Screens | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Wind Erosion | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Misc. Sources | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Paved Roads | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Unpaved Roads | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| **Total** | **3.16** | **5.06** | **22** | **12** | **20** | **87** | **0.37** | **0.60** | **2.61** |
| | | | | | | | | | |
| Lead Emissions | | | | | | | | | |
| Annual (tons/year) | | | | | | | | | |
| Monthly (lb/month) | | | | | | | | | |

# DOZER MOVEMENT

**Emission Calculations**

## *Operations*

| | Actual | | | Maximum | | | |
|---|---|---|---|---|---|---|---|
| Type | Hours per Day | Days per Year | Hours per Year | Hours of Operation / Dozer | Days per Year | Hours per Year | Number of Dozers/Shovels |
| Overburden | 15 | 190 | 2,850 | 24 | 365 | 8,760 | 4 |
| Excavation | 4 | 190 | 760 | 24 | 365 | 8,760 | 2 |

## *Dozer Movement Fugitive Dust Emission Factors*

### *Dozer Movement PM Emission Factor*

TSP Emission Factor (lb/hr) = $(5.7 * (s)^{1.2}) / (M)^{1.3}$

AP-42 Fifth Edition 11.9-1 (7/98)

6.9 s, material silt content (%)

10.5 M, material moisture content (%)

$EF_{TSP}$ = 2.72 lb/hr

### *Dozer Movement PM10 Emission Factor*

PM10 Emission Factor (lb/hr) = $0.75 * (1.0 * (s)^{1.5}) / (M)^{1.4}$

AP-42 Fifth Edition 11.9-1 (7/98)

6.9 s, material silt content (%)

10.5 M, material moisture content (%)

$EF_{PM10}$ = 0.51 lb/hr

## *Fugitive Emissions*

| | TSP Actual Annual | TSP Potential to Emit | | PM10 Actual Annual | PM10 Potential to Emit | |
|---|---|---|---|---|---|---|
| Emission Unit | Emissions (tons/yr) | Daily (lbs/hr) | Annual (tons/yr) | Emissions (tons/yr) | Daily (lbs/hr) | Annual (tons/yr) |
| Overburden | 15.5 | 10.9 | 47.7 | 2.9 | 2.02 | 8.86 |
| Excavation | 2.1 | 5.4 | 23.8 | 0.4 | 1.01 | 4.43 |
| Sum | 17.6 | 16.3 | 71.5 | 3.3 | 3.03 | 13.28 |

## BLASTING and DRILLING
### Emission Calculations

***Operations***

| Type | Type of Material | Average AFNO lb per blast | Maximum Blasts per day | Blasts per year | Maximum Blasts per hour | Maximum Blasts per year | Annual Holes Drilled per year | Maximum Holes Drilled per hour | Maximum Holes Drilled per year |
|---|---|---|---|---|---|---|---|---|---|
| Blasting | Rock | 7,152 | 2 | 104 | 0.08 | 730 | NA | NA | NA |
| Drilling | Rock | NA | NA | NA | NA | NA | 6,000 | 6 | 52,560 |

***Blasting Fugitive Dust Emission Factors***

***Blasting PM Emission Factor***

TSP Emission Factor (lbs / blast) = $0.000014 * A^{1.5}$
- AP-42 Fifth Edition 11.9-1 (7/98)

20,000 A, horizontal area ($ft^2$), with blasting depth < 70 feet

$EF_{TSP}$ = 39.5980 lbs / blast

***Blasting PM10 Emission Factor***

PM10 Emission Factor (lbs / blast) = $0.52 * (0.000014 * A^{1.5})$
- AP-42 Fifth Edition 11.9-1 (7/98)

20,000 A, horizontal area, with blasting depth < 70 feet
0.52 K, scaling factor

$EF_{PM10}$ = 20.591 lbs / blast

***Drilling Fugitive Dust Emission Factors***

***Drilling PM Emission Factor***

TSP Emission Factor (lbs / hole) = 1.3
- AP-42 Fifth Edition 11.9-4 (10/98)

$EF_{TSP}$ = 1.3 lbs / hole

***Blasting & Drilling Fugitive Dust Emissions***

| Emission Unit | TSP Actual Annual Emissions (tons/yr) | TSP Potential to Emit Hourly (lbs/hr) | TSP Potential to Emit Annual (tons/yr) | PM10 Actual Annual Emissions (tons/yr) | PM10 Potential to Emit Hourly (lbs/hr) | PM10 Potential to Emit Annual (tons/yr) |
|---|---|---|---|---|---|---|
| Blasting | 2.05909 | 3.299 | 14.45 | 1.0707 | 1.72 | 7.51 |
| Drilling | 2.0 | 3.9 | 17.1 | 1.0 | 1.95 | 8.54 |
| Sum | 4.0 | 7.2 | 31.5 | 2.05 | 3.67 | 16.05 |

NOTES: Drilling - Assuming 50% reduction in emissions due to watering controls.
Drilling - Assume PM10 = 0.5 x TSP

***Blasting Nox, CO, SO2 Emission Factors***

***Blasting NOx Emission Factor***

NOx Emission Factor (lbs / ton) = 17
- AP-42 Fifth Edition 13.3-1 (2/80)

$EF_{NOx}$ = 17 lbs / ton

***Blasting CO Emission Factor***

CO Emission Factor (lbs / ton) = 67
- AP-42 Fifth Edition 13.3-1 (2/80)

$EF_{CO}$ = 67 lbs / ton

***Blasting SO2 Emission Factor***

SO2 Emission Factor (lbs / ton) = 2
- AP-42 Fifth Edition 13.3-1 (2/80)

$EF_{SO2}$ = 2 lbs / ton

***Blasting NOx, CO, SO2 Fugitive Emissions***

| Emission Unit | NOx Actual Annual Emissions (tons/yr) | NOx Potential to Emit Hourly (lbs/hr) | NOx Potential to Emit Annual (tons/yr) | CO Actual Annual Emissions (tons/yr) | CO Potential to Emit Hourly (lbs/hr) | CO Potential to Emit Annual (tons/yr) | SO2 Actual Annual Emissions (tons/yr) | SO2 Potential to Emit Hourly (lbs/hr) | SO2 Potential to Emit Annual (tons/yr) |
|---|---|---|---|---|---|---|---|---|---|
| Blasting | 3.16 | 5.06 | 22.18 | 12.46 | 19.96 | 87.42 | 0.372 | 0.596 | 2.61 |

## CRUSHERS / SCREENS

**Emission Calculations**

### *Operations*

| Unit | Type of Material | Number of Units | Actual Annual Throughput (TPY) | Maximum Hourly Throughput (TPH) | Maximum Annual Throughput (TPY) |
|---|---|---|---|---|---|
| Double Deck Screen | Ore | 2 | 1,200,000 | 1,000 | 8,760,000 |
| Horizontal Impact Crusher | Ore | 1 | 50,000 | 250 | 2,190,000 |

### *Material Processing Fugitive Dust Emission Factors*

#### *Material Processing PM Emission Factor*

TSP Emission Factor (lbs / ton of throughput) = Sum of (Unit EFs * Number of Units)

- AP-42 Fifth Edition 11.19.2-2 (8/04)

0.0012 Horizontal Impact Crusher EF (lb/ton)

0.0022 Double Deck Screen EF (lb/ton)

$EF_{TSP}$ = 0.0056 lbs / ton of throughput

#### *Material Processing PM10 Emission Factor*

PM10 Emission Factor (lbs / ton of throughput) = Sum of (Unit EFs * Number of Units)

- AP-42 Fifth Edition 11.19.2 (8/04)

0.00054 Horizontal Impact Crusher EF (lb/ton)

0.00074 Double Deck Screen EF (lb/ton)

$EF_{PM10}$ = 0.0020 lbs / ton of throughput

### *Fugitive Emissions*

| Emission Unit | TSP Actual Annual Emissions (tons/yr) | TSP Potential to Emit Hourly (lbs/hr) | TSP Potential to Emit Annual (tons/yr) | PM10 Actual Annual Emissions (tons/yr) | PM10 Potential to Emit Hourly (lbs/hr) | PM10 Potential to Emit Annual (tons/yr) |
|---|---|---|---|---|---|---|
| Horizontal Impact Crusher | 0.03 | 0.30 | 1.31 | 0.01 | 0.14 | 0.59 |
| Double Deck Screen | 2.6 | 4.4 | 19.3 | 0.9 | 1.48 | 6.48 |
| Sum | 2.7 | 4.7 | 20.6 | 0.9 | 1.6 | 7.1 |

NOTES: Double Deck Screen - Assuming Controlled Emissions due to 10.5% moisture content of the material, and water suppressant system.
Horizontal Impact Crusher - Assuming Controlled Emissions due to 10.5% moisture content of the material, and water suppressant system.

## WIND EROSION ON OPEN AREAS

### Emission Calculations

***Operations***

| Type | Acres of Exposed Land |
|---|---|
| Open Areas | 240.0 |

***Open Areas Fugitive Dust Emission Factors***

***Open Areas PM Emission Factor***

TSP Emission Factor (ton / (acre)(yr)) = 0.38
AP-42 Fifth Edition 11.9-4 (7/98)

$EF_{TSP}$= 0.38 tons / (acre)(yr)

***Fugitive Emissions***

| | TSP Actual Annual | TSP Potential to Emit | | PM10 Actual Annual | PM10 Potential to Emit | |
|---|---|---|---|---|---|---|
| | Emissions | Hourly | Annual | Emissions | Hourly | Annual |
| Emission Unit | (tons/yr) | (lbs/hr) | (tons/yr) | (tons/yr) | (lbs/hr) | (tons/yr) |
| Open Areas | 91.2 | 20.8 | 91.2 | 27.4 | 6.25 | 27.36 |

NOTE: Assume wind erosion PM10 = 0.3 x TSP

**MISC DUST SOURCES**
**Emission Calculations**

***Operations***

| Unit | Number of Units | Material Moisture Content (%) | Actual Annual Material Handled (TPY) | Maximum Hourly Material | Maximum Annual Material Handled (TPY) |
|---|---|---|---|---|---|
| Screen Transfer Points | 3 | 10.5 | 1,200,000 | 1,000 | 8,760,000 |
| Crusher Bypass Transfer Points | 2 | 10.5 | 600,000 | 200 | 1,752,000 |
| Crusher Transfer Points | 2 | 10.5 | 50,000 | 250 | 2,190,000 |
| Tipple Transfer Points | 3 | 10.5 | 1,200,000 | 421 | 3,688,421 |
| Truck Loading-FEL | 1 | 10.5 | 600,000 | 500 | 4,380,000 |
| Steam Shoveling | 3 | 10.5 | 600,000 | 1,300 | 11,388,000 |

NOTE: Truck Loading and Steam Shoveling - material handled is for all units in category

***Miscellaneous Sources Fugitive Dust Emission Factors***

***Material Handling PM Emission Factors***

TSP Emission Factor (lb / ton) = {k(0.0032)[(U/5)^1.3/(M/2)^1.4]}
AP-42 Fifth Edition 13.2.4 (11/06)

0.74 k, particle size multiplier
7.6 U, mean wind speed (mph)
10.5 M, material moisture content (%)

$EF_{TSP}$ = 0.000400 lb/ton

| | |
|---|---|
| Screen Transfer Points | 0.001201 lb/ton |
| Crusher Bypass Transfer Points | 0.000801 lb/ton |
| Crusher Transfer Points | 0.000801 lb/ton |
| Tipple Transfer Points | 0.001201 lb/ton |
| Truck Loading-FEL | 0.000400 lb/ton |
| Steam Shoveling | 0.001201 lb/ton |

***Material Handling PM10 Emission Factors***

PM10 Emission Factor (lb / ton) = {k(0.0032)[(U/5)^1.3/(M/2)^1.4]}
AP-42 Fifth Edition 13.2.4 (11/06)

0.35 k, particle size multiplier
7.6 U, mean wind speed (mph)
10.5 M, material moisture content (%)

$EF_{PM10}$ = 0.000189 lb/ton

| | | EF | Total EF | Total |
|---|---|---|---|---|
| Screen Transfer Points | 0.000568 lb/ton | 0.000046 | 0.000138 | 0.60444 |
| Crusher Bypass Transfer Points | 0.000379 lb/ton | 0.000046 | 0.000092 | 0.080592 |
| Crusher Transfer Points | 0.000379 lb/ton | 0.000046 | 0.000092 | 0.10074 |
| Tipple Transfer Points | 0.000568 lb/ton | 0.000046 | 0.000138 | 0.254501053 |
| Truck Loading-FEL | 0.000189 lb/ton | 0.000046 | 0.000046 | 0.10074 |
| Steam Shoveling | 0.000568 lb/ton | | 0.000568 | 3.235417869 |
| | | | | 4.376430922 |

***Fugitive Emissions***

| | TSP Actual Annual Emissions (tons/yr) | TSP Potential to Emit Hourly (lbs/hr) | TSP Potential to Emit Annual (tons/yr) | PM10 Actual Annual Emissions (tons/yr) | PM10 Potential to Emit Hourly (lbs/hr) | PM10 Potential to Emit Annual (tons/yr) |
|---|---|---|---|---|---|---|
| Screen Transfer Points | 0.721 | 1.201 | 5.262 | 0.341 | 0.568 | 2.489 |
| Crusher Bypass Transfer Points | 0.240 | 0.160 | 0.702 | 0.114 | 0.076 | 0.332 |
| Crusher Transfer Points | 0.020 | 0.200 | 0.877 | 0.009 | 0.095 | 0.415 |
| Tipple Transfer Points | 0.721 | 0.506 | 2.216 | 0.341 | 0.239 | 1.048 |
| Truck Loading | 0.120 | 0.200 | 0.877 | 0.057 | 0.095 | 0.415 |
| Shovel | 0.360 | 1.562 | 6.841 | 0.170 | 0.739 | 3.235 |
| **Total** | **2.2** | **3.8** | **16.8** | **1.0** | **1.8** | **7.9** |

NOTE: Two large rock transfer points are not included in the calculations since PM emissions are negligible

## ON-SITE PAVED ROADS

**Emission Calculations**

### *Paved Road Fugitive Dust Emission Factors*

#### *Paved Road PM Emission Factor*

TSP Emission Factor (lb / VMT) = $[[k * (s / 12)^{0.7} * (W/3)^{0.45}] * [(1\text{-}CE)]$

AP-42 Fifth Edition 13.2.2, Unpaved Roads (11/06) (see Utah DEQ Policy, March 10, 2008)

| | |
|---|---|
| 4.9 | k, TSP multiplier (lb / VMT) |
| 4.8 | s, surface material silt content (%) |
| 195 | W, average weight of the vehicles traveling the road (tons) |
| 90% | Control efficiency for paved roads |

$EF_{TSP}$ = 1.69 lbs / VMT

#### *Paved Road PM10 Emission Factor*

PM10 Emission Factor (lb / VMT) = $[[k * (s / 12)^{0.9} * (W/3)^{0.45}] * [(1\text{-}CE)]$

AP-42 Fifth Edition 13.2.2, Unpaved Roads (11/06) (see Utah DEQ Policy, March 10, 2008)

| | |
|---|---|
| 1.5 | k, PM10 multiplier (lb / VMT) |
| 4.8 | s, surface material silt content (%) |
| 195 | W, average weight of the vehicles traveling the road (tons) (Section 1, see below) |
| 90% | Control efficiency for paved roads |

$EF_{PM10}$ Section 1 = 0.43 lbs / VMT

### *Vehicle Miles Traveled*

| Location | Vehicle | Avg. Weight (tons) | Number of Round Trips per day | Actual Days per year | Round Trips per year | Distance per Roundtrip (mi) | Actual VMT/yr |
|---|---|---|---|---|---|---|---|
| Paved Roads | Ore Trains | 195 | 16 | 365 | 5,714 | 0.5 | 2,857 |

### *Fugitive Emissions*

| | TSP Actual Annual Emissions (tons/yr) | TSP Potential to Emit | | PM10 Actual Annual Emissions (tons/yr) | PM10 Potential to Emit | |
|---|---|---|---|---|---|---|
| | | Hourly (lbs/hr) | Annual (tons/yr) | | Hourly (lbs/hr) | Annual (tons/yr) |
| **Paved Roads** | **2.4** | **0.6** | **2.4** | **0.6** | **0.14** | **0.61** |

## ON-SITE UNPAVED ROADS

**Emission Calculations**

### *Unpaved Road Fugitive Dust Emission Factors*

#### *Unpaved Road PM Emission Factors*

TSP Emission Factor (lb / VMT) = $[[k * (s / 12)^{0.7} * (W/3)^{0.45}] * [(365-p) / 365]*[(1-CE)]$

AP-42 Fifth Edition 13.2.2-2, Table 13.2.2-2 (11/06)

| | |
|---|---|
| 4.9 | k, TSP multiplier (lb / VMT) |
| 6.9 | s, surface material silt content (%) |
| 74.3 | W, average weight of the vehicles traveling the road (tons) |
| 90 | p, number of days with at least 0.254 mm (0.01 inch) of precipitation per year |
| 75% | CE, unpaved road dust control effiency |

$EF_{TSP}$ = 2.66 lbs / VMT

#### *Unpaved Road PM10 Emission Factors*

PM10 Emission Factor (lb / VMT) = $[[k * (s / 12)^{0.9} * (W/3)^{0.45}] * [(365-p) / 365]*[(1-CE)]$

AP-42 Fifth Edition 13.2.2-2, Table 13.2.2-2 (11/06)

| | |
|---|---|
| 1.5 | k, PM10 multiplier (lb / VMT) |
| 6.9 | s, surface material silt content (%) |
| 74.3 | W, average weight of the vehicles traveling the road (tons) |
| 90 | p, number of days with at least 0.254 mm (0.01 inch) of precipitation per year |
| 75% | CE, unpaved road dust control effiency |

$EF_{PM10}$ = 0.73 lbs / VMT

### *Vehicle Miles Traveled, All Relevant Vehicles*

| | | Avg. Weight | Number of Vehicles | Number of Round Trips | Actual Days | Round Trips | Distance per Roundtrip | Actual | Maximum | |
|---|---|---|---|---|---|---|---|---|---|---|
| Location | Vehicle | (tons) | | per day | per year | per year | (mi) | VMT/yr | VMT/hr | VMT/yr |
| ORE | Dump Trucks | 90 | | 50 | 190 | 9,500 | 3.0 | 28,500 | 6.3 | 54,750.0 |
| WASTE | Dump Trucks | 90 | | 40 | 190 | 7,600 | 3.0 | 22,800 | 5.0 | 43,800.0 |
| | Dump Trucks Total | 90 | 13 | | | | | 51,300 | 11.3 | 98,550.0 |
| | Road Graders Total | 38 | 1.5 | 78 | 190 | 14,820 | 1.0 | 22,230.0 | 7.3 | 42,705 |
| | Fleet Average | 42.7 | | | | | | 24,510.0 | 6.2 | 47,085.0 |
| | Weighted Average | 74.3 | | | | | | | | |

### *Fugitive Emissions*

| | TSP Actual Annual Emissions (tons/yr) | TSP Potential to Emit Hourly (lbs/hr) | TSP Potential to Emit Annual (tons/yr) | PM10 Actual Annual Emissions (tons/yr) | PM10 Potential to Emit Hourly (lbs/hr) | PM10 Potential to Emit Annual (tons/yr) |
|---|---|---|---|---|---|---|
| Dump Trucks | 68 | 30 | 131 | 18.7 | 8.2 | 35.9 |
| Road Graders | 29.5 | 19.4 | 56.7 | 8.1 | 5.3 | 15.5 |
| **Total** | **97.6** | **49** | **188** | **26.8** | **13.51** | **51.40** |

NOTE: Unpaved Roads emission rates include a 75% control factor due to the watering truck.

**Blackfoot Bridge Mining Information Needed for Emissions Calculations**

This lists all the equipment that was used for calculating emissions in late 2002.
If other equipment has been added, please add to list.

| | Blackfoot Bridge Mine |
|---|---|
| Exposed Acres for Wind Erosion (acres) | 240 |
| Mining Operations, Overburden (hours/day) | 15 |
| Mining Operations, Excavation (hours/day) | 4 |
| Mining Operations, Overburden (days/year) | 190 |
| Mining Operations, Excavation (days/year) | 190 |
| Number of Dozers, Overburden | 4 |
| Number of Dozers, Excavation | 2 |
| Number of Graders | 3 |
| Graders, Weight (tons) | 38 |
| Graders, Vehicle Speed (mph) | 5 |
| Graders, Hours of Operation (hrs/year/grader) | 1000 |
| Graders, Round Trips (RT/day) | 78 * |
| Graders, Days of Operation (days/year) | 190 |
| Graders, Distance per Round Trip (miles/RT) | 1 |
| Number of Truck Loading - FEL | 1 |
| Truck Loading - FEL, Material Handled (ton/hour) | 500 |
| Number of Steam Shovels | 3 |
| Steam Shovels, Material Handled (ton/hour) | 1300 |
| Number of Scrapers - Waste | |
| Scraper - Waste, Material Handled (ton/hour) | |
| Number of Scrapers - Ore | |
| Scraper - Ore, Material Handled (ton/hour) | |
| Scraper, Weight (tons) | |
| Scraper, Bucket Capacity (tons) | |
| Scrape, Round Trips (RT/hour) | |
| Scraper, Miles per Round Trip (mile/RT) | |
| Scraper, Round Trips (RT/day) | |
| Scraper, Days of Operation (days/year) | |
| Haul Trucks, Weight (tons) | 195 |
| Haul Trucks, Distance per Round Trip (miles/RT) | 0.5 |
| Haul Trucks, Capacity (tons/trip) | 210 |
| Haul Trucks, Tons Hauled (tons/year) | 1200000 |
| Number of Dump Trucks | 13 |
| Dump Trucks, Weight (tons) | 90 |
| Dump Trucks, Capacity (tons/trip) | 100 |
| Dump Trucks, Days of Operation (days/year) | 190 |
| Dump Trucks, Ore, Round Trips (RT/day) | 50 |
| Dump Trucks, Ore, Pit to Tipple (tons/year) | 1200000 |
| Dump Trucks, Ore, Distance per Round Trip (miles/RT) | 3 |
| Dump Trucks, Waste, Round Trips (RT/day) | 40 |
| Dump Trucks, Waste (tons/year) | 10000000 |
| Dump Trucks, Waste, Distance per Round Trip (miles/RT) | 3 |
| Double Deck Screen, number of units | 2 |
| Double Deck Screen Thruput (ton/year) | 1200000 |
| Double Deck Screen Maximum Thruput (ton/hr) | 1000 |
| Horizontal Impact Crusher, number of units | 1 |
| Horizontal Impact Crusher Thruput (ton/year) | 50000 |
| Horizontal Impact Crusher Maximum Thruput (ton/hr) | 250 |
| Crusher Bypass Thruput (ton/year) | 600000 |
| Crusher Bypass Thruput, Actual (ton/hr) | |
| Crusher Bypass Thruput, Maximum (ton/hr) | 200 |
| Blasting, (max blasts/hour) | 0.0833 |
| Blasting, (blasts/year) | 104 |
| Blasting, horizontal area per blast (ft2) | 20000 |
| Blasting, lb ANFO/blast | 7152 |
| Drilling, (max holes drilled/hour) | 6 |
| Drilling (holes drilled/year) | 6000 |
| Material Silt Content (%) | 6.9 |
| Material Moisture Content (%) | 10.5 |
| Days with at least 0.01 inches precipitation | 90 |

* - Grader operating travels 5 mph for 19.5 hrs * 0.8 effectiveness factor = 15.6 hrs * 5 mph = 78 miles/day

Lead Emission Factor 2.18E-05 lb Pb/lb ore
NOTE: Ore analysis is from South Rasmussen mine Ore collected in Oct-Dec, 2005 , sampled by D. R. Wind,

**Equipment Duty Calculation**

| | | |
|---|---|---|
| Generator Capacity (brake KW) | 600 | |
| Average Load Factor (when running) | 80% | |
| Average brake horsepower | 643 | |

**Sulfur Emission Factor Calculation**

| | | |
|---|---|---|
| #2 Diesel density (lb/gal) | 7.1 | |
| #2 Diesel heat value (btu/lb) | 19,000 | |
| #2 Diesel heat value (btu/gal) | 134,900 | |
| EPA Diesel utilization factor (hp-hr/gal) | 19.35 | (Source: Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression Ignition, p.A7; April 2004) |
| Net Diesel utilization (btu/gal) | 49,246 | |
| #2 Diesel thermal efficiency | 36.51% | |
| #2 Diesel sulfur content (ppm) | 2,200 | (Source: Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression Ignition, p.B3; April 2004) |
| #2 Diesel sulfur mass (lb/hp-hr) | 0.00081 | |
| Mole weight ratio ($SO_2$:S) | 1.998 | |
| Mass conversion (g/lb) | 454 | |
| #2 Diesel $SO_2$ emission factor (g/hp-hr) | 0.732 | |

**$CO_2$ Emission Factor Calculation**

| | | |
|---|---|---|
| #2 Diesel consumption rate (gal/hr) | 33.25 | |
| #2 Diesel carbon content (USEPA) | 87.0% | (AP-42 Table 3.4-1) |
| Carbon conversion (burnout) | 99.0% | (AP-42 Table 3.3-1) |
| $CO_2$:C conversion factor | 3.67 | |
| $CO_2$ emission rate (lb/hr) | 745.6 | check: 746.4 based on 1.16 lb/hp-hr from AP-42 Table 3.4-1 |

**Pollutant Emission Rate (g/hp-hr)**

| Emission Factor Source | CO | $NO_x$ | $VOC^2$ | PM | $PM2.5^1$ | $Pb^3$ | $SO_2$ | |
|---|---|---|---|---|---|---|---|---|
| EPA NONROAD Emission Factors - Tier 2 | 2.60 | 4.80 | 0.300 | 0.150 | 0.146 | 0.00005 | 0.732 | <-use this |
| Cat C18 600 KW Tier 2 Specifications | 0.48 | 5.84 | | 0.035 | 0.034 | | N/A | |
| Cat C13 440 HP Tier 3 Specifications | 2.61 | 2.98 | | 0.149 | 0.145 | | N/A | |

**Pollutant Emission Rate (lb/hr)**

| CO | $CO_2$ | VOC | $NO_x$ | PM | $PM_{2.5}$ | Pb | $SO_2$ |
|---|---|---|---|---|---|---|---|
| 3.68 | 745.6 | 0.43 | 6.80 | 0.21 | 0.21 | 0.00 | 1.04 |

Notes:

1 - Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression Ignition, p.1; April 2004

2 - VOC emissions N/A for Tier 2,3; therefore it is based on Tier 4 Transitional standard (Final Regulatory Analysis: Control of Emissions from Nonroad Diesel Engines, May 2004)
(note: previous version of Table 3.4-1 lists TOC as 7.05E-3 lb/hp-hr which equates to 0.320 g/hp-hr)

3 - Lead emission factor for large diesel engines taken from http://www.dnr.state.wi.us/air/emission/NR438/pollutants/428_ef.htm

# APPENDIX B – PERMIT FEES

# PTC Fee Calculation

**Instructions:**
**Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.**

| | |
|---|---|
| **Company:** | **P4 Production, L.L.C., Blackfoot Bridge Mine** |
| **Address:** | **1853 Hwy 34** |
| **City:** | **Soda Springs** |
| **State:** | **Idaho** |
| **Zip Code:** | **83276** |
| **Facility Contact:** | **Jim McCulloch** |
| **Title:** | **Senior Environmental Engineer** |
| **AIRS No.:** | **029-00035** |

| | |
|---|---|
| **N** | Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N |
| **Y** | Did this permit require engineering analysis? Y/N |
| **N** | Is this a PSD permit Y/N (IDAPA 58.01.01.205.04) |

| Emissions Inventory | | | |
|---|---|---|---|
| Pollutant | Annual Emissions Increase (T/yr) | Annual Emissions Reduction (T/yr) | Annual Emissions Change (T/yr) |
| $NO_X$ | 0.0 | 0 | 0.0 |
| $SO_2$ | 0.0 | 0 | 0.0 |
| CO | 0.0 | 0 | 0.0 |
| PM10 | 0.0 | 0 | 0.0 |
| VOC | 0.0 | 0 | 0.0 |
| TAPS/HAPS | 0.0 | 0 | 0.0 |
| Total: | 0.0 | 0 | **0.0** |
| | | | |
| Fee Due | **$ 1,000.00** | | |

Comments: In accordance with IDAPA 58.01.01.225, the fee calculation shall not include fugitive emissions. This is a new source with an increase in emissions of less than one ton per year (because fugitives are not included). Therefore, the processing fee is $1,000.

# APPENDIX C – FACILITY DRAFT COMMENTS

## The following comments were received from the facility on December 29, 2010:

**Facility Comment:**

In Table 2, on page 6, the annual Potential to Emit amount for CO should be 16.1 T/yr. The corresponding Total annual CO Potential to Emit amount would then be 103.52 T/yr.

**DEQ Response:**

This has been corrected.

# APPENDIX D – AMBIENT AIR QUALITY IMPACT ANALYSES

***MEMORANDUM***

**DATE:** December 15, 2010

**TO:** Carole Zundel, Air Quality Analyst, Air Program

**FROM:** Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

**PROJECT NUMBER:** P-2009.0135

**SUBJECT:** Modeling Review for the P4 Production L.L.C. Application for a Permit to Construct for the Proposed Blackfoot Bridge Mine north of Soda Springs, Idaho

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## 1.0 SUMMARY

P4 Production L.L.C. (P4) submitted an application for a permit to construct (PTC) for the Blackfoot Bridge Mine proposed to be located north of Soda Springs, Idaho. The PTC will allow ore handling operations and other mine-related processing. Air quality analyses involving atmospheric dispersion modeling of increased emissions were performed to demonstrate the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 [Idaho Air Rules Section 203.02]) and would comply with new source review requirements for Toxic Air Pollutants (Idaho Air Rules Section 203.03). IML Air Science (IML), P4's consultant, performed the site-specific ambient air quality impact analyses.

A technical review of the submitted analyses was conducted by DEQ. The submitted analyses and information: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the proposed facility were below significant impact levels (SCLs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from emissions associated with the facility and any potentially co-contributing sources, when appropriately combined with background concentrations, were below applicable air quality standards at all locations outside of the facility's property boundary. Table 1 presents key assumptions and results that should be considered in the development of the permit.

**Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES**

| Criteria/Assumption/Result | Explanation/Consideration |
|---|---|
| Modeled impacts of $PM_{10}$ were near the $PM_{10}$ 24-hour and annual standard at a location along the railway bisecting the site, near the main collection of sources at the site. | No sensitive receptors (schools, homes, businesses, or other places/activities where it would be suspected that people would be present for a large portion of the time) are present in the area where modeled concentrations are near the applicable standards. Therefore, no special operational provisions or restrictions, beyond those described in the application, are needed in the permit to assure compliance with standards. |
| Modeling analyses easily demonstrated compliance with all applicable ambient air quality standards except $PM_{10}$. | No special operational provisions or restrictions, beyond those described in the application, are needed in the permit to assure compliance with standards. This assumes all sources were accurately accounted for and modeled in the submitted application. |

## 2.0 BACKGROUND INFORMATION

### 2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

#### *2.1.1 Area Classification*

The P4 mine is proposed to be located about 10 miles northeast of Soda Springs, Idaho. The area is designated as an attainment or unclassifiable area for carbon monoxide (CO), lead (Pb), nitrogen dioxide ($NO_2$), ozone ($O_3$), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers ($PM_{10}$), particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$), and sulfur dioxide ($SO_2$).

There are no Class I areas within 10 kilometers of this location.

#### *2.1.2 Significant and Cumulative NAAQS Impact Analyses*

If estimated maximum pollutant impacts to ambient air from the emissions sources associated with the proposed facility exceed the significant impact levels (SILs) of Idaho Air Rules Section 006.105, then a cumulative impact analysis is necessary to demonstrate compliance with National Ambient Air Quality Standards (NAAQS) and Idaho Air Rules Section 203.02. A cumulative NAAQS impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions, and emissions from any nearby co-contributing sources, to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled value that must be used for comparison to the NAAQS.

New source review requirements for assuring compliance with $PM_{2.5}$ standards have not yet been completed and promulgated into Idaho Air Rules. EPA has asserted through a policy memorandum (October 23, 1997) that compliance with $PM_{2.5}$ standards will be assured through an air quality analysis for the corresponding $PM_{10}$ standard. DEQ allows a direct surrogate use of $PM_{10}$ modeling results. DEQ does not require the adjustments and justifications for surrogate use as suggested by the EPA March 23, 2010, Stephen Page Memo (memorandum from Stephen Page, Director of Office of Air Quality Planning and Standards, EPA, *Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS*, March 23, 2010). Although the $PM_{10}$ annual standard was revoked in 2006, compliance with the revoked $PM_{10}$ annual standard must be demonstrated as a surrogate to the annual $PM_{2.5}$ standard.

New $NO_2$ and $SO_2$ short-term standards have recently been promulgated by EPA. These standards will not be applicable for permitting purposes in Idaho until they are incorporated by reference sine die into Idaho Air Rules (likely to be Spring 2011).

| Table 2. APPLICABLE REGULATORY LIMITS | | | | |
|---|---|---|---|---|
| **Pollutant** | **Averaging Period** | **Significant Impact Levels[a] ($\mu g/m^3$)[b]** | **Regulatory Limit[c] ($\mu g/m^3$)** | **Modeled Value Used[d]** |
| $PM_{10}$[e] | Annual[f] | 1.0 | 50[g] | Maximum 1st highest[h] |
| | 24-hour | 5.0 | 150[i] | Maximum 6th highest[j] |
| $PM_{2.5}$[k] | Annual | 0.3 | 15[l] | Use $PM_{10}$ as surrogate |
| | 24-hour | 1.2 | 35[m] | Use $PM_{10}$ as surrogate |
| Carbon monoxide (CO) | 8-hour | 500 | 10,000[n] | Maximum 2nd highest[h] |
| | 1-hour | 2,000 | 40,000[n] | Maximum 2nd highest[h] |
| Sulfur Dioxide ($SO_2$) | Annual | 1.0 | 80[g] | Maximum 1st highest[h] |
| | 24-hour | 5 | 365[n] | Maximum 2nd highest[h] |
| | 3-hour | 25 | 1,300[n] | Maximum 2nd highest[h] |
| | 1-hour | 3 ppb[o] | 75 ppb[p] | Mean of maximum 4th highest[q] |
| Nitrogen Dioxide ($NO_2$) | Annual | 1.0 | 100[g] | Maximum 1st highest[h] |
| | 1-hour | 4 ppb[o] | 100 ppb[r] | Mean of maximum 8th highest[s] |
| Lead (Pb) | Quarterly | NA | 1.5[g] | Maximum 1st highest[h] |
| | 3-month[t] | NA | 0.15[g] | Maximum 1st highest[h] |

a. Idaho Air Rules Section 006.105.
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.03.b.
d. The maximum 1st highest modeled value is always used for the significant impact analysis.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers.
f. The annual $PM_{10}$ standard was revoked in 2006. The standard is still listed because compliance with the annual $PM_{2.5}$ standard is demonstrated by a $PM_{10}$ analysis that demonstrates compliance with the revoked $PM_{10}$ standard.
g. Not to be exceeded in any calendar year.
h. Concentration at any modeled receptor.
i. Never expected to be exceeded more than once in any calendar year.
j. Concentration at any modeled receptor when using five years of meteorological data.
k. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
l. 3-year average of annual concentration.
m. 3-year average of the upper 98th percentile of 24-hour concentrations.
n. Not to be exceeded more than once per year.
o. Interim SIL established by EPA policy memorandum.
p. 3-year average of the upper 99th percentile of the distribution of maximum daily 1-hour concentrations.
q. Mean (of 5 years of data) of the maximum of 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled.
r. 3-year average of the upper 98th percentile of the distribution of maximum daily 1-hour concentrations.
s. Mean (of 5 years of data) of the maximum of 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled.
t. 3-month rolling average.

### *2.1.3 Toxic Air Pollutant Analyses*

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

*Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permit requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

*Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as*

*required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Per Section 210, if the emissions increase associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

## 2.2 Background Concentrations

Background concentrations are used in the cumulative NAAQS impact analyses to account for impacts from sources in the general area that were not explicitly modeled. Table 3 lists appropriate background concentrations for the area where the mine is located.

Background concentrations were revised for all areas of Idaho by DEQ in March 2003[1]. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Background concentrations in these analyses were based on DEQ default values for rural / remote areas since there is little population in the surrounding area.

**Table 3. BACKGROUND CONCENTRATIONS**

| Pollutant | Averaging Period | Background Concentration ($\mu g/m^3$)[a] |
|---|---|---|
| $PM_{10}$[b] | 24-hour | 43 |
| | Annual | 9.6 |
| Carbon monoxide (CO) | 1-hour | 3,600 |
| | 8-hour | 2,300 |
| Sulfur dioxide ($SO_2$) | 3-hour | 34 |
| | 24-hour | 26 |
| | Annual | 8 |
| Nitrogen dioxide ($NO_2$) | Annual | 4.3 |
| Lead (Pb) | Quarterly | 0.03 |

a) Micrograms per cubic meter
b) Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

# 3.0 MODELING IMPACT ASSESSMENT

## 3.1 Modeling Methodology

This section describes the modeling methods used by the applicant to demonstrate compliance with applicable air quality standards.

### *3.1.1 Overview of Analyses*

Table 4 provides a brief description of parameters used in the submitted modeling analyses.

[1] Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

| Table 4. MODELING PARAMETERS | | |
|---|---|---|
| **Parameter** | **Description/Values** | **Documentation/Addition Description** |
| General Facility Location | Soda Springs, Idaho | 10 miles northeast of Soda Springs |
| Model | AERMOD | AERMOD with the PRIME downwash algorithm, version 09292. |
| Meteorological data | Soda Springs site data, Pocatello surface data, and Boise upper air | 2004-2008 data processed by IML. |
| Terrain | Considered | Receptor, building, and emissions source elevations were determined using 7.5 minute USGS DEM files. |
| Building downwash | Not Considered | Downwash was not considered because there are very few buildings associated with the proposed mine and they are not located near most emissions sources. |
| Receptor Grid | Grid 1 | 50-meter spacing along the fenced boundary of the mine and along the railway bisecting the site. |
| | Grid 2 | 500-meter spacing out about 2,000 meters from the fenceline. |
| | Grid 3 | 50-meter spacing in a 1,200 meter by 1,100 meter grid centered on the max impact receptors for $PM_{10}$ and $NO_2$. |

### *3.1.2 Modeling Protocol and Methodology*

Refined air impact analyses were performed by IML. A modeling protocol was submitted to DEQ prior to the application and DEQ provided conditional approval of the protocol to IML. Modeling was generally conducted using data and methods described in the protocol and/or in the *State of Idaho Air Quality Modeling Guideline*.

### *3.1.3 Model Selection*

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. EPA provided a one-year transition period during which either ISCST3 or AERMOD could be used at the discretion of the permitting agency. AERMOD must be used for all air impact analyses, performed in support of air quality permitting, conducted after November 2006.

AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD offers the following improvements over ISCST3:

- Improved dispersion in the convective boundary layer and the stable boundary layer.
- Improved plume rise and buoyancy calculations.
- Improved treatment of terrain affects on dispersion.
- New vertical profiles of wind, turbulence, and temperature.

AERMOD was used for all air impact analyses.

### *3.1.4 Meteorological Data*

IML processed five years (2004-2008) of meteorological data with AERMET version 06341 to create the meteorological input file for AERMOD. Surface meteorological data were obtained from the P4 Soda Springs Plant tower about eight miles to the south of the mine site. National Weather Service meteorological data collected at the Pocatello airport were used for surface station data (for parameters

not provided by the on-site tower) and National Weather Service meteorological data collected at the Boise airport were used for upper air input to AERMET.

AERSURFACE, version 08009, was used to establish surface characteristics for the area surrounding the meteorological data collection site. DEQ reviewed the meteorological data processing analysis submitted but did not rerun AERSURFACE or AERMET to verify results.

### *3.1.5 Terrain Effects*

Terrain effects on dispersion were considered in the analyses. Receptor elevations and hill heights were obtained by IML using AERMAP (version 09040) and elevation data from 7.5 minute digital elevation map (DEM) files obtained from the USGS.

### *3.1.6 Facility Layout*

DEQ could not verify the location of emissions points since the facility has not yet been constructed. DEQ did verify that source locations were relatively consistent with stated descriptions in the application and the elevation of the surrounding terrain.

### *3.1.7 Building Downwash*

Downwash effects potentially caused by structures at the facility were not accounted for in the dispersion modeling analyses. There will be some small structures associated with the project, but most of these will not affect dispersion from modeled sources because of the separation distance from most sources. Also, downwash only affects sources modeled as a stack release in the model. All sources except for the generator in these analyses are volume sources or area sources, and those sources would not be affected by any structures, regardless of their proximity to those structures.

### *3.1.8 Ambient Air Boundary*

Ambient air is defined in Section 006 of the Idaho Air Rules as "that portion of the atmosphere, external to buildings, to which the general public has access." The mine will be located on leased property, and the boundary will be fenced with a three-strand fence to preclude public access.

There is a roadway and railway bisecting the mine site. IML indicated via email the road is a haul road from the P4 South Rasmussen Mine and P4 controls all access. The railway was treated as ambient air for dispersion modeling purposes.

### *3.1.9 Receptor Network*

Table 4 describes the receptor grid used in the submitted analyses. The receptor grid met the minimum recommendations specified in the State of Idaho Air Quality Modeling Guideline. DEQ determined the receptor grid was adequate to reasonably resolve maximum modeled concentrations.

## 3.2 Emission Rates

Emissions rates used in the modeling analyses for the proposed project were equal to those presented in other sections of the permit application or the DEQ Statement of Basis, as verified by the DEQ permit writer.

### 3.2.1 Criteria Pollutant Emissions Rates

Table 5 provides facility-wide $PM_{10}$ emissions used in the modeling analyses for point sources and volume sources. Table 6 provides $PM_{10}$ emissions for area sources. Table 7 provides emissions rates for other criteria pollutants.

**Table 5. $PM_{10}$ EMISSIONS RATES USED FOR MODELING ANALYSES – POINT SOURCES AND VOLUME SOURCES**

| Emissions Point | Stack ID | Emissions Rates (lb/hr) |
|---|---|---|
| 600 kW diesel generator | GEN1 | 0.21 |
| Truck Loadout | TL01 | 0.095 |
| Double Deck Screen | DDS1 | 1.48 |
| Horizontal Impact Crusher | HIC1 | 0.14 |
| Paved Haul Road (PVRD1) – 65 sources | L0013660 – L0013724 | 0.0022[a] |
| Unpaved road area 4, dump trucks (UNPVRD4) – 9 sources | L0013341 – L0013349 | 0.1519[a] |
| Unpaved road area 5, dump trucks (UNPVRD5) – 17 sources | L0013350 – L0013366 | 0.0804[a] |
| Unpaved haul road graders (UNRDGR6) – 71 sources | L0013367 – L0013437 | 0.0124[a] |
| Service area 3, dump trucks (UNPVRD3) – 7 sources | L0013438 – L0013444 | 0.1953[a] |
| Service area 2, dump trucks (UNPVRD2) – 6 sources | L0013445 – L0013450 | 0.2278[a] |
| Service area 1, dump trucks (UNPVRD1) – 3 sources | L0013743 – L0013745 | 0.4557[a] |
| Primary conveyor – ore hopper to screen (STP1) – 38 sources | L0013455 – L0013492 | 0.0149[a,b] |
| Conveyor from screen to truck loadout (TTP1) – 38 sources | L0013493 – L0013530 | 0.0063[a,b] |
| Crush Bypass Conveyor (CBTP1) – 3 sources | L0013531 – L0013533 | 0.025[a,b] |
| Conveyor for screen to crusher (CTP1) – 6 sources | L0013725 – L0013730 | 0.0158[a,b] |
| Conveyor from crusher back to screen (CTP2) – 6 sources | L0013737 – L0013742 | 0.0158[a,b] |
| Service Area 1 Road Graders (UPRDGR1) – 3 sources | L0013746 – L0013748 | 0.2943[a] |
| Service Area 2 Road Graders (UPRDGR2) – 6 sources | L0013550 – L0013555 | 0.1472[a] |
| Service Area 3 Road Graders (UPRDGR3) – 7 sources | L0013556 – L0013562 | 0.1261[a] |
| Unpaved road area 4 road graders (UPRDGR4) – 9 sources | L0013563 – L0013571 | 0.0981[a] |
| Unpaved road area 5 road graders (UPRDGR5) – 17 sources | L0013572 – L0013588 | 0.0519[a] |
| Unpaved haul road 6 dump trucks (UNPVRD6) – 72 sources | L0013589 – L0013659 | 0.0193[a] |

a) Emissions listed are for each emissions source point.

b) Emissions are modified by the model as a function of wind speed category. Listed emissions are for a base case wind speed of 7.6 miles per hour.

### 3.2.2 TAP Emissions Rates

TAP emissions regulations under Idaho Air Rules Section 220 are only applicable for new or modified sources constructed before July 1, 1995. All TAP emissions increases listed in the application were below screening emissions limits (ELs) listed in Idaho Air Rules Section 585 and 586.

| Table 6. $PM_{10}$ EMISSIONS RATES USED FOR MODELING ANALYSES – AREA SOURCES | | | |
|---|---|---|---|
| | | $PM_{10}$ Emissions Rates (lb/hr) | |
| Emissions Point | Model ID | g/(sec-$m^2$) | lb/hr |
| North Overburden Wind Erosion | OVWND1 | 4.313E-7[a] | 0.625[a] |
| South Overburden Wind Erosion | OVWND2 | 1.384E-7[a] | 0.625[a] |
| Top Soil Pile Southeast Wind Erosion | TOPWND1 | 3.808E-6[a] | 0.625[a] |
| Top Soil Pile Middle Wind Erosion | TOPWND2 | 3.565E-6[a] | 0.625[a] |
| Top Soil Pile Northeast Wind Erosion | TOPWND3 | 1.659E-6[a] | 0.625[a] |
| Top Soil Pile Southwest Wind Erosion | TOPWND4 | 7.621E-6[a] | 0.625[a] |
| Top Soil Pile Northwest Wind Erosion | TOPWND5 | 1.482E-6[a] | 0.625[a] |
| North Pit Blasting | NPITBL1 | 1.447E-7 | 0.573 |
| Middle Pit Blasting | MPITBL1 | 1.348E-7 | 0.573 |
| South Pit Blasting | SPITBL1 | 1.693E-7 | 0.573 |
| North Overburden Dozer | OVDZR1 | 5.797E-7 | 0.840 |
| South Overburden Dozer | OVDZR2 | 1.860E-7 | 0.840 |
| North Pit Drilling | NPITDR1 | 1.641E-7 | 0.650 |
| North Pit Wind Erosion | NPITWND1 | 1.577E-7[a] | 0.625[a] |
| North Pit Dozer | NPITDZR1 | 7.067E-8 | 0.280 |
| North Pit Shovel | NPITSHV1 | 5.156E-8[a] | 0.204[a] |
| Middle Pit Drilling | MPITDR1 | 1.529E-7 | 0.650 |
| Middle Pit Wind Erosion | MPITWND1 | 1.470E-7[a] | 0.625[a] |
| Middle Pit Dozer | MPITDZR1 | 6.585E-8 | 0.280 |
| Middle Pit Shovel | MPITSHV1 | 4.805E-8[a] | 0.204[a] |
| South Pit Drilling | SPITDR1 | 1.919E-7 | 0.650 |
| South Pit Wind Erosion | SPITWND1 | 1.845E-7[a] | 0.625[a] |
| South Pit Dozer | SPITDZR1 | 8.266E-8 | 0.280 |
| South Pit Shovel | SPITSHV1 | 6.031E-8[a] | 0.204[a] |

a) Emissions are modified by the model as a function of wind speed category

| Table 7. CO, $NO_2$, AND $SO_2$ EMISSIONS RATES USED FOR MODELING ANALYSES | | | | |
|---|---|---|---|---|
| | | Emissions Rates (lb/hr) | | |
| Emissions Point | Stack ID | CO | $NO_2$ | $SO_2$ |
| 600 kW Diesel Generator | GEN1 | 3.68 | 6.80 | 1.04 |
| North Pit Blasting | NPITBL1 | 19.96[a] | 5.06[a] | 0.60[a] |
| Middle Pit Blasting | MPITBL1 | 19.96[a] | 5.06[a] | 0.60[a] |
| South Pit Blasting | SPITBL1 | 19.96[a] | 5.06[a] | 0.60[a] |

a) Modeled emissions are about three times greater than emissions estimated in the permitting emissions inventory, which results in an overestimation of impacts. Such a conservative approach was used since impacts still easily demonstrated compliance with applicable standards.

## 3.3 Emission Release Parameters

Table 8 provides emissions release parameters used in the modeling analyses. These parameters include release height, initial horizontal dispersion coefficient ($\sigma_{y0}$) (volume sources only), initial vertical dispersion coefficient ($\sigma_{z0}$), and area of release (area sources only). All parameters were within reasonably expected ranges for the type of sources modeled and DEQ did not verify in detail the accuracy of release parameters.

| Table 8. EMISSIONS RELEASE PARAMETERS | | | |
|---|---|---|---|
| **Release Point/Location** | **Release Height (m)** | **Initial Horizontal Dispersion Coefficient $\sigma_{y0}$ (m)** | **Initial Vertical Dispersion Coefficient $\sigma_{z0}$ (m)** |
| **VOLUME SOURCES** | | | |
| Truck Loadout | 6.1 | 1.772 | 2.83 |
| Double Deck Screen | 14.17 | 1.063 | 7.38 |
| Horizontal Impact Crusher | 3.96 | 1.42 | 3.69 |
| Paved Haul Road (PVRD1) – 65 sources | 4.27 | 6.03 | 0.46 |
| Unpaved road area 4, dump trucks (UNPVRD4) – 9 sources | 9.96 | 28.0 | 1.08 |
| Unpaved road area 5, dump trucks (UNPVRD5) – 17 sources | 9.96 | 28.0 | 1.08 |
| Unpaved haul road graders (UNRDGR6) – 71 sources | 3.66 | 28.0 | 1.08 |
| Service area 3, dump trucks (UNPVRD3) – 7 sources | 9.96 | 28.0 | 1.08 |
| Service area 2, dump trucks (UNPVRD2) – 6 sources | 9.96 | 50.0 | 1.08 |
| Service area 1, dump trucks (UNPVRD1) – 3 sources | 9.96 | 50.0 | 1.08 |
| Primary conveyor – ore hopper to screen (STP1) – 38 sources | 6.49 | 1.27 | 0.28 |
| Conveyor from screen to truck loadout (TTP1) – 38 sources | 1.56-6.49 | 1.13 | 0.28 |
| Crush Bypass Conveyor (CBTP1) – 3 sources | 3.45-6.09 | 0.69 | 0.28 |
| Conveyor for screen to crusher (CTP1) – 6 sources | 3.84-6.31 | 0.74 | 0.28 |
| Conveyor from crusher back to screen (CTP2) – 6 sources | 3.23-6.31 | 0.72 | 0.28 |
| Service Area 1 Road Graders (UPRDGR1) – 3 sources | 3.66 | 50.0 | 1.08 |
| Service Area 2 Road Graders (UPRDGR2) – 6 sources | 3.66 | 50.0 | 1.08 |
| Service Area 3 Road Graders (UPRDGR3) – 7 sources | 3.66 | 28.0 | 1.08 |
| Unpaved road area 4 road graders (UPRDGR4) – 9 sources | 3.66 | 28.0 | 1.08 |
| Unpaved road area 5 road graders (UPRDGR5) – 17 sources | 3.66 | 28.0 | 1.08 |
| Unpaved haul road 6 dump trucks (UNPVRD6) – 72 sources | 9.96 | 28.0 | 1.08 |
| **AREA SOURCES** | | | |
| **Release Point/Location** | **Release Height (m)[a]** | **Area of Release ($m^2$)** | **Init. Vert. Dispersion Coefficient $\sigma_{z0}$ (m)** |
| North Overburden Wind Erosion | 10 | 182,576 | 0.0 |
| South Overburden Wind Erosion | 10 | 569,051 | 0.0 |
| Top Soil Pile Southeast Wind Erosion | 10 | 20,682 | 0.0 |
| Top Soil Pile Middle Wind Erosion | 10 | 22,089 | 0.0 |
| Top Soil Pile Northeast Wind Erosion | 10 | 47,463 | 0.0 |
| Top Soil Pile Southwest Wind Erosion | 10 | 10,334 | 0.0 |
| Top Soil Pile Northwest Wind Erosion | 10 | 53,137 | 0.0 |
| North Pit Blasting | 10 | 499,223 | 0.0 |
| Middle Pit Blasting | 10 | 535,725 | 0.0 |
| South Pit Blasting | 10 | 426,816 | 0.0 |
| North Overburden Dozer | 10 | 182,576 | 0.0 |
| South Overburden Dozer | 10 | 569,051 | 0.0 |
| North Pit Drilling | 10 | 499,223 | 0.0 |
| North Pit Wind Erosion | 1 | 499,223 | 0.0 |
| North Pit Dozer | 10 | 499,223 | 0.0 |
| North Pit Shovel | 10 | 499,223 | 0.0 |
| Middle Pit Drilling | 10 | 535,725 | 0.0 |
| Middle Pit Wind Erosion | 1 | 535,725 | 0.0 |
| Middle Pit Dozer | 10 | 535,725 | 0.0 |
| Middle Pit Shovel | 10 | 535,725 | 0.0 |
| South Pit Drilling | 10 | 426,816 | 0.0 |
| South Pit Wind Erosion | 1 | 426,816 | 0.0 |
| South Pit Dozer | 10 | 426,816 | 0.0 |
| South Pit Shovel | 10 | 426,816 | 0.0 |

## 3.4 Results for Significant and Cumulative NAAQS Impact Analyses

Results from the submitted significant impact analyses showed that impacts from the proposed project will have a significant $NO_2$ and $PM_{10}$ impact for all applicable averaging periods, thereby triggering full cumulative NAAQS impact analyses. Table 9 provides the results for the significant impact analyses and cumulative NAAQS impact analyses.

Modeled impacts of 24-hour and annual $PM_{10}$ were very close to the NAAQS. Concentrations near the NAAQS were limited to a small area along the railway that bisects the site. There are no sensitive receptors at this location and concentrations quickly decrease to levels well below standards at receptors outside of site property boundary.

**Table 9. RESULTS FOR CUMULATIVE IMPACT ANALYSIS AND SIGNIFICANT IMPACT ANALYSES**

| Cumulative Impact Analyses | | | | | | |
|---|---|---|---|---|---|---|
| **Pollutant** | **Averaging Period** | **Modeled Design Concentration ($\mu g/m^3$)[a]** | **Background Concentration ($\mu g/m^3$)** | **Total Ambient Impact ($\mu g/m^3$)** | **NAAQS[b] ($\mu g/m^3$)** | **Percent of NAAQS** |
| $PM_{10}$ | 24-hour | 97.15[c] | 43 | 140.2 | 150 | 94 |
| | Annual | 40.28 | 9.6 | 49.88 | 50 | 99.8 |
| $NO_2$ | Annual | 15.9 | 4.3 | 20.2 | 100 | 20 |
| **Significant Impact Analyses** | | | | | | |
| **Pollutant** | **Averaging Period** | **Maximum Modeled Concentraton ($\mu g/m^3$)** | **SIL[d]** | **Cumulative Impact Analysis Required** | | |
| $SO_2$ | 3-hour | 56.1 | 25 | No | | |
| | 24-hour | 19.1 | 5 | No | | |
| | Annual | 2.4 | 1 | No | | |
| CO | 1-hour | 590.8 | 2,000 | No | | |
| | 8-hour | 168.1 | 500 | No | | |

a) Micrograms per cubic meter.
b) National ambient air quality standards.
c) Modeled value is the maximum of 6th highest modeled concentrations at each receptor, modeled for the entire period of 2004 through 2008.
d) Significant Impact Level

## 3.5 Results for TAPs Analyses

Emissions of all TAPs were below applicable ELs and modeling analyses were not required.

# 4.0 CONCLUSIONS

The ambient air impact analyses demonstrated to DEQ's satisfaction that emissions from the facility will not cause or significantly contribute to a violation of any air quality standard.