FREEPORT-MCMORAN

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Bagdad Operations
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SENT VIA ELECTRONIC MAIL TO AIRPERMITS@AZDEQ.GOV

July 12, 2023

Mr. Daniel Czecholinski
Director, Air Quality Division
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

RE: Significant Permit Revision Application
Updates to Alternate Operating Scenario 1
Freeport-McMoRan Bagdad Inc.
Class II Air Quality Permit #77414

Dear Mr. Czecholinski:

Freeport-McMoRan Bagdad Inc. (FMBI) operates a copper and molybdenum ore mining and processing facility in Bagdad, Arizona as authorized by Class II Air Quality Permit #77414, issued by the Arizona Department of Environmental Quality (ADEQ) on November 20, 2019. In accordance with Arizona Administrative Code (A.A.C.) R18-2-320, FMBI is submitting this significant permit revision (SPR) application to update the design of Alternate Operating Scenario 1 (Two Concentrator Operations).

If you have any questions concerning this application or need additional details, please feel free to contact me using the phone number or email address noted below.

Sincerely,

Hope Johnston
Senior Environmental Scientist
Phone: (928) 633-3422
hjohnsto@fmi.com

Freeport-McMoRan Bagdad Inc.

Significant Permit Revision Application
Updates to Alternate Operating Scenario 1
Class II Air Quality Permit #77414
Bagdad, Arizona

Stantec

Prepared for:

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Submitted to:

Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

July 12, 2023

SIGN-OFF SHEET

The conclusions in the Report titled **Significant Permit Revision Application; Updates to Alternate Operating Scenario 1** are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from **Freeport-McMoRan Bagdad Inc.** (the "Client") and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

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Prepared by: ______________________________

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Amber Summers

Reviewed by: Kathy Houed ______________________________

(signature)

Kathy Houed

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EXECUTIVE SUMMARY

Freeport-McMoRan Bagdad Inc. (FMBI) operates a copper and molybdenum ore mining and processing facility in Bagdad, Arizona as authorized by Class II Air Quality Permit #77414, issued by the Arizona Department of Environmental Quality (ADEQ) on November 20, 2019. In accordance with Arizona Administrative Code (A.A.C.) R18-2-320, FMBI is submitting this significant permit revision (SPR) application to update the design of Alternate Operating Scenario 1 (Two Concentrator Operations).

Key elements of the SPR application are presented below along with a table identifying all components of the application. ADEQ's application administrative completeness checklist is presented in Appendix I.

Summary of the Proposed Updates

The FMBI facility is a large industrial complex located in Yavapai County in north central Arizona and is comprised of mining, ore processing, and multiple support operations. The six major operations at the FMBI facility include: (a) open-pit mining and hauling of ore and overburden; (b) size reduction of the ore using primary crushing and overland conveying followed by grinding/milling and secondary crushing; (c) concentration of the ore using bulk and molybdenum froth flotation; (d) processing and bagging/loading of the copper and molybdenum concentrate; (e) heap leaching of ore to generate a copper-rich pregnant leach solution followed by solution extraction and electrowinning to produce high purity copper cathodes; and (f) pressure leaching of copper and molybdenum concentrate to produce additional copper-rich pregnant leach solution and molybdenum trioxide, respectively.

The grinding/milling, secondary crushing, and flotation operations described in (b) and (c) above are commonly referred to as the Bagdad Concentrator and are currently fed by a single primary crusher (PC2) and overland conveying system. The Bagdad Concentrator produces the copper and molybdenum concentrates described in (d) above. For air quality permitting purposes, these existing operations are known as the Primary Operating Scenario.[1]

According to Condition I.D.1 of Attachment "B" of Class II Air Quality Permit #77414, FMBI is also authorized to operate Alternate Operating Scenario 1 (AOS1) called the Two Concentrator Operations. This operating scenario includes modified primary crushing and overland conveying operations, additional milling operations, and additional bulk flotation operations. The additional milling and bulk flotation operations are referred to as the Sycamore Concentrator. The AOS1 operations were authorized in a prior permit, but FMBI has not constructed nor operated under AOS1 due to unfavorable economic conditions.

[1] The Primary Operating Scenario also includes an additional primary crusher (PC1) and overland conveying system, but they are not currently operating.

With the current economic conditions, FMBI is now planning to move forward with the Two Concentrator Operations under AOS1. However, because of advancement and modernization of technology and engineering, the design of AOS1 in Class II Air Quality Permit #77414 needs to be updated.

~~The proposed updated design of AOS1 includes the following major differences from the design of AOS1 in Class II Air Quality Permit #77414:~~

- ~~**PC1 and Overland Conveying**~~
  - ~~FMBI will purchase a new PC1 instead of reconstructing/refurbishing the old PC1.~~
  - ~~The overland conveyor transfer apron feeder will be removed.~~
  - ~~All ore processed by PC1 will be transferred to the Sycamore Concentrator.~~
  - ~~Equipment names will be updated.~~
  - ~~Dust collector exhaust flow rates will be updated.~~
- ~~**PC2 and Overland Conveying**~~
  - ~~The overland conveyor transfer apron feeder will be removed.~~
  - ~~Free-Standing Stacker 6 will be retained.~~
  - ~~All ore processed by PC2 will be transferred to the Bagdad Concentrator.~~
  - ~~Fogging systems will be used instead of dust collectors to control emissions from non-fugitive transfer points during overland conveying.~~
- ~~**Sycamore Milling Operations**~~
  - ~~Autogenous mills (wet processes) will be used instead of secondary crushers.~~
  - ~~An additional ball mill and regrind mill will be used.~~
  - ~~Screening and material handling operations will have a different configuration.~~
  - ~~Equipment names will be updated.~~
  - ~~Dust collector exhaust flow rates will be updated.~~
- ~~**Sycamore Flotation Operations**~~
  - ~~Both bulk and molybdenum flotation operation will be included (i.e., the copper/molybdenum concentrate from the Sycamore Concentrator will no longer combine with the copper/molybdenum concentrate from the Bagdad Concentrator). This will require addition of the Sycamore Concentrate Handling Operations and Sycamore Lime and Other Reagent Operations as described below.~~
  - ~~Cleaner flotation will be added.~~
  - ~~Thickeners for bulk concentrate, copper concentrate, and molybdenum concentrate will be added.~~
  - ~~Equipment names will be updated.~~

- **~~Sycamore Concentrate Handling Operations~~**
  - ~~Filtering and loadout for the copper concentrate from the Sycamore Concentrator will be added.~~
  - ~~Filtering, drying (controlled by a scrubber), and packaging of the molybdenum concentrate from the Sycamore Concentrator will be added.~~
- **~~Sycamore Lime and Other Reagent Operations~~**
  - ~~Because of the additional Sycamore flotation operations, reagent systems for lime, flocculant, xanthate, test reagent, and sodium hydrosulfide (NaHS) will be added.~~
- **~~Sycamore Prill Handling Operations~~**
  - ~~Because of the updated blasting rates described below, an additional prill bin will be added.~~
- **~~Sycamore Emergency Internal Combustion Engines~~**
  - ~~Two diesel emergency generators (engines rated at 609 horsepower [hp] and 762 hp) and two propane emergency generators (engines rated at 84.7 hp each) will be added to provide backup power to the grinding/flotation line, byproduct separation and handling area, concentrator wastewater treatment plant, and the primary crusher area wastewater treatment plant.~~
- **~~Maximum Mining Rates~~**
  - ~~To achieve the production targets associated with the updated design of AOS1, updates are needed to maximum mining rates and associated operations, such as blasting rates and mobile equipment usage (including haul trucks).~~
  - ~~The updates will affect emissions from drilling, blasting, haul truck and other vehicle travel, dozer and grader operations, and loading/unloading of mined material.~~

~~The upgrades will provide FMBI operational flexibility and allow PC1 and the accompanying Sycamore Concentrator to operate independently of the Bagdad Concentrator.~~

Changes in Emissions

The regulated air pollutants emitted by the emission units associated with AOS1 include the following: particulate matter (PM), particulate matter less than or equal to 10 microns in aerodynamic diameter (PM_{10}), and particulate matter less than or equal to 2.5 microns in aerodynamic diameter ($PM_{2.5}$); carbon monoxide (CO); nitrogen oxides (NO_X); sulfur dioxide (SO_2); volatile organic compounds (VOCs); hydrogen sulfide (H_2S); hazardous air pollutants (HAPs); and greenhouse gases (GHGs or CO_2e)[2], including carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). CO_2e emissions are

[2] While GHGs are not included under the definition of "regulated air pollutant" at A.A.C. R18-2-101.122, they are considered a "regulated NSR pollutant" under the Prevention of Significant Deterioration (PSD) program at 40 CFR 52.21(b)(50) and therefore included here for informational purposes.

calculated by summing the individual greenhouse gas emissions multiplied by their global warming potential (GWP). The GWP of CO_2 is 1, the GWP of CH_4 is 25, and the GWP of N_2O is 298.

FMBI's annual facility-wide potential emissions (including potential to emit [PTE]) prior to and following the proposed updates are presented in Table ES.1. Table ES.1 is broken down into the Primary Operating Scenario (current operations) and Alternate Operating Scenario 1 (AOS1 – two concentrator operations) according to: (a) annual facility-wide potential emissions as presented in the last submittal to ADEQ (i.e., Minor Permit Revision (MPR) #96299); (b) change in annual potential emissions due to the proposed updates; and (c) the resulting annual facility-wide potential emission totals following the proposed updates.

The FMBI facility is a synthetic minor source of regulated air pollutants for permitting purposes under A.A.C. Title 18, Chapter 2, Articles 3 and 4. As shown in Table ES.1, FMBI will remain a non-Title V, minor PSD, and minor HAP source in accordance with the A.A.C. following the proposed updates.

Permit Condition Changes

Due to the updates to the design of AOS1, FMBI requests that the following changes be made to Class II Air Quality Permit #77414.

- **Attachment "A"**
  - None.
- **Attachment "B"**
  - Add reference to Condition II.D.1.c(1) in Condition I.B.3.c.
  - Add reference to the PC1 Rock Breaker (2110-RKB-0021) in Condition II.A.4.b.
  - Update the voluntary emission limitation in Condition II.C.2.f.
  - Update the name of the pollution control devices in Condition II.C.3.a.
  - Update the references to Condition II.C.3.a in Conditions II.C.3.c and II.C.3.d.
  - Revise Condition II.D.1 to correspond to the proposed updated design of AOS1.
  - Update the references to the Sycamore flotation equipment in Conditions III.A.1.
  - Add reference to the Sycamore Lime Silo (AOS1), Sycamore Lime Slaker (AOS1), and Prill Bin 6 (AOS1) in Condition III.A.5.d.
- **Attachment "C"**
  - Replace the equipment under AOS1: Two Concentrator Operations in Attachment "C" with the equipment corresponding to the proposed updated design of AOS1.
- **Attachment "D"**
  - Revise the entry for Dust Collector C51 (AOS1) under Section A.
  - Replace the entire Section F with the processes corresponding to the proposed updated design of AOS1.

Suggested draft permit language for the proposed changes to Class II Air Quality Permit #77414 is presented in Appendix H.

<u>Information Required as Part of a Significant Permit Revision Application</u>

According to A.A.C. R18-2-304.B, applicants applying for a significant permit revision must "complete the applicable standard application form provided by the Director and supply all information required by the form's filing instructions." It is assumed that "all information required by the form's filing instructions" refers to Section 3.2 (Standard Class II Permit Application Components) of ADEQ's Application Packet for a Class II Permit. An application for a significant permit revision must also include the information required by A.A.C. R18-2-304.F. As clarified by A.A.C. R18-2-304.F.1, an application for a permit revision only need supply information related to the proposed change. Identification of the information presented in this application, including the Standard Permit Application Form and the application components from ADEQ's Application Packet for a Class II Permit are listed in Table ES.2. The section or appendix where the information can be located in this document is also presented in Table ES.2.

Table ES.1 Summary of the Changes in Annual Facility-Wide Potential Emissions

Potential Emission Description	Emission Classification	Annual Facility-Wide Potential Emissions (tpy)										
		PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	H_2S	CO_2e	Greatest Single HAP	Total HAPs
Primary Operating Scenario												
Potential Emissions Following MPR #96299	Non-Fugitive	117.41	85.57	65.02	65.85	62.01	1.38	30.12	--	37,274	5.55	6.84
	Fugitive	6,169.77	1,913.29	248.56	914.49	40.50	0.28	16.42	9.43	8,593	--	4.08
	Total	6,287.19	1,998.86	313.59	980.34	102.51	1.65	46.54	9.43	45,867	5.55	10.92
	PTE	117.41	85.57	65.02	65.85	62.01	1.38	30.12	--	37,274	5.55	10.92
Change in Potential Emissions Due to the Proposed Updates	Non-Fugitive	--	--	--	--	--	--	--	--	--	--	--
	Fugitive	--	--	--	--	--	--	--	--	--	--	--
	Total	--	--	--	--	--	--	--	--	--	--	--
	PTE	--	--	--	--	--	--	--	--	--	--	--
Potential Emissions Following the Proposed Updates	Non-Fugitive	117.41	85.57	65.02	65.85	62.01	1.38	30.12	--	37,274	5.55	6.84
	Fugitive	6,169.77	1,913.29	248.56	914.49	40.50	0.28	16.42	9.43	8,593	--	4.08
	Total	6,287.19	1,998.86	313.59	980.34	102.51	1.65	46.54	9.43	45,867	5.55	10.92
	PTE	117.41	85.57	65.02	65.85	62.01	1.38	30.12	--	37,274	5.55	10.92

Table ES.1 Summary of the Changes in Annual Facility-Wide Potential Emissions

Potential Emission Description	Emission Classification	Annual Facility-Wide Potential Emissions (tpy)										
		PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	H_2S	CO_2e	Greatest Single HAP	Total HAPs
Alternate Operating Scenario 1												
Potential Emissions Following MPR #96299	Non-Fugitive	107.83	91.06	82.00	65.85	62.01	1.38	30.12	--	37,274	5.55	6.84
	Fugitive	6,152.44	1,905.09	247.32	914.49	40.50	0.28	16.42	9.43	8,593	--	4.08
	Total	6,260.27	1,996.15	329.32	980.34	102.51	1.65	46.54	9.43	45,867	5.55	10.92
	PTE	107.83	91.06	82.00	65.85	62.01	1.38	30.12	--	37,274	5.55	10.92
Change in Potential Emissions Due to the Proposed Updates	Non-Fugitive	-2.57	-4.77	-6.29	10.35	3.38	0.009	9.65	0.17	454	1.31	2.04
	Fugitive	14,655.64	4,141.05	432.70	745.14	33.00	0.23	1.18	2.18	7,002	--	1.64
	Total	14,653.08	4,136.28	426.41	755.49	36.38	0.23	10.83	2.35	7,457	1.31	3.68
	PTE	-2.57	-4.77	-6.29	10.35	3.38	0.009	9.65	0.17	454	1.31	3.68
Potential Emissions Following the Proposed Updates	Non-Fugitive	105.26	86.29	75.71	76.20	65.40	1.39	39.77	0.17	37,728	6.87	8.88
	Fugitive	20,808.08	6,046.14	680.02	1,659.63	73.50	0.50	17.60	11.61	15,595	--	5.72
	Total	20,913.35	6,132.43	755.73	1,735.83	138.90	1.89	57.37	11.78	53,323	6.87	14.60
	PTE	105.26	86.29	75.71	76.20	65.40	1.39	39.77	0.17	37,728	6.87	14.60

Table ES.2 Information Included in the Application

Required Application Component	Location in the Application
Standard Class II Permit Application Form Including a Certification from the Responsible Official	Appendix A
Description of the Proposed Updates	Section 2
Process Flow Diagrams	Appendices D and E
Description of Alternate Operating Scenarios	Section 3
Identification and Description of Pollution Controls	Section 4
Emissions Calculations Including the Calculation Methodology and an Electronic Copy	Section 5 and Appendices C, F, and G
Minor NSR Applicability Determination	Section 10
Applicable Requirements and Explanation of Any Proposed Exemptions from Otherwise Applicable Requirements	Section 7
Proposed Voluntary Limitations	Section 6
Equipment List	Appendix B
Emission Source Form	Appendix C
Listing of Insignificant and Trivial Activities	Section 8
Identification of Confidential Information	Section 11
Compliance Schedule (only if not currently in compliance)	Section 9
Suggested Draft Permit Language	Appendix H

ABBREVIATIONS

A.A.C.	Arizona Administrative Code
acfm	Actual Cubic Feet Per Minute
ADEQ	Arizona Department of Environmental Quality
AOS	Alternate Operating Scenario
AP-42	Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition
A.R.S.	Arizona Revised Statutes
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Greenhouse Gases Expressed as Carbon Dioxide Equivalent Calculated by Summing the Individual Greenhouse Gas Emissions Multiplied by Their Global Warming Potential
dscf	Dry Standard Cubic Foot
dscfm	Dry Standard Cubic Foot per Minute
EPA	Environmental Protection Agency
FMBI	Freeport-McMoRan Bagdad Inc.
ft^3	Cubic Feet
g	Gram
GHG	Greenhouse Gas
gr	Grain
GWP	Global Warming Potential
H_2S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
hp	Horsepower
hr	Hour
ICE	Internal Combustion Engine
kg	Kilogram
kW	Kilowatts

ABBREVIATIONS (cont'd)

L	Liter
lb	Pound
min	Minute
mph	miles per hour
MPR	Minor Permit Revision
N_2O	Nitrous Oxide
NaHS	Sodium Hydrosulfide
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_X	Nitrogen Oxides
NSPS	New Source Performance Standards
NSR	New Source Review
PM	Particulate Matter
PM_{10}	Particulate Matter Less Than or Equal to 10 Microns in Aerodynamic Diameter
$PM_{2.5}$	Particulate Matter Less Than or Equal to 2.5 Microns in Aerodynamic Diameter
ppm	Parts per Million
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
SCC	Source Classification Code
SO_2	Sulfur Dioxide
SPR	Significant Permit Revision
tph	Tons per Hour
tpy	Tons per Year
VOC	Volatile Organic Compounds
Yr	Year

1 INTRODUCTION

Freeport-McMoRan Bagdad Inc. (FMBI) operates a copper and molybdenum ore mining and processing facility in Bagdad, Arizona as authorized by Class II Air Quality Permit #77414, issued by the Arizona Department of Environmental Quality (ADEQ) on November 20, 2019. In accordance with Arizona Administrative Code (A.A.C.) R18-2-320, FMBI is submitting this significant permit revision (SPR) application to update the design of Alternate Operating Scenario 1 (Two Concentrator Operations).

The following sections and appendices present the information required to be submitted with an SPR application. ADEQ's Standard Class II Permit Application Form and the Emission Source Form are presented in Appendix A and Appendix C, respectively. ADEQ's Application Administrative Completeness Checklist is provided in Appendix I.

2 PROCESS DESCRIPTION

2.1 DESCRIPTION OF THE PROPOSED UPDATES

2.1.1 Current Operations

The FMBI facility is a large industrial complex located in Yavapai County in north central Arizona and is comprised of mining, ore processing, and multiple support operations. The six major existing operations at the FMBI facility include: (a) open-pit mining and hauling of ore and overburden; (b) size reduction of the ore using primary crushing and overland conveying followed by grinding/milling and secondary crushing; (c) concentration of the ore using bulk and molybdenum froth flotation; (d) processing and bagging/loading of the copper and molybdenum concentrate; (e) heap leaching of ore to generate a copper-rich pregnant leach solution followed by solution extraction and electrowinning to produce high purity copper cathodes; and (f) pressure leaching of copper and molybdenum concentrate to produce additional copper-rich pregnant leach solution and molybdenum trioxide, respectively.

The grinding/milling, secondary crushing, and flotation operations described in (b) and (c) above are commonly referred to as the Bagdad Concentrator and are currently fed by a single primary crusher (PC2) and overland conveying system. The Bagdad Concentrator produces the copper and molybdenum concentrates described in (d) above. For air quality permitting purposes, these existing operations are known as the Primary Operating Scenario.[1]

According to Condition I.D.1 of Attachment "B" of Class II Air Quality Permit #77414, FMBI is also authorized to operate Alternate Operating Scenario 1 (AOS1) called the Two Concentrator Operations. The design of AOS1 in Class II Air Quality Permit #77414 is presented in Figures D.1 through D.5 of Appendix D. This operating scenario includes modified primary crushing and overland conveying operations, additional milling operations, and additional bulk flotation operations. The AOS1 operations were authorized in a prior permit, but FMBI has not constructed nor operated under AOS1 due to unfavorable economic conditions.

The modified primary crushing and overland conveying operations in AOS1 involve relocating and reconstructing/refurbishing PC1 and making improvements to the overland conveying systems associated with both crushers. The overland conveying system from PC1 was designed with all new equipment that would feed new Coarse Ore Stockpile 6. Four new dust collectors were designed to control emissions from PC1 and the non-fugitive transfer points associated with the overland conveyors. No changes were planned for PC2 (controlled by Dust Collector C51), but its overland conveying system was modified to add an apron feeder, remove Free-Standing Stacker 6, and add three new dust collectors to control emissions from non-fugitive transfer points.

The design of AOS1 in Class II Air Quality Permit #77414 also includes additional milling and bulk flotation operations, referred to as the Sycamore Concentrator. The milling operations involve a secondary crusher, high pressure grinding roll, a ball mill, a regrind mill, and all associated screening and material handling operations. Seven new dust collectors were designed to control emissions from

[1] The Primary Operating Scenario also includes an additional primary crusher (PC1) and overland conveying system, but they are not currently operating.

the milling operations. The additional bulk flotation operations were designed to use rougher and scavenger cells to separate the combined copper/molybdenum concentrate from tailings. The combined copper/molybdenum concentrate from the Sycamore Concentrator was designed to join the combined copper/molybdenum concentrate from the Bagdad Concentrator at the molybdenum flotation operations and follow the existing process flow through bagging/loading.

2.1.2 Proposed Operations

With the current economic conditions, FMBI is now planning to move forward with the Two Concentrator Operations under AOS1. However, because of advancement and modernization of technology and engineering, the design of AOS1 in Class II Air Quality Permit #77414 needs to be updated.

The proposed updated design of AOS1 is presented in Figures E.1 through E.9 of Appendix E and includes the following major differences from the design of AOS1 in Class II Air Quality Permit #77414:

- **PC1 and Overland Conveying**
  - FMBI will purchase a new PC1 instead of reconstructing/refurbishing the old PC1.
  - The overland conveyor transfer apron feeder will be removed.
  - All ore processed by PC1 will be transferred to the Sycamore Concentrator.
  - Equipment names will be updated.
  - Dust collector exhaust flow rates will be updated.
- **PC2 and Overland Conveying**
  - The overland conveyor transfer apron feeder will be removed.
  - Free-Standing Stacker 6 will be retained.
  - All ore processed by PC2 will be transferred to the Bagdad Concentrator.
  - Fogging systems will be used instead of dust collectors to control emissions from non-fugitive transfer points during overland conveying.
- **Sycamore Milling Operations**
  - Autogenous mills (wet processes) will be used instead of secondary crushers.
  - An additional ball mill and regrind mill will be used.
  - Screening and material handling operations will have a different configuration.
  - Equipment names will be updated.
  - Dust collector exhaust flow rates will be updated.
- **Sycamore Flotation Operations**
  - Both bulk and molybdenum flotation operations will be included (i.e., the copper/molybdenum concentrate from the Sycamore Concentrator will no longer combine with the copper/molybdenum concentrate from the Bagdad Concentrator). This will require addition

of the Sycamore Concentrate Handling Operations and Sycamore Lime and Other Reagent Operations as described below.

- Cleaner flotation will be added.
- Thickeners for bulk concentrate, copper concentrate, and molybdenum concentrate will be added.
- Equipment names will be updated.

- **Sycamore Concentrate Handling Operations**
  - Filtering and loadout for the copper concentrate from the Sycamore Concentrator will be added.
  - Filtering, drying (controlled by a scrubber), and packaging of the molybdenum concentrate from the Sycamore Concentrator will be added.

- **Sycamore Lime and Other Reagent Operations**
  - Because of the additional Sycamore flotation operations, reagent systems for lime, flocculant, xanthate, test reagent, and sodium hydrosulfide (NaHS) will be added.

- **Sycamore Prill Handling Operations**
  - Because of the updated blasting rates described below, an additional prill bin will be added.

- **Sycamore Emergency Internal Combustion Engines**
  - Two diesel emergency generators (engines rated at 609 horsepower [hp] and 762 hp) and two propane emergency generators (engines rated at 84.7 hp each) will be added to provide backup power to the grinding/flotation line, byproduct separation and handling area, concentrator wastewater treatment plant, and the primary crusher area wastewater treatment plant.

- **Maximum Mining Rates**
  - To achieve the production targets associated with the updated design of AOS1, updates are needed to maximum mining rates and associated operations, such as blasting rates and mobile equipment usage (including haul trucks).
  - The updates will affect emissions from drilling, blasting, haul truck and other vehicle travel, dozer and grader operations, and loading/unloading of mined material.

FMBI proposes to update the design of AOS1 according to the description above. The upgrades will provide FMBI operational flexibility and allow PC1 and the accompanying Sycamore Concentrator to operate independently of the Bagdad Concentrator.

2.2 EQUIPMENT SUBJECT TO PERMITTING

The equipment associated with the updated design of AOS1 that is subject to air quality permitting and proposed to be added to Class II Air Quality Permit #77414 is presented in Table 2.1. Table 2.1 also includes reference to the equipment's associated Source Classification Code (SCC) and applicable state (A.A.C.) and federal air quality requirements, including New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP). Further detailed information about the equipment (i.e., make, model, serial number, and date of manufacture) and applicable requirements are presented in Appendix B and Section 7, respectively.

Table 2.1 Equipment Subject to Air Quality Permitting

Equipment ID Number	Equipment Description	SCC	Applicable Requirements Reference		
			State	NSPS	NESHAP
AOS1: Two Concentrator Operations					
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)					
RB	Rock Breaker (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
PC2	Primary Crusher 2 (AOS1)	3-03-024-01	A.A.C. R18-2-901.46	40 Code of Federal Regulations (CFR) 60 Subpart LL	--
C51	Dust Collector C51 (AOS1)	--	A.A.C. R18-2-306.01 [a,b]	-- [c]	--
PC2SB	PC2 Surge Bin (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
PC2AF	PC2 Apron Feeder (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
PC2DC	PC2 Dribble Conveyor (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
OC3A	Overland Conveyor 3A (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
OC3	Overland Conveyor 3 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	--	--
OC4	Overland Conveyor 4 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	--	--
RST5	Radial Stacker 5 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	--	--
FSS6	Free-Standing Stacker 6 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--

Table 2.1 Equipment Subject to Air Quality Permitting

Equipment ID Number	Equipment Description	SCC	Applicable Requirements Reference		
			State	NSPS	NESHAP
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)					
2110-RKB-0021	PC1 Rock Breaker (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2110-CRG-0021	Primary Crusher 1 (AOS1)	3-03-024-01	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2140-DCD-0021	PC1 Dust Collector 1 (AOS1)	--	A.A.C. R18-2-306.01 [a,b]	-- [c]	--
2110-BIN-0021	PC1 Surge Pocket (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2110-FDA-0021	PC1 Discharge Apron Feeder (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2140-CVB-0021	PC1 Discharge Conveyor (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2140-CVB-0022	PC1 Cross Country Conveyor 1 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2140-DCD-0022	PC1 CCC1 Dust Collector 2 (AOS1)	--	A.A.C. R18-2-306.01 [a,b]	--	--
2140-CVB-0023	PC1 Cross Country Conveyor 2 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2140-DCD-0023	PC1 CCC2 Dust Collector 3 (AOS1)	--	A.A.C. R18-2-306.01 [a,b]	--	--
2140-CVB-0024	PC1 Cross Country Conveyor 3 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2140-DCD-0024	PC1 CCC3 Dust Collector 4 (AOS1)	--	A.A.C. R18-2-306.01 [a,b]	--	--

Table 2.1 Equipment Subject to Air Quality Permitting

Equipment ID Number	Equipment Description	SCC	Applicable Requirements Reference		
			State	NSPS	NESHAP
Sycamore Milling Operations (AOS1)					
2210-FDA-0101	Coarse Ore Reclaim Feeder 1 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2210-FDA-0102	Coarse Ore Reclaim Feeder 2 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2210-FDA-0103	Coarse Ore Reclaim Feeder 3 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2210-CVB-0101	Coarse Ore Reclaim Conveyor 1 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2210-DCD-0101	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	--	A.A.C. R18-2-306.01 [a]	-- [c]	--
2210-FDA-0201	Coarse Ore Reclaim Feeder 4 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2210-FDA-0202	Coarse Ore Reclaim Feeder 5 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2210-FDA-0203	Coarse Ore Reclaim Feeder 6 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2210-CVB-0201	Coarse Ore Reclaim Conveyor 2 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2210-DCD-0201	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	--	A.A.C. R18-2-306.01 [a]	-- [c]	--
2310-MLA-0101	AG Mill 1 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2310-SCN-0101	AG Mill 1 Discharge Screen 1 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--

Table 2.1 Equipment Subject to Air Quality Permitting

Equipment ID Number	Equipment Description	SCC	Applicable Requirements Reference		
			State	NSPS	NESHAP
2310-SCN-0102	AG Mill 1 Discharge Screen 2 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2310-SCN-0103	AG Mill Rotatable Discharge Screen 1 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2340-MLB-0111	Ball Mill 1 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2310-MLA-0201	AG Mill 2 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2310-SCN-0201	AG Mill 2 Discharge Screen 1 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2310-SCN-0202	AG Mill 2 Discharge Screen 2 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2310-SCN-0203	AG Mill Rotatable Discharge Screen 2 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2340-MLB-0211	Ball Mill 2 (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2330-CVB-0121	Pebble Conveyor (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-CVB-0122	HPGR Feed Bin Feed Conveyor (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-DVT-0123	HPGR Feed Diverter (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2330-BIN-0130	HPGR Feed Bin (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-FDB-0132	HPGR Belt Feeder (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--

Table 2.1 Equipment Subject to Air Quality Permitting

Equipment ID Number	Equipment Description	SCC	Applicable Requirements Reference		
			State	NSPS	NESHAP
2330-CVB-0134	HPGR Feed Conveyor (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-CRH-0140	High Pressure Grinding Roll (AOS1)	3-03-024-02	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-DCD-0141	HPGR Discharge Dust Collector 7 (AOS1)	--	A.A.C. R18-2-306.01 [a]	-- [c]	--
2330-CVB-0141	HPGR Discharge Conveyor 1 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-CVB-0142	HPGR Discharge Conveyor 2 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-DCD-0142	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	--	A.A.C. R18-2-306.01 [a]	-- [c]	--
2330-BIN-0150	HPGR Product Bin (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-DCD-0150	HPGR Product Bin Dust Collector 9 (AOS1)	--	A.A.C. R18-2-306.01 [a]	-- [c]	--
2330-FDB-0152	HPGR Product Recycle Feeder (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-FDB-0163	HPGR Product Feeder 1 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-FDB-0263	HPGR Product Feeder 2 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-CVB-0163	HPGR Product Return Conveyor 1 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-DCD-0163	HPGR Product Transfer Dust Collector 10 (AOS1)	--	A.A.C. R18-2-306.01 [a]	-- [c]	--

Table 2.1 Equipment Subject to Air Quality Permitting

Equipment ID Number	Equipment Description	SCC	Applicable Requirements Reference		
			State	NSPS	NESHAP
2330-CVB-0263	HPGR Product Return Conveyor 2 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2330-DCD-0263	HPGR Product Transfer Dust Collector 11 (AOS1)	--	A.A.C. R18-2-306.01 [a]	-- [c]	--
Sycamore Bulk and Molybdenum Flotation Operations (AOS1)					
S-FLO-B	Sycamore Bulk Flotation Equipment (AOS1)	3-05-038-32	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721 A.A.C. R18-2-730	-- [d]	--
2420-MLV-0303	Sycamore Regrind Mill 1 (AOS1)	3-03-024-03	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2420-MLV-0304	Sycamore Regrind Mill 2 (AOS1)	3-03-024-03	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
S-FLO-M	Sycamore Molybdenum Flotation Equipment (AOS1)	3-05-038-32	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721 A.A.C. R18-2-730	-- [d]	--
Sycamore Concentrate Handling Operations (AOS1)					
2630-SCN-0410	Copper Filter Feed Tank Trash Screen (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2520-SCN-0517	Molybdenum Thickener Trash Screen (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2520-HPR-0576	Molybdenum Concentrate Filter Discharge Hopper 1 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2520-HPR-0577	Molybdenum Concentrate Filter Discharge Hopper 2 (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--

Table 2.1 Equipment Subject to Air Quality Permitting

Equipment ID Number	Equipment Description	SCC	Applicable Requirements Reference		
			State	NSPS	NESHAP
2520-CVS-0576	Molybdenum Concentrate Dryer Screw Feeder (AOS1)	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2520-DRY-0576	Molybdenum Concentrate Dryer (AOS1)	3-03-024-11	A.A.C. R18-2-702.B.3 A.A.C. R18-2-721	-- [d]	--
2520-SCU-0576	Molybdenum Dryer Wet Scrubber System (AOS1)	--	-- [b]	--	--
2520-BIN-0576	Dried Molybdenum Concentrate Storage Bin (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
2520-SYS-0576	Molybdenum Concentrate Bagging System (AOS1)	3-03-024-04	A.A.C. R18-2-901.46	40 CFR 60 Subpart LL	--
Sycamore Lime and Other Regent Operations (AOS1)					
2360-SLO-0140	Sycamore Lime Silo (AOS1)	3-05-016-26	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	-- [e]	-- [e]
2360-BGH-0141	Sycamore Lime Silo Baghouse (AOS1)	3-05-016-26	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	-- [e]	-- [e]
2360-FDR-0140	Sycamore Lime Screw Feeder (AOS1)	3-05-016-26	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	-- [e]	-- [e]
2360-MLV-0140	Sycamore Lime Slaker (AOS1)	3-02-016-88	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	-- [e]	-- [e]
2360-SCU-0140	Sycamore Lime System Scrubber (AOS1)	3-02-016-88	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	-- [e]	-- [e]
2720-BIN-0720	Tailings Flocculant Bag Breaker Bin (AOS1)	3-01-810-03	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--
2720-FDR-0720	Tailings Flocculant Screw Feeder (AOS1)	3-01-810-03	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--

Table 2.1 Equipment Subject to Air Quality Permitting

Equipment ID Number	Equipment Description	SCC	Applicable Requirements Reference		
			State	NSPS	NESHAP
2510-BIN-0580	Concentrate Flocculant Bag Breaker Bin (AOS1)	3-01-810-03	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--
2510-FDR-0580	Concentrate Flocculant Screw Feeder (AOS1)	3-01-810-03	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--
2440-TNK-0150	Xanthate Mix Tank (AOS1)	4-07-146-97 4-07-146-98	A.A.C. R18-2-730	--	--
2440-TNK-0152	Xanthate Holding Tank (AOS1)	4-07-146-97 4-07-146-98	A.A.C. R18-2-730	--	--
2440-TNK-0160	Test Reagent Mix Tank (AOS1)	4-07-146-97 4-07-146-98	A.A.C. R18-2-730	--	--
2440-TNK-0162	Test Reagent Holding Tank (AOS1)	4-07-146-97 4-07-146-98	A.A.C. R18-2-730	--	--
2520-TNK-0591	NaHS Storage Tank (AOS1)	3-01-875-97 3-01-875-98	A.A.C. R18-2-730	--	--
2520-TNK-0592	NaHS Distribution Tank (AOS1)	3-01-875-97 3-01-875-98	A.A.C. R18-2-730	--	--
2520-SCU-0591	Sycamore NaHS System Scrubber (AOS1)	3-01-875-97 3-01-875-98	A.A.C. R18-2-730	--	--
Sycamore Prill Handling Operations (AOS1)					
PB6	Prill Bin 6 (AOS1)	3-01-027-09	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--
PBV06	Prill Bin Vent 6 (no filter) (AOS1)	3-01-027-09	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--

Table 2.1 Equipment Subject to Air Quality Permitting

Equipment ID Number	Equipment Description	SCC	Applicable Requirements Reference		
			State	NSPS	NESHAP
Sycamore Emergency Internal Combustion Engine (ICE) (AOS1)					
2440-GEN-0101	Sycamore Diesel Emergency Generator 1 (AOS1)	2-02-001-02	A.A.C. R18-2-901.84 A.A.C. R18-2-1101.B.81	40 CFR 60 Subpart IIII (emergency engine)	40 CFR 63 Subpart ZZZZ (new emergency engine at an area source)
2500-GEN-0501	Sycamore Diesel Emergency Generator 2 (AOS1)	2-02-001-02	A.A.C. R18-2-901.84 A.A.C. R18-2-1101.B.81	40 CFR 60 Subpart IIII (emergency engine)	40 CFR 63 Subpart ZZZZ (new emergency engine at an area source)
3650-GEN-0801	Sycamore Propane Emergency Generator 1 (AOS1)	2-02-010-01	A.A.C. R18-2-901.85 A.A.C. R18-2-1101.B.81	40 CFR 60 Subpart JJJJ (emergency engine)	40 CFR 63 Subpart ZZZZ (new emergency engine at an area source)
3650-GEN-0802	Sycamore Propane Emergency Generator 2 (AOS1)	2-02-010-01	A.A.C. R18-2-901.85 A.A.C. R18-2-1101.B.81	40 CFR 60 Subpart JJJJ (emergency engine)	40 CFR 63 Subpart ZZZZ (new emergency engine at an area source)

[a] For ease of reference, A.A.C. R18-2-306.01 for a voluntary emission limitation is listed as applicable to the pollution control device. However, the voluntary emission limitation is actually applicable to the processes controlled by the pollution control device and the pollution control device is used to demonstrate compliance with the voluntary emission limitation.

[b] The pollution control device is not an affected facility subject to A.A.C. R18-2-702.B.3 and A.A.C. R18-2-721 (Standards of Performance for Existing Nonferrous Metals Industry Sources). Instead, it controls affected facilities subject to A.A.C. R18-2-702.B.3 and A.A.C. R18-2-721 and is used to ensure compliance with the requirements of A.A.C. R18-2-702.B.3 and A.A.C. R18-2-721.

[c] The pollution control device is not an affected facility subject to A.A.C. R18-2-901.45 and 40 CFR 60 Subpart LL (Standards of Performance for Metallic Mineral Processing Plants). Instead, it controls affected facilities subject to A.A.C. R18-2-901.45 and 40 CFR 60 Subpart LL and is used to ensure compliance with the requirements of A.A.C. R18-2-901.45 and 40 CFR 60 Subpart LL.

[d] The equipment is not subject to A.A.C. R18-2-901.45 and 40 CFR 60 Subpart LL (Standards of Performance for Metallic Mineral Processing Plants) because the equipment is not a crusher or screen located in the open-pit mine or a crusher, screen, bucket elevator, conveyor belt transfer point, thermal dryer, product packaging station, storage bin, enclosed storage area, truck loading station, truck unloading station, railcar loading station, and railcar unloading station located at the mill or concentrator.

[e] The equipment is not subject to 40 CFR 60 Subpart HH (Standards of Performance for Lime Manufacturing Plants) or 40 CFR 63 Subpart AAAAA (National Emission Standards for Hazardous Air Pollutants for Lime Manufacturing Plants) because it is not a kiln and FMBI is not a major source of HAP emissions and does not manufacture lime products through calcination.

3 DESCRIPTION OF ALTERNATE OPERATING SCENARIOS

As described in Section 2.1.1, FMBI previously established the Two Concentrator Operations as an alternate operating scenario (i.e., AOS1). The design of AOS1 in Class II Air Quality Permit #77414 includes modified primary crushing and overland conveying operations, additional milling operations, and additional bulk flotation operations. FMBI proposes to update the design of AOS1 by modernizing the previously permitted primary crushing, overland conveying, milling, and bulk flotation operations as well as incorporating additional concentrate handling operations, lime and other reagent operations, prill handling operations, and emergency engines. These changes are described in detail in Section 2.1.2.

4 IDENTIFICATION AND DESCRIPTION OF POLLUTION CONTROLS

4.1 IDENTIFICATION, DESCRIPTION, AND LOCATION

Identification and description of the pollution control equipment associated with the updated design of AOS1 is presented in Table 4.1. The general location of the pollution control equipment within the process flow is shown in the process flow diagrams presented in Appendix E.

The Sycamore Lime Silo Baghouse, Sycamore Lime System Scrubber, and Sycamore NaHS System Scrubber are not considered pollution control devices because they are inherent to the process equipment and/or have a primary function that is not pollution control. However, they are included in Table 4.1 for reference purposes and because they have a secondary benefit of controlling emissions. Additionally, pollution prevention techniques such as unpaved road watering, water sprays, fogging systems, and building enclosures are also not considered pollution control devices. However, they are included in Table 4.1 for reference purposes and consistency.

There are no required compliance monitoring devices associated with the pollution control equipment identified in Table 4.1.

4.2 RATED AND OPERATING EFFICIENCIES

The rated and operating efficiency of the identified air pollution control equipment/method is presented in Table 4.1. Operation of the air pollution control equipment is necessary to comply with applicable emission limitations and standards.

4.3 REFERENCE TO APPLICABLE TEST METHODS

The requirements applicable to each process and/or piece of equipment associated with the updated design of AOS1 are identified in Table 2.1 and described in Section 7. The applicable test methods that can be used to determine compliance with the applicable emission standards include:

- Opacity Standard: U.S. Environmental Protection Agency (EPA) Reference Method 9, EPA Reference Method 22, or Visible Emission Surveys;
- PM Emission Standard: EPA Reference Method 5 and (if necessary) EPA Reference Method 202;
- PM_{10} Emission Standard: EPA Reference Method 201 or 201A and (if necessary) EPA Reference Method 202 (alternately EPA Reference Method 5 can be used with the assumption that all particulate collected is PM_{10});
- CO Emission Standard: EPA Reference Method 10;
- NO_X Emission Standard: EPA Reference Method 7E;
- SO_2 Emission Standard EPA Reference Method 6 or 6C; and
- VOC Emission Standard: EPA Reference Method 25A.

Table 4.1 Summary of Air Pollution Control Methods and Equipment for the Updated Design of AOS1

Process Number	Identification of Control Method or Equipment	Emission Unit(s) Controlled	Pollutants Controlled	Voluntary Emission Limitations	Exhaust Flow Rate	Rated/ Operating Efficiency
Affected Emissions Units - Proposed Updated Design of AOS1						
Mining Operations (AOS1)						
022-1 (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	Haul Truck Travel Inside the Pit (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	90%
022-2 (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	Haul Truck Travel Outside the Pit (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	90%
023-3 (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	Other Vehicle Travel (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	90%
023-2 (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	Road Grader Operation (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	90%
001-6 (AOS1)	Water Spray/Wet Suppression When Necessary	Unloading Ore to Primary Crusher 1 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	N/A (only used when necessary)
001-7 (AOS1)	Water Spray/Wet Suppression When Necessary	Unloading Ore to Primary Crusher 2 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	N/A (only used when necessary)

Table 4.1 Summary of Air Pollution Control Methods and Equipment for the Updated Design of AOS1

Process Number	Identification of Control Method or Equipment	Emission Unit(s) Controlled	Pollutants Controlled	Voluntary Emission Limitations	Exhaust Flow Rate	Rated/ Operating Efficiency
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)						
001-5 (AOS1)	Dust Collector C51 (AOS1)	Primary Crusher 2 (AOS1) Primary Crusher 2 (AOS1) to PC2 Surge Bin (AOS1) PC2 Surge Bin (AOS1) to PC2 Apron Feeder (AOS1) PC2 Apron Feeder (AOS1) to Overland Conveyor 3A (AOS1) PC2 Apron Feeder (AOS1) to PC2 Dribble Conveyor (AOS1) PC2 Dribble Conveyor (AOS1) to Overland Conveyor 3A (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0135 grains per dry standard cubic foot (gr/dscf) PM_{10} ≤ 0.0135 gr/dscf	15,000 dry standard cubic foot per minute (dscfm)	99.99%
001-2 (AOS1)	Dry Fogging System	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	90%
001-8 (AOS1)	Dry Fogging System	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	90%
001-9 (AOS1)	Dry Fogging System	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	90%
001-4 (AOS1)	Water Spray/Wet Suppression When Necessary	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	N/A (only used when necessary)
001-10 (AOS1)	Water Spray/Wet Suppression When Necessary	Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	N/A (only used when necessary)

Table 4.1 Summary of Air Pollution Control Methods and Equipment for the Updated Design of AOS1

Process Number	Identification of Control Method or Equipment	Emission Unit(s) Controlled	Pollutants Controlled	Voluntary Emission Limitations	Exhaust Flow Rate	Rated/ Operating Efficiency
001-3 (AOS1)	Water Spray/Wet Suppression When Necessary	Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	N/A (only used when necessary)
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)						
001-12 (AOS1)	PC1 Dust Collector 1 (AOS1)	Primary Crusher 1 (AOS1) Primary Crusher 1 (AOS1) to PC1 Surge Pocket (AOS1) PC1 Surge Pocket (AOS1) to PC1 Discharge Apron Feeder (AOS1) PC1 Discharge Apron Feeder (AOS1) to PC1 Discharge Conveyor (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	14,500 dscfm	99.99%
001-13 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	PC1 Discharge Conveyor (AOS1) to PC1 Cross Country Conveyor 1 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	16,700 dscfm	99.99%
001-14 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	PC1 Cross Country Conveyor 1 (AOS1) to PC1 Cross Country Conveyor 2 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	16,700 dscfm	99.99%
001-15 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	PC1 Cross Country Conveyor 2 (AOS1) to PC1 Cross Country Conveyor 3 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	16,700 dscfm	99.99%
001-20 (AOS1)	Water Spray/Wet Suppression When Necessary	PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	N/A (only used when necessary)

Table 4.1 Summary of Air Pollution Control Methods and Equipment for the Updated Design of AOS1

Process Number	Identification of Control Method or Equipment	Emission Unit(s) Controlled	Pollutants Controlled	Voluntary Emission Limitations	Exhaust Flow Rate	Rated/ Operating Efficiency
Sycamore Milling Operations (AOS1)						
002-7 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	Coarse Ore Reclaim Feeder 1 (AOS1) to Coarse Ore Reclaim Conveyor 1 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	22,000 dscfm	99.99%
		Coarse Ore Reclaim Feeder 2 (AOS1) to Coarse Ore Reclaim Conveyor 1 (AOS1)				
		Coarse Ore Reclaim Feeder 3 (AOS1) to Coarse Ore Reclaim Conveyor 1 (AOS1)				
		HPGR Product Return Conveyor 1 (AOS1) to Coarse Ore Reclaim Conveyor 1 (AOS1)				
002-8 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	Coarse Ore Reclaim Feeder 4 (AOS1) to Coarse Ore Reclaim Conveyor 2 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	22,000 dscfm	99.99%
		Coarse Ore Reclaim Feeder 5 (AOS1) to Coarse Ore Reclaim Conveyor 2 (AOS1)				
		Coarse Ore Reclaim Feeder 6 (AOS1) to Coarse Ore Reclaim Conveyor 2 (AOS1)				
		HPGR Product Return Conveyor 2 (AOS1) to Coarse Ore Reclaim Conveyor 2 (AOS1)				
002-9 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	HPGR Feed Conveyor (AOS1) to High Pressure Grinding Roll (AOS1) and Operation of the High Pressure Grinding Roll (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	23,000 dscfm	99.99%
		High Pressure Grinding Roll (AOS1) to HPGR Discharge Conveyor 1 (AOS1)				
		HPGR Product Recycle Feeder (AOS1) to HPGR Feed Conveyor (AOS1)				
002-10 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	HPGR Discharge Conveyor 1 (AOS1) to HPGR Discharge Conveyor 2 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	27,000 dscfm	99.99%

Table 4.1 Summary of Air Pollution Control Methods and Equipment for the Updated Design of AOS1

Process Number	Identification of Control Method or Equipment	Emission Unit(s) Controlled	Pollutants Controlled	Voluntary Emission Limitations	Exhaust Flow Rate	Rated/ Operating Efficiency
002-11 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	HPGR Discharge Conveyor 2 (AOS1) to HPGR Product Bin (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	25,000 dscfm	99.99%
002-12 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	HPGR Product Feeder 1 (AOS1) to HPGR Product Return Conveyor 1 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	10,000 dscfm	99.99%
002-13 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	HPGR Product Feeder 2 (AOS1) to HPGR Product Return Conveyor 2 (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	10,000 dscfm	99.99%
Sycamore Concentrate Handling Operations (AOS1)						
027-8 (AOS1)	3-Sided Enclosure	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	75%
052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	Molybdenum Concentrate Dryer (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	337 dscfm	N/A
Sycamore Lime and Other Regent Operations (AOS1)						
007-6 (AOS1)	Sycamore Lime Silo Baghouse (AOS1)	Transfer of Lime to the Sycamore Lime Silo (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	99%
007-7 (AOS1)	Sycamore Lime System Scrubber (AOS1)	Sycamore Lime Slaker (AOS1)	PM, PM_{10}, $PM_{2.5}$, HAPs	None	--	N/A
055-3 (AOS1)	Sycamore NaHS System Scrubber (AOS1)	NaHS Storage Tank (AOS1) NaHS Distribution Tank (AOS1)	H_2S	None	--	N/A

5 EMISSIONS CALCULATIONS

5.1 EMISSIONS FROM EACH PROCESS

As described in Section 2.1, FMBI proposes to update the design of AOS1. Potential emissions from each emission unit associated with the design of existing AOS1 in Class II Air Quality Permit #77414 is presented in Table 5.1 in pounds per hour (lb/hr) and tons per year (tpy). Potential emissions from each emission unit associated with the proposed updated design of AOS1 is presented in Table 5.2.

The regulated air pollutants emitted by the emission units associated with AOS1 include the following: particulate matter (PM), particulate matter less than or equal to 10 microns in aerodynamic diameter (PM_{10}), and particulate matter less than or equal to 2.5 microns in aerodynamic diameter ($PM_{2.5}$); carbon monoxide (CO); nitrogen oxides (NO_X); sulfur dioxide (SO_2); volatile organic compounds (VOCs); hydrogen sulfide (H_2S); hazardous air pollutants (HAPs); and greenhouse gases (GHGs or CO_2e)[1], including carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). CO_2e emissions are calculated by summing the individual greenhouse gas emissions multiplied by their global warming potential (GWP). The GWP of CO_2 is 1, the GWP of CH_4 is 25, and the GWP of N_2O is 298.

5.2 FACILITY-WIDE EMISSIONS

The FMBI facility is currently a synthetic minor source of regulated air pollutants for permitting purposes under A.A.C. Title 18, Chapter 2, Articles 3 and 4. The primary activity of the FMBI facility is mining and ore processing operations, which is not a “categorical source”, or a “Section 302(j) category” source as defined in A.A.C. R18-2-101.23 and A.A.C. R18-2-101.129, respectively. Therefore, only non-fugitive emissions are included in the determination of the facility-wide potential to emit (PTE) of regulated air pollutants (except HAPs) for purposes of determining “major source” status under A.A.C. R18-2, Articles 3 and 4. All HAP emissions are included in the determination of the facility-wide PTE regardless of their fugitive or non-fugitive classification.

The proposed updated design of AOS1 will not affect the source status of the FMBI facility. FMBI’s facility-wide potential emissions (including PTE) prior to and following the proposed updates are presented in Tables 5.3 and 5.4. Tables 5.3 and 5.4 present hourly and annual potential emissions, respectively, and are broken down into the Primary Operating Scenario (current operations) and Alternate Operating Scenario 1 (AOS1 – two concentrator operations) according to: (a) facility-wide potential emissions as presented in the last submittal to ADEQ (i.e., Minor Permit Revision (MPR) #96299); (b) change in potential emissions due to the proposed updates; and (c) the resulting facility-wide potential emission totals following the proposed updates.

[1] While GHGs are not included under the definition of “regulated air pollutant” at A.A.C. R18-2-101.122, they are considered a “regulated NSR pollutant” under the Prevention of Significant Deterioration (PSD) program at 40 CFR 52.21(b)(50) and therefore included here for informational purposes.

5.3 EMISSION FACTOR DOCUMENTATION

The methodology used to calculate potential emissions from the emission units addressed in Section 5.1 is presented in Appendix F.

5.4 ELECTRONIC COPY OF EMISSION CALCULATIONS

An electronic copy of the emission calculations will be provided via email with the SPR application. The Excel spreadsheets used to calculate emissions are reproduced in Appendix G.

Table 5.1 Potential Emissions from the Design of AOS1 in Class II Air Quality Permit #77414

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
Mining Operations (AOS1)					
026-3 (AOS1)	Drilling (AOS1)	Fugitive	PM	260.00	58.50
			PM_{10}	156.00	35.10
			$PM_{2.5}$	28.89	6.50
			Lead	3.30E-03	7.44E-04
			Total HAPs [a]	5.33E-02	1.20E-02
026-2 (AOS1)	Blasting (AOS1)	Fugitive	PM	1,252.20	119.12
			PM_{10}	651.14	61.94
			$PM_{2.5}$	37.57	3.57
			CO	4,064.40	914.49
			NO_X	180.00	40.50
			SO_2	1.23	0.28
			CO_2	38,066.47	8,564.96
			CH_4	1.49	0.33
			N_2O	0.29	0.07
			CO_2e	38,191.09	8,593.00
			Lead	1.59E-02	1.79E-03
			Total HAPs [a]	3.44E-01	4.86E-02
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	Fugitive	PM	1,014.96	2,492.53
			PM_{10}	278.95	685.04
			$PM_{2.5}$	27.90	68.50
			Lead	5.91E-03	1.45E-02
			Total HAPs [a]	9.53E-02	2.34E-01

Table 5.1 Potential Emissions from the Design of AOS1 in Class II Air Quality Permit #77414

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	Fugitive	PM	338.32	830.84
			PM_{10}	92.98	228.35
			$PM_{2.5}$	9.30	22.83
			Lead	1.97E-03	4.84E-03
			Total HAPs [a]	3.18E-02	7.80E-02
023-3 (AOS1)	Other Vehicle Travel (AOS1)	Fugitive	PM	1,044.33	1,338.92
			PM_{10}	287.02	367.99
			$PM_{2.5}$	28.70	36.80
			Lead	6.08E-03	7.80E-03
			Total HAPs [a]	9.80E-02	1.26E-01
023-1 (AOS1)	Dozer Operation (AOS1)	Fugitive	PM	141.54	345.20
			PM_{10}	25.69	62.66
			$PM_{2.5}$	14.86	36.25
			Lead	5.44E-04	1.33E-03
			Total HAPs [a]	8.78E-03	2.14E-02
023-2 (AOS1)	Road Grader Operation (AOS1)	Fugitive	PM	10.58	20.91
			PM_{10}	3.30	6.53
			$PM_{2.5}$	0.33	0.65
			Lead	7.00E-05	1.38E-04
			Total HAPs [a]	1.13E-03	2.23E-03
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Fugitive	PM	80.51	290.62
			PM_{10}	38.08	137.46
			$PM_{2.5}$	5.77	20.81
			Lead	8.07E-04	2.91E-03
			Total HAPs [a]	1.30E-02	4.70E-02

Table 5.1 Potential Emissions from the Design of AOS1 in Class II Air Quality Permit #77414

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Fugitive	PM	16.97	43.33
			PM_{10}	8.03	20.50
			$PM_{2.5}$	1.22	3.10
			Lead	9.04E-05	2.53E-04
			Total HAPs [a]	2.22E-03	6.21E-03
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Fugitive	PM	16.97	43.33
			PM_{10}	8.03	20.50
			$PM_{2.5}$	1.22	3.10
			Lead	1.08E-04	2.53E-04
			Total HAPs [a]	2.65E-03	6.21E-03
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Fugitive	PM	9.06	39.67
			PM_{10}	4.28	18.76
			$PM_{2.5}$	0.65	2.84
			Lead	5.48E-05	2.40E-04
			Total HAPs [a]	9.41E-04	4.12E-03
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Fugitive	PM	37.51	164.28
			PM_{10}	17.74	77.70
			$PM_{2.5}$	2.69	11.77
			Lead	4.94E-04	2.17E-03
			Total HAPs [a]	6.94E-03	3.04E-02
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)					
001-5 (AOS1)	Dust Collector C51 (AOS1)	Non-Fugitive	PM	1.74	7.60
			PM_{10}	1.74	7.60
			$PM_{2.5}$	1.74	7.60
			Lead	2.14E-05	9.39E-05
			Total HAPs [a]	5.26E-04	2.30E-03

Table 5.1 Potential Emissions from the Design of AOS1 in Class II Air Quality Permit #77414

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
001-16 (AOS1)	Dust Collector AE-001 (AOS1)	Non-Fugitive	PM	0.45	1.95
			PM_{10}	0.45	1.95
			$PM_{2.5}$	0.45	1.95
			Lead	5.50E-06	2.41E-05
			Total HAPs [a]	1.35E-04	5.92E-04
001-17 (AOS1)	Dust Collector AE-014 (AOS1)	Non-Fugitive	PM	0.27	1.17
			PM_{10}	0.27	1.17
			$PM_{2.5}$	0.27	1.17
			Lead	3.30E-06	1.45E-05
			Total HAPs [a]	8.11E-05	3.55E-04
001-18 (AOS1)	Dust Collector AE-015 (AOS1)	Non-Fugitive	PM	0.27	1.17
			PM_{10}	0.27	1.17
			$PM_{2.5}$	0.27	1.17
			Lead	3.30E-06	1.45E-05
			Total HAPs [a]	8.11E-05	3.55E-04
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Fugitive	PM	20.05	43.33
			PM_{10}	9.48	20.50
			$PM_{2.5}$	1.44	3.10
			Lead	1.17E-04	2.53E-04
			Total HAPs [a]	2.87E-03	6.21E-03
001-19 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Fugitive	PM	10.46	21.38
			PM_{10}	4.95	10.11
			$PM_{2.5}$	0.75	1.53
			Lead	6.11E-05	1.25E-04
			Total HAPs [a]	1.50E-03	3.06E-03

Table 5.1 Potential Emissions from the Design of AOS1 in Class II Air Quality Permit #77414

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	Fugitive	PM	2.18	9.56
			PM_{10}	1.09	4.78
			$PM_{2.5}$	0.16	0.72
			Lead	1.35E-05	5.90E-05
			Total HAPs [a]	3.31E-04	1.45E-03
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)					
001-12 (AOS1)	Dust Collector AE-002 (AOS1)	Non-Fugitive	PM	0.27	1.17
			PM_{10}	0.27	1.17
			$PM_{2.5}$	0.27	1.17
			Lead	3.30E-06	1.45E-05
			Total HAPs [a]	8.11E-05	3.55E-04
001-13 (AOS1)	Dust Collector AE-003 (AOS1)	Non-Fugitive	PM	0.33	1.46
			PM_{10}	0.33	1.46
			$PM_{2.5}$	0.33	1.46
			Lead	4.13E-06	1.81E-05
			Total HAPs [a]	1.01E-04	4.44E-04
001-14 (AOS1)	Dust Collector AE-016 (AOS1)	Non-Fugitive	PM	0.27	1.17
			PM_{10}	0.27	1.17
			$PM_{2.5}$	0.27	1.17
			Lead	3.30E-06	1.45E-05
			Total HAPs [a]	8.11E-05	3.55E-04
001-15 (AOS1)	Dust Collector AE-017 (AOS1)	Non-Fugitive	PM	0.27	1.17
			PM_{10}	0.27	1.17
			$PM_{2.5}$	0.27	1.17
			Lead	3.30E-06	1.45E-05
			Total HAPs [a]	8.11E-05	3.55E-04

Table 5.1 Potential Emissions from the Design of AOS1 in Class II Air Quality Permit #77414

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
001-20 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6	Fugitive	PM	5.01	21.96
			PM_{10}	2.37	10.38
			$PM_{2.5}$	0.36	1.57
			Lead	2.93E-05	1.28E-04
			Total HAPs [a]	7.19E-04	3.15E-03
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	Fugitive	PM	0.74	3.25
			PM_{10}	0.37	1.63
			$PM_{2.5}$	0.06	0.24
			Lead	4.58E-06	2.01E-05
			Total HAPs [a]	1.12E-04	4.93E-04
Sycamore Milling Operations (AOS1)					
002-7 (AOS1)	Dust Collector AE-008 (AOS1)	Non-Fugitive	PM	1.11	4.88
			PM_{10}	1.11	4.88
			$PM_{2.5}$	1.11	4.88
			Lead	1.38E-05	6.03E-05
			Total HAPs [a]	3.38E-04	1.48E-03
002-8 (AOS1)	Dust Collector AE-009 (AOS1)	Non-Fugitive	PM	0.27	1.17
			PM_{10}	0.27	1.17
			$PM_{2.5}$	0.27	1.17
			Lead	3.30E-06	1.45E-05
			Total HAPs [a]	8.11E-05	3.55E-04
002-9 (AOS1)	Dust Collector AE-010 (AOS1)	Non-Fugitive	PM	0.45	1.95
			PM_{10}	0.45	1.95
			$PM_{2.5}$	0.45	1.95
			Lead	5.50E-06	2.41E-05
			Total HAPs [a]	1.35E-04	5.92E-04

Table 5.1 Potential Emissions from the Design of AOS1 in Class II Air Quality Permit #77414

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
002-10 (AOS1)	Dust Collector AE-011 (AOS1)	Non-Fugitive	PM	0.27	1.17
			PM_{10}	0.27	1.17
			$PM_{2.5}$	0.27	1.17
			Lead	3.30E-06	1.45E-05
			Total HAPs [a]	8.11E-05	3.55E-04
002-11 (AOS1)	Dust Collector AE-007 (AOS1)	Non-Fugitive	PM	0.27	1.17
			PM_{10}	0.27	1.17
			$PM_{2.5}$	0.27	1.17
			Lead	3.30E-06	1.45E-05
			Total HAPs [a]	8.11E-05	3.55E-04
002-12 (AOS1)	Dust Collector AE-012 (AOS1)	Non-Fugitive	PM	0.74	3.22
			PM_{10}	0.74	3.22
			$PM_{2.5}$	0.74	3.22
			Lead	9.08E-06	3.98E-05
			Total HAPs [a]	2.23E-04	9.76E-04
002-13 (AOS1)	Dust Collector AE-013 (AOS1)	Non-Fugitive	PM	0.40	1.76
			PM_{10}	0.40	1.76
			$PM_{2.5}$	0.40	1.76
			Lead	4.95E-06	2.17E-05
			Total HAPs [a]	1.22E-04	5.33E-04

[a] See Appendix G for individual HAPs.

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
Mining Operations (AOS1)					
026-3 (AOS1)	Drilling (AOS1)	Fugitive	PM	637.31	69.04
			PM_{10}	382.39	41.43
			$PM_{2.5}$	70.81	7.67
			Lead	8.65E-03	9.37E-04
			Total HAPs [a]	1.37E-01	1.48E-02
026-2 (AOS1)	Blasting (AOS1)	Fugitive	PM	4,919.42	486.50
			PM_{10}	2,558.10	252.98
			$PM_{2.5}$	147.58	14.60
			CO	15,319.65	1,659.63
			NO_X	678.46	73.50
			SO_2	4.64	0.50
			CO_2	143,484.81	15,544.19
			CH_4	5.60	0.61
			N_2O	1.11	0.12
			CO_2e	143,954.54	15,595.07
			Lead	6.58E-02	6.59E-03
			Total HAPs [a]	1.38E+00	1.40E-01
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	Fugitive	PM	4,702.74	5,559.65
			PM_{10}	1,292.50	1,528.01
			$PM_{2.5}$	129.25	152.80
			Lead	2.93E-02	3.46E-02
			Total HAPs [a]	4.63E-01	5.48E-01

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	Fugitive	PM	1,567.58	1,853.22
			PM_{10}	430.83	509.34
			$PM_{2.5}$	43.08	50.93
			Lead	9.75E-03	1.15E-02
			Total HAPs [a]	1.54E-01	1.83E-01
023-3 (AOS1)	Other Vehicle Travel (AOS1)	Fugitive	PM	4,595.56	11,026.21
			PM_{10}	1,263.04	3,030.43
			$PM_{2.5}$	126.30	303.04
			Lead	2.86E-02	6.86E-02
			Total HAPs [a]	4.53E-01	1.09E+00
023-1 (AOS1)	Dozer Operation (AOS1)	Fugitive	PM	194.61	589.25
			PM_{10}	35.33	106.96
			$PM_{2.5}$	20.43	61.87
			Lead	7.99E-04	2.42E-03
			Total HAPs [a]	1.27E-02	3.83E-02
023-2 (AOS1)	Road Grader Operation (AOS1)	Fugitive	PM	16.93	74.16
			PM_{10}	5.29	23.16
			$PM_{2.5}$	0.52	2.30
			Lead	1.20E-04	5.24E-04
			Total HAPs [a]	1.90E-03	8.30E-03
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Fugitive	PM	103.82	336.16
			PM_{10}	49.10	158.99
			$PM_{2.5}$	7.44	24.08
			Lead	1.11E-03	3.60E-03
			Total HAPs [a]	1.76E-02	5.70E-02

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Fugitive	PM	21.11	58.61
			PM_{10}	9.98	27.72
			$PM_{2.5}$	1.51	4.20
			Lead	1.23E-04	3.42E-04
			Total HAPs [a]	3.03E-03	8.40E-03
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Fugitive	PM	18.47	43.05
			PM_{10}	8.73	20.36
			$PM_{2.5}$	1.32	3.08
			Lead	1.08E-04	2.51E-04
			Total HAPs [a]	2.65E-03	6.17E-03
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Fugitive	PM	3.34	12.18
			PM_{10}	1.58	5.76
			$PM_{2.5}$	0.24	0.87
			Lead	2.02E-05	7.37E-05
			Total HAPs [a]	3.47E-04	1.27E-03
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Fugitive	PM	60.91	222.32
			PM_{10}	28.81	105.15
			$PM_{2.5}$	4.36	15.92
			Lead	8.03E-04	2.93E-03
			Total HAPs [a]	1.13E-02	4.12E-02
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)					
001-5 (AOS1)	Dust Collector C51 (AOS1)	Non-Fugitive	PM	1.74	7.60
			PM_{10}	1.74	7.60
			$PM_{2.5}$	1.74	7.60
			Lead	2.14E-05	9.39E-05
			Total HAPs [a]	5.26E-04	2.30E-03

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
001-2 (AOS1)	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	Non-Fugitive	PM	0.22	0.97
			PM_{10}	0.10	0.46
			$PM_{2.5}$	0.02	0.07
			Lead	1.29E-06	5.64E-06
			Total HAPs [a]	3.16E-05	1.39E-04
001-8 (AOS1)	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	Non-Fugitive	PM	0.22	0.97
			PM_{10}	0.10	0.46
			$PM_{2.5}$	0.02	0.07
			Lead	1.29E-06	5.64E-06
			Total HAPs [a]	3.16E-05	1.39E-04
001-9 (AOS1)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	Non-Fugitive	PM	0.22	0.97
			PM_{10}	0.10	0.46
			$PM_{2.5}$	0.02	0.07
			Lead	1.29E-06	5.64E-06
			Total HAPs [a]	3.16E-05	1.39E-04
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Fugitive	PM	20.05	70.26
			PM_{10}	9.48	33.23
			$PM_{2.5}$	1.44	5.03
			Lead	1.17E-04	4.10E-04
			Total HAPs [a]	2.87E-03	1.01E-02
001-10 (AOS1)	Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	Fugitive	PM	20.05	17.56
			PM_{10}	9.48	8.31
			$PM_{2.5}$	1.44	1.26
			Lead	1.17E-04	1.03E-04
			Total HAPs [a]	2.87E-03	2.52E-03

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
001-3 (AOS1)	Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Fugitive	PM	20.05	17.56
			PM_{10}	9.48	8.31
			$PM_{2.5}$	1.44	1.26
			Lead	1.17E-04	1.03E-04
			Total HAPs [a]	2.87E-03	2.52E-03
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	Fugitive	PM	1.96	8.59
			PM_{10}	0.98	4.29
			$PM_{2.5}$	0.15	0.64
			Lead	1.21E-05	5.30E-05
			Total HAPs [a]	2.97E-04	1.30E-03
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)					
001-12 (AOS1)	PC1 Dust Collector 1 (AOS1)	Non-Fugitive	PM	0.29	1.25
			PM_{10}	0.29	1.25
			$PM_{2.5}$	0.29	1.25
			Lead	3.53E-06	1.55E-05
			Total HAPs [a]	8.66E-05	3.79E-04
001-13 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	Non-Fugitive	PM	0.33	1.44
			PM_{10}	0.33	1.44
			$PM_{2.5}$	0.33	1.44
			Lead	4.07E-06	1.78E-05
			Total HAPs [a]	9.98E-05	4.37E-04
001-14 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	Non-Fugitive	PM	0.33	1.44
			PM_{10}	0.33	1.44
			$PM_{2.5}$	0.33	1.44
			Lead	4.07E-06	1.78E-05
			Total HAPs [a]	9.98E-05	4.37E-04

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
001-15 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	Non-Fugitive	PM	0.33	1.44
			PM_{10}	0.33	1.44
			$PM_{2.5}$	0.33	1.44
			Lead	4.07E-06	1.78E-05
			Total HAPs [a]	9.98E-05	4.37E-04
001-20 (AOS1)	PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	Fugitive	PM	21.11	92.44
			PM_{10}	9.98	43.72
			$PM_{2.5}$	1.51	6.62
			Lead	1.23E-04	5.40E-04
			Total HAPs [a]	3.03E-03	1.33E-02
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	Fugitive	PM	0.96	4.22
			PM_{10}	0.48	2.11
			$PM_{2.5}$	0.07	0.32
			Lead	5.95E-06	2.61E-05
			Total HAPs [a]	1.46E-04	6.40E-04
Sycamore Milling Operations (AOS1)					
002-7 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	Non-Fugitive	PM	0.43	1.90
			PM_{10}	0.43	1.90
			$PM_{2.5}$	0.43	1.90
			Lead	5.36E-06	2.35E-05
			Total HAPs [a]	1.31E-04	5.76E-04
002-8 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	Non-Fugitive	PM	0.43	1.90
			PM_{10}	0.43	1.90
			$PM_{2.5}$	0.43	1.90
			Lead	5.36E-06	2.35E-05
			Total HAPs [a]	1.31E-04	5.76E-04

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
002-9 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	Non-Fugitive	PM	0.45	1.99
			PM_{10}	0.45	1.99
			$PM_{2.5}$	0.45	1.99
			Lead	5.60E-06	2.45E-05
			Total HAPs [a]	1.37E-04	6.02E-04
002-10 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	Non-Fugitive	PM	0.53	2.33
			PM_{10}	0.53	2.33
			$PM_{2.5}$	0.53	2.33
			Lead	6.57E-06	2.88E-05
			Total HAPs [a]	1.61E-04	7.07E-04
002-11 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	Non-Fugitive	PM	0.49	2.16
			PM_{10}	0.49	2.16
			$PM_{2.5}$	0.49	2.16
			Lead	6.09E-06	2.67E-05
			Total HAPs [a]	1.49E-04	6.54E-04
002-12 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	Non-Fugitive	PM	0.20	0.86
			PM_{10}	0.20	0.86
			$PM_{2.5}$	0.20	0.86
			Lead	2.43E-06	1.07E-05
			Total HAPs [a]	5.98E-05	2.62E-04
002-13 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	Non-Fugitive	PM	0.20	0.86
			PM_{10}	0.20	0.86
			$PM_{2.5}$	0.20	0.86
			Lead	2.43E-06	1.07E-05
			Total HAPs [a]	5.98E-05	2.62E-04

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
Sycamore Bulk and Molybdenum Flotation Operations (AOS1)					
044-2 (AOS1)	Sycamore Bulk and Molybdenum Flotation Equipment	Fugitive	VOC	0.27	1.18
			H_2S	0.50	2.18
			Total HAPs [a]	2.38E-02	1.04E-01
Sycamore Concentrate Handling Operations (AOS1)					
006-11 (AOS1)	Copper Concentrate Filters 1/2 (AOS1) to Copper Concentrate Filter Drop Storage (AOS1)	Fugitive	PM	0.003	0.01
			PM_{10}	0.001	0.006
			$PM_{2.5}$	0.0002	0.0009
			Lead	9.85E-07	4.31E-06
			Total HAPs [a]	2.99E-06	1.31E-05
006-12 (AOS1)	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader	Fugitive	PM	0.003	0.01
			PM_{10}	0.001	0.006
			$PM_{2.5}$	0.0002	0.0009
			Lead	9.85E-07	4.31E-06
			Total HAPs [a]	2.99E-06	1.31E-05
006-13 (AOS1)	Copper Concentrate Loadout Storage (AOS1) to Trucks via Front-End Loader	Fugitive	PM	0.003	0.01
			PM_{10}	0.001	0.006
			$PM_{2.5}$	0.0002	0.0009
			Lead	9.85E-07	4.31E-06
			Total HAPs [a]	2.99E-06	1.31E-05
027-8 (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1)	Fugitive	PM	0.31	1.35
			PM_{10}	0.15	0.68
			$PM_{2.5}$	0.02	0.10
			Lead	1.13E-04	4.93E-04
			Total HAPs [a]	3.41E-04	1.50E-03

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	Non-Fugitive	PM	0.06	0.28
			PM_{10}	0.06	0.28
			$PM_{2.5}$	0.06	0.28
			VOC	1.83	8.02
			Lead	9.67E-06	4.23E-05
			Total HAPs [a]	1.61E-01	7.07E-01
052-3 (AOS1)	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1)	Non-Fugitive	PM	0.004	0.02
			PM_{10}	0.002	0.009
			$PM_{2.5}$	0.0003	0.001
			Lead	3.22E-07	1.41E-06
			Total HAPs [a]	2.86E-06	1.25E-05
052-4 (AOS1)	Dried Molybdenum Concentrate Storage Bin (AOS1) to Molybdenum Concentrate Bagging System (AOS1)	Fugitive	PM	0.004	0.02
			PM_{10}	0.002	0.009
			$PM_{2.5}$	0.0003	0.001
			Lead	3.22E-07	1.41E-06
			Total HAPs [a]	2.86E-06	1.25E-05
Sycamore Lime and Other Regent Operations (AOS1)					
007-6 (AOS1)	Transfer of Lime to Sycamore Lime Silo (AOS1)	Non-Fugitive	PM	0.15	0.30
			PM_{10}	0.05	0.11
			$PM_{2.5}$	0.008	0.02
007-7 (AOS1)	Sycamore Lime Slaker (AOS1)	Non-Fugitive	PM	0.01	0.06
			PM_{10}	0.01	0.06
			$PM_{2.5}$	0.01	0.06
055-1 (AOS1)	Transfer of Flocculant to Tailings Flocculant Bag Breaker Bin (AOS1)	Non-Fugitive	PM	0.06	0.25
			PM_{10}	0.03	0.12
			$PM_{2.5}$	0.004	0.02

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
055-2 (AOS1)	Transfer of Flocculant to Concentrate Flocculant Bag Breaker Bin (AOS1)	Non-Fugitive	PM	0.004	0.02
			PM_{10}	0.002	0.008
			$PM_{2.5}$	0.0003	0.001
053-2 (AOS1)	Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	Non-Fugitive	VOC	0.49	1.31
			Greatest Single HAP	4.94E-01	1.31E+00
			Total HAPs [a]	4.94E-01	1.31E+00
055-3 (AOS1)	Sycamore NaHS System Scrubber (AOS1)	Non-Fugitive	H_2S	0.04	0.17
Sycamore Prill Handling Operations (AOS1)					
050-7 (AOS1)	Delivery of Ammonium Nitrate Prill to Prill Bin 6 (AOS1)	Non-Fugitive	PM	0.52	0.25
			PM_{10}	0.18	0.09
			$PM_{2.5}$	0.03	0.01
050-8 (AOS1)	Prill Bin 6 to ANFO Trucks for Transfer to Drill Holes	Non-Fugitive	PM	1.00	0.25
			PM_{10}	0.35	0.09
			$PM_{2.5}$	0.05	0.01
Sycamore Emergency ICE (AOS1)					
049-59 (AOS1)	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	Non-Fugitive	PM	0.20	0.05
			PM_{10}	0.20	0.05
			$PM_{2.5}$	0.20	0.05
			CO	3.50	0.88
			NO_X	3.74	0.93
			SO_2	0.007	0.002
			VOC	0.27	0.07
			CO_2	695.10	173.77
			CH_4	0.03	0.007
			N_2O	0.006	0.001
			CO_2e	697.48	174.37
			Total HAPs [a]	6.71E-03	1.68E-03

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
049-60 (AOS1)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	Non-Fugitive	PM	0.25	0.06
			PM_{10}	0.25	0.06
			$PM_{2.5}$	0.25	0.06
			CO	4.38	1.10
			NO_X	7.52	1.88
			SO_2	0.008	0.002
			VOC	0.50	0.13
			CO_2	869.73	217.43
			CH_4	0.04	0.009
			N_2O	0.007	0.002
			CO_2e	872.71	218.18
			Total HAPs [a]	8.39E-03	2.10E-03
049-61 (AOS1)	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	Non-Fugitive	PM	0.02	0.004
			PM_{10}	0.02	0.004
			$PM_{2.5}$	0.02	0.004
			CO	16.77	4.19
			NO_X	1.14	0.29
			SO_2	0.01	0.003
			VOC	0.25	0.06
			CO_2	123.27	30.82
			CH_4	0.006	0.001
			N_2O	0.001	0.0003
			CO_2e	123.77	30.94
			Total HAPs [a]	2.89E-02	7.22E-03

Table 5.2 Potential Emissions from the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions	
				lb/hr	tpy
049-62 (AOS1)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	Non-Fugitive	PM	0.02	0.004
			PM_{10}	0.02	0.004
			$PM_{2.5}$	0.02	0.004
			CO	16.77	4.19
			NO_X	1.14	0.29
			SO_2	0.01	0.003
			VOC	0.25	0.06
			CO_2	123.27	30.82
			CH_4	0.006	0.001
			N_2O	0.001	0.0003
			CO_2e	123.77	30.94
			Total HAPs [a]	2.89E-02	7.22E-03

[a] See Appendix G for individual HAPs.

Table 5.3 Summary of the Changes in Hourly Facility-Wide Potential Emissions

Potential Emission Description	Emission Classification	Hourly Facility-Wide Potential Emissions (lb/hr)										
		PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	H_2S	CO_2e	Greatest Single HAP	Total HAPs
Primary Operating Scenario												
Potential Emissions Following MPR #96299	Non-Fugitive	34.25	23.03	16.52	96.93	72.86	0.41	10.89	--	15,198	2.15	2.78
	Fugitive	4,330.88	1,624.52	167.80	4,064.40	180.00	1.23	3.75	2.15	38,191	--	1.46
	Total	4,365.13	1,647.55	184.32	4,161.33	252.86	1.64	14.64	2.15	53,390	2.15	4.24
Change in Potential Emissions Due to the Proposed Updates	Non-Fugitive	--	--	--	--	--	--	--	--	--	--	--
	Fugitive	--	--	--	--	--	--	--	--	--	--	--
	Total	--	--	--	--	--	--	--	--	--	--	--
Potential Emissions Following the Proposed Updates	Non-Fugitive	34.25	23.03	16.52	96.93	72.86	0.41	10.89	--	15,198	2.15	2.78
	Fugitive	4,330.88	1,624.52	167.80	4,064.40	180.00	1.23	3.75	2.15	38,191	--	1.46
	Total	4,365.13	1,647.55	184.32	4,161.33	252.86	1.64	14.64	2.15	53,390	2.15	4.24

Table 5.3 Summary of the Changes in Hourly Facility-Wide Potential Emissions

Potential Emission Description	Emission Classification	Hourly Facility-Wide Potential Emissions (lb/hr)										
		PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	H_2S	CO_2e	Greatest Single HAP	Total HAPs
Alternate Operating Scenario 1												
Potential Emissions Following MPR #96299	Non-Fugitive	31.98	24.24	20.39	96.93	72.86	0.41	10.89	--	15,198	2.15	2.78
	Fugitive	4,326.30	1,622.35	167.47	4,064.40	180.00	1.23	3.75	2.15	38,191	--	1.46
	Total	4,358.28	1,646.60	187.86	4,161.33	252.86	1.64	14.64	2.15	53,390	2.15	4.24
Change in Potential Emissions Due to the Proposed Updates	Non-Fugitive	1.35	-0.11	-0.90	41.42	13.54	0.04	3.59	0.04	1,818	0.49	0.73
	Fugitive	12,664.92	4,516.22	397.09	11,255.26	498.46	3.41	0.27	0.50	105,763	--	2.01
	Total	12,666.27	4,516.11	396.19	11,296.68	512.00	3.44	3.86	0.54	107,581	0.49	2.73
Potential Emissions Following the Proposed Updates	Non-Fugitive	33.33	24.13	19.49	138.35	86.40	0.44	14.48	0.04	17,016	2.65	3.51
	Fugitive	16,991.22	6,138.57	564.56	15,319.65	678.46	4.64	4.02	2.65	143,955	--	3.46
	Total	17,024.55	6,162.70	584.05	15,458.00	764.86	5.08	18.50	2.69	160,971	2.65	6.97

Table 5.4 Summary of the Changes in Annual Facility-Wide Potential Emissions

Potential Emission Description	Emission Classification	Annual Facility-Wide Potential Emissions (tpy)										
		PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	H_2S	CO_2e	Greatest Single HAP	Total HAPs
Primary Operating Scenario												
Potential Emissions Following MPR #96299	Non-Fugitive	117.41	85.57	65.02	65.85	62.01	1.38	30.12	--	37,274	5.55	6.84
	Fugitive	6,169.77	1,913.29	248.56	914.49	40.50	0.28	16.42	9.43	8,593	--	4.08
	Total	6,287.19	1,998.86	313.59	980.34	102.51	1.65	46.54	9.43	45,867	5.55	10.92
	PTE	117.41	85.57	65.02	65.85	62.01	1.38	30.12	--	37,274	5.55	10.92
Change in Potential Emissions Due to the Proposed Updates	Non-Fugitive	--	--	--	--	--	--	--	--	--	--	--
	Fugitive	--	--	--	--	--	--	--	--	--	--	--
	Total	--	--	--	--	--	--	--	--	--	--	--
	PTE	--	--	--	--	--	--	--	--	--	--	--
Potential Emissions Following the Proposed Updates	Non-Fugitive	117.41	85.57	65.02	65.85	62.01	1.38	30.12	--	37,274	5.55	6.84
	Fugitive	6,169.77	1,913.29	248.56	914.49	40.50	0.28	16.42	9.43	8,593	--	4.08
	Total	6,287.19	1,998.86	313.59	980.34	102.51	1.65	46.54	9.43	45,867	5.55	10.92
	PTE	117.41	85.57	65.02	65.85	62.01	1.38	30.12	--	37,274	5.55	10.92

Table 5.4 Summary of the Changes in Annual Facility-Wide Potential Emissions

Potential Emission Description	Emission Classification	Annual Facility-Wide Potential Emissions (tpy)										
		PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	H_2S	CO_2e	Greatest Single HAP	Total HAPs
Alternate Operating Scenario 1												
Potential Emissions Following MPR #96299	Non-Fugitive	107.83	91.06	82.00	65.85	62.01	1.38	30.12	--	37,274	5.55	6.84
	Fugitive	6,152.44	1,905.09	247.32	914.49	40.50	0.28	16.42	9.43	8,593	--	4.08
	Total	6,260.27	1,996.15	329.32	980.34	102.51	1.65	46.54	9.43	45,867	5.55	10.92
	PTE	107.83	91.06	82.00	65.85	62.01	1.38	30.12	--	37,274	5.55	10.92
Change in Potential Emissions Due to the Proposed Updates	Non-Fugitive	-2.57	-4.77	-6.29	10.35	3.38	0.009	9.65	0.17	454	1.31	2.04
	Fugitive	14,655.64	4,141.05	432.70	745.14	33.00	0.23	1.18	2.18	7,002	--	1.64
	Total	14,653.08	4,136.28	426.41	755.49	36.38	0.23	10.83	2.35	7,457	1.31	3.68
	PTE	-2.57	-4.77	-6.29	10.35	3.38	0.009	9.65	0.17	454	1.31	3.68
Potential Emissions Following the Proposed Updates	Non-Fugitive	105.26	86.29	75.71	76.20	65.40	1.39	39.77	0.17	37,728	6.87	8.88
	Fugitive	20,808.08	6,046.14	680.02	1,659.63	73.50	0.50	17.60	11.61	15,595	--	5.72
	Total	20,913.35	6,132.43	755.73	1,735.83	138.90	1.89	57.37	11.78	53,323	6.87	14.60
	PTE	105.26	86.29	75.71	76.20	65.40	1.39	39.77	0.17	37,728	6.87	14.60

6 PROPOSED VOLUNTARY LIMITATIONS

As part of the design of AOS1 in Class II Air Quality Permit #77414, FMBI previously accepted voluntary emission limitations for the processes controlled by new dust collectors. The limitations were initially established as lb/hr emission caps for PM_{10} but were eventually converted to outlet grain loading limits for both PM and PM_{10}. While FMBI's engineering team designed the dust collectors at an outlet grain loading of 0.002 gr/dscf, FMBI accepted voluntary emission limitations of 0.0026 gr/dscf to provide a buffer for compliance demonstrations during performance testing.

After many years of experience with the specific dust collectors chosen for AOS1 (i.e., FARR cartridge filter dust collectors), FMBI feels confident with a smaller buffer for performance testing and proposes to accept limitations of 0.0023 gr/dscf for both PM and PM_{10} for the processes controlled by new dust collectors in the updated design of AOS1. FMBI also proposes to accept a voluntary limitation for the operation of fogging systems on the transfer points associated with existing overland conveying operations. Finally, for the processes controlled by existing Dust Collector C51, FMBI proposes to retain the previously established voluntary emission limitation of 0.0135 gr/dscf for both PM and PM_{10}.

The voluntary limitations for the updated design of AOS1 are presented in Table 6.1. The associated averaging period and monitoring, recordkeeping, and reporting requirements necessary to demonstrate that the voluntary limitations are permanent, quantifiable, and otherwise enforceable as a practical matter are also presented in Table 6.1.

Table 6.1 Voluntary Limitations for the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description [a]	Type of Voluntary Limitation	Description of Voluntary Limitation	Averaging Period	Proposed Monitoring, Recordkeeping, and Reporting Requirements
Affected Emissions Units - Proposed Updated Design of AOS1					
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)					
001-5 (AOS1)	Dust Collector C51 (AOS1)	Emissions Limitations	PM ≤ 0.0135 gr/dscf PM_{10} ≤ 0.0135 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing
001-2 (AOS1)	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	Operational Requirement	Install, maintain, and operate a fogging system to minimize particulate matter emissions from the transfer process.	N/A	Perform periodic opacity monitoring
001-8 (AOS1)	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	Operational Requirement	Install, maintain, and operate a fogging system to minimize particulate matter emissions from the transfer process.	N/A	Perform periodic opacity monitoring
001-9 (AOS1)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	Operational Requirement	Install, maintain, and operate a fogging system to minimize particulate matter emissions from the transfer process.	N/A	Perform periodic opacity monitoring
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)					
001-12 (AOS1)	PC1 Dust Collector 1 (AOS1)	Emissions Limitations	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing
001-13 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	Emissions Limitations	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing
001-14 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	Emissions Limitations	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing
001-15 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	Emissions Limitations	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing

Table 6.1 Voluntary Limitations for the Proposed Updated Design of AOS1

Process Number	Process/Emission Unit Description [a]	Type of Voluntary Limitation	Description of Voluntary Limitation	Averaging Period	Proposed Monitoring, Recordkeeping, and Reporting Requirements
Sycamore Milling Operations (AOS1)					
002-7 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	Emissions Limitations	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing
002-8 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	Emissions Limitations	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing
002-9 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	Emissions Limitations	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing
002-10 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	Emissions Limitations	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing
002-11 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	Emissions Limitations	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing
002-12 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	Emissions Limitations	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing
002-13 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	Emissions Limitations	PM ≤ 0.0023 gr/dscf PM_{10} ≤ 0.0023 gr/dscf	Three Method 5 Test Runs	Perform periodic opacity monitoring and complete performance testing

[a] The voluntary limitation is applicable to the entire process controlled by the pollution control device and the pollution control device is used to demonstrate compliance with the voluntary emission limitation. See Table 4.1 for the emission units/processes controlled by the pollution control devices listed in this table.

7 APPLICABLE REQUIREMENTS AND PROPOSED EXEMPTIONS FROM OTHERWISE APPLICABLE REQUIREMENTS

7.1 APPLICABLE REQUIREMENTS

Reference to the regulatory requirements applicable to the equipment/processes associated with the proposed updated design of AOS1 are presented in Table 2.1. The regulatory requirements include the following:

- Ore Processing Equipment
    - A.A.C. R18-2-306.01 (Voluntarily Accepted Emission Limitations and Standards);
    - A.A.C. R18-2-702.B.3 (Opacity Standard) and A.A.C. R18-2-721 (Standards of Performance for Existing Nonferrous Metals Industry Sources); and/or
    - A.A.C. R18-2-901.46 and 40 CFR 60 Subpart LL (Standards of Performance for Metallic Mineral Processing Plants).
- Lime and Other Reagent Operations and Prill Handling Operations (A.A.C. R18-2-730 also applies to bulk and molybdenum flotation operations)
    - A.A.C. R18-2-702.B.3 (Opacity Standard); and
    - A.A.C. R18-2-730 (Standards of Performance for Unclassified Sources).
- Diesel Emergency Engines
    - A.A.C. R18-2-901.84 and 40 CFR 60 Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines); and
    - A.A.C. R18-2-1101.B.81 and 40 CFR 63 Subpart ZZZZ (National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines).
- Propane Emergency Engines
    - A.A.C. R18-2-901.85 and 40 CFR 60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines); and
    - A.A.C. R18-2-1101.B.81 and 40 CFR 63 Subpart ZZZZ (National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines).

Detailed descriptions of the regulatory requirements are presented in Tables 7.1 through 7.8. All applicable requirements are currently included in FMBI's Class II Air Quality Permit #77414.

The applicability of A.A.C. R18-2-721 (Standards of Performance for Existing Nonferrous Metals Industry Sources) to certain mining equipment largely depends on whether that equipment is subject to 40 CFR 60 Subpart LL and therefore considered a new source rather than an existing source. In turn, the applicability of 40 CFR 60 Subpart LL largely depends on whether the equipment is an "affected facility" (as defined under Subpart LL) and is located within certain areas of FMBI's metallic mineral processing plant. For example, the overland and cross-country conveyors will not be located "at the mill or concentrator" and are not considered crushers or screens "in open-pit mines." Therefore, they are subject to A.A.C. R18-2-721 instead of 40 CFR 60 Subpart LL. Likewise, while the AG mills, ball mills, and regrind mills will be located at the mill or concentrator, they do not meet the definition of a "crusher" in 40 CFR 60.381 and therefore these mills are also subject to A.A.C. R18-2-721 instead of 40 CFR 60 Subpart LL. Specific to Molybdenum Concentrate Dryer Screw Feeder and Coarse Ore Reclaim Feeders 1 through 6, because they will not have a belt, they cannot be affected facilities under 40 CFR 60 Subpart LL in and of themselves (i.e., they are not "conveyor belt transfer points," which are defined as points in the process where "metallic mineral concentrate is transferred to or from a conveyor belt"). Accordingly, these feeders are instead subject to A.A.C. R18-2-721.

Finally, the Molybdenum Concentrate Dryer will be a holoflite-type dryer, which uses heated oil in conjunction with a hollow screw to dry the molybdenum concentrate. The definition of "thermal dryer" in 40 CFR 60.381 requires the surface moisture content of a metallic mineral or a metallic mineral concentrate to be reduced by direct or indirect contact with a heated gas stream. Because heated oil will be used in place of a heated gas stream, the Molybdenum Concentrate Dryer is subject to the requirements of A.A.C. R18-2-721 instead of 40 CFR 60 Subpart LL.

Updating the design of AOS1 will require revisions to Attachments "B," "C," and "D" of Class II Air Quality Permit #77414. Suggested draft permit language is presented in Appendix H.

7.2 PROPOSED EXEMPTION FROM OTHERWISE APPLICABLE REQUIREMENTS

FMBI does not propose to be exempt from any otherwise applicable regulatory requirement.

Table 7.1 Applicable Regulatory Requirements of A.A.C. R18-2-306.01 and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
A.A.C. R18-2-306.01	Limit emissions as described in Table 6.1.	Records of performance tests; operation & maintenance (O&M) plans; facility procedures; operation and maintenance records.
A.A.C. R18-2-306.01	Install, maintain, and operate the fogging systems described in Table 6.1.	Facility procedure; design and configuration of the fogging systems.

Table 7.2 Applicable Regulatory Requirements of A.A.C. R18-2-702.B.3 and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
A.A.C. R18-2-702.B.3 A.A.C. R18-2-702.C	For all sources described in A.A.C. R18-2-702.A (except as otherwise provided in Title 18, Chapter 2 of the A.A.C. relating to specific types of sources): • Opacity ≤ 20% If the presence of uncombined water is the only reason for an exceedance of the opacity limit, the exceedance shall not constitute a violation.	Records of visible emission surveys; records of Method 9 observations; facility procedure.

Table 7.3 Applicable Regulatory Requirements of A.A.C. R18-2-721 and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
A.A.C. R18-2-721.B A.A.C. R18-2-721.D	PM $\leq$ 4.10 $P^{0.67}$, when P $\leq$ 30 tons per hour (tph) PM $\leq$ 55.0 $P^{0.11}$ – 40, when P > 30 tph (where PM = maximum allowable PM emission rate in lb/hr, P = total process rate in tons/hr) The total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of PM.	Records of process weight rate, PM limit, and potential emission calculations.
A.A.C. R18-2-721.F	Record the daily process rates and hours of operation of all material handling facilities.	Facility procedure; records review.

Table 7.4 Applicable Regulatory Requirements of A.A.C. R18-2-730 and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
A.A.C. R18-2-730.A.1 A.A.C. R18-2-730.B	$PM \le 4.10\ P^{0.67}$, when $P \le 30$ tph $PM \le 55.0\ P^{0.11} - 40$, when $P > 30$ tph (where PM = maximum allowable PM emission rate in lb/hr, P = total process rate in tons/hr) The total process weight from all similar units employing a similar type process shall be used for determining the maximum allowable emission of PM.	Process weight rates, PM limits, potential emission calculations.
A.A.C. R18-2-730.D	Operate equipment, processes, and premises such that gaseous or odorous materials are not emitted in such quantities or concentrations as to cause air pollution.	O&M plans; facility procedures; operations and maintenance records; facility configuration; review of odor complaints.
A.A.C. R18-2-730.F	Processing, storage, usage, and transportation of solvents or other volatile compounds, paints, acids, alkalis, pesticides, fertilizers and manure in such a manner and by such means that they will not evaporate, leak, escape, or otherwise be discharged into the ambient air as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage or discharge, install and use such control methods, devices, or equipment.	O&M plans; facility procedures; operations and maintenance records.
A.A.C. R18-2-730.G	If required by the Director, install abatement equipment or alter the stack, vent, or other outlet to a degree that will adequately dilute, reduce or eliminate the discharge of air pollution to adjoining property.	Explanatory statement of law; management of change procedures.
A.A.C. R18-2-730.H	$H_2S \le 0.03$ parts per million by volume (ppm_v) for any averaging period of 30 minutes or more at any occupied place beyond the premises of FMMI.	O&M plans; facility procedures; operations and maintenance records; H_2S monitoring.

Table 7.5 Applicable Regulatory Requirements of A.A.C. R18-2-901.46 and 40 CFR 60 Subpart LL and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
40 CFR 60.382(a)(1) A.A.C. R18-2-901.46	On and after the date on which the performance test required to be conducted by 40 CFR 60.8 is completed, do not cause to be discharged into the atmosphere from an affected facility any stack emissions that contain particulate matter in excess of 0.05 grams per dry standard cubic meter (0.05 g/dscm).	Records of performance test; O&M plan; operations and maintenance records; facility procedures.
40 CFR 60.382(a)(2) A.A.C. R18-2-901.46	On and after the date on which the performance test required to be conducted by 40 CFR 60.8 is completed, do not cause to be discharged into the atmosphere from an affected facility any stack emissions that exhibit greater than 7 percent opacity.	Records of monthly visual surveys; facility procedure.
40 CFR 60.382(b) A.A.C. R18-2-901.46	On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup, do not cause to be discharged into the atmosphere from an affected facility any process fugitive emissions that exhibit greater than 10 percent opacity.	Records of monthly visual surveys; facility procedure.
40 CFR 60.385(a) A.A.C. R18-2-901.46	Conduct a performance test and submit to the Administrator a written report of the results of the test as specified in 40 CFR 60.8(a).	Facility procedure; records of performance test results and reports.
40 CFR 60.386(a) A.A.C. R18-2-901.46	In conducting the performance tests required in 40 CFR 60.8, use as reference methods and procedures the test methods in 40 CFR 60, Appendix A or other methods and procedures as specified in 40 CFR 60 Subpart LL, except as provided in 40 CFR 60.8(b).	Facility procedure; records of performance test procedures.

Table 7.5 Applicable Regulatory Requirements of A.A.C. R18-2-901.46 and 40 CFR 60 Subpart LL and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
40 CFR 60.386(b) A.A.C. R18-2-901.46	Determine compliance with the particulate matter standards by: • Using Method 5 or 17 to determine the particulate matter concentration. The sample volume for each run must be at least 60 dscf. The sampling probe and filter holder of Method 5 may be operated without heaters if the gas stream being sampled is at ambient temperature. For gas streams above ambient temperature, the Method 5 sampling train must be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 250°F) in order to prevent water condensation on the filter. • Using Method 9 and the procedures in 40 CFR 60.11 to determine opacity from stack emissions and process fugitive emissions. The observer must read opacity only when emissions are clearly identified as emanating solely from the affected facility being observed. A single visible emission observer may conduct visible emission observations for up to three fugitive, stack, or vent emission points within a 15-second interval. This option is subject to the following limitations: o No more than three emission points are read concurrently; o All three emission points must be within a 70° viewing sector or angle in front of the observer such that the proper sun position can be maintained for all three points; and o If an opacity reading for any one of the three emission points is within 5 percent opacity of the application standard, then the observer must stop taking readings for the other two points and continue reading just that single point.	Facility procedure; records of performance test procedures.

Table 7.6 Applicable Regulatory Requirements of A.A.C. R18-2-901.84 and 40 CFR 60 Subpart IIII (Emergency Engines) and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
40 CFR 60.4205(b) 40 CFR 60.4202(a)(2) A.A.C. R18-2-901.84	For an emergency stationary CI engine with a rated power greater than or equal to 50 hp but less than or equal to 3,000 hp with a displacement of less than 10 liters per cylinder that are not fire pump engines, comply with the Tier 2 or Tier 3 emission standards for new nonroad CI engines for the same rated power as described in 40 CFR 1039 Appendix I, for all pollutants and the smoke standards as specified in 40 CFR 1039.105 beginning in model year 2007.	Records of manufacturer's certifications; O&M plans; manufacturer's emission-related instructions; operations and maintenance records.
40 CFR 60.4206 A.A.C. R18-2-901.84	Operate and maintain the stationary CI engine that achieves the emission standards of 40 CFR 60.4205 over the entire life of the engine.	O&M plans; facility procedures; operation inspection, and O&M records.
40 CFR 60.4207(b) A.A.C. R18-2-901.84	For a stationary CI engine with a displacement of less than 30 liters per cylinder that uses diesel fuel, use diesel fuel that meets the requirements of 40 CFR 1090.305 for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted. The requirements of 40 CFR 1090.305 include: • Sulfur content ≤ 15 ppm; and • Cetane index ≥ 40 or aromatic content ≤ 35% by volume.	Facility procedure; records of fuel specifications from fuel supplier.
40 CFR 60.4209(a) A.A.C. R18-2-901.84	If the emergency stationary CI engine does not meet the standards applicable to non-emergency engines, install a non-resettable hour meter prior to startup of the engine.	Facility procedure; record of non-resettable hour meter installed on all emergency engines.
40 CFR 60.4211(a) A.A.C. R18-2-901.84	Operate and maintain the engine according to the manufacturer's emission-related written instructions, except as permitted by 40 CFR 60.4211(g). Change only those emission-related settings that are permitted by the manufacturer, except as permitted by 40 CFR 60.4211(g). Meet the requirements of 40 CFR Part 1068, as they apply.	O&M plans; manufacturer's emission-related written instructions; facility procedures; O&M records.

Table 7.6 Applicable Regulatory Requirements of A.A.C. R18-2-901.84 and 40 CFR 60 Subpart IIII (Emergency Engines) and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
40 CFR 60.4211(c) A.A.C. R18-2-901.84	Purchase an engine certified to the emission standards in 40 CFR 60.4204(b), 40 CFR 60.4205(b), or 40 CFR 60.4205(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 emission-related specifications, except as permitted by 40 CFR 60.4211(g).	Records of manufacturer's certifications; records of installation and configuration according to the manufacturer's emission-related specifications; O&M plans; manufacturer's emission-related written instructions; facility procedures; O&M records.
40 CFR 60.4211(f)(1) 40 CFR 60.4211(f)(2) 40 CFR 60.4211(f)(3) A.A.C. R18-2-901.84	Operate the emergency stationary CI engine as follows to retain classification as an emergency engine: • Unlimited operation for use in emergency situations; • Maximum of 100 hr/yr for maintenance checks and readiness testing (provided that the tests are recommended); and • Maximum of 50 hr/yr in non-emergency situations (counted towards the 100 hr/yr in 40 CFR 60.4211(f)(2)). The 50 hr/yr for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity unless all conditions in 40 CFR 60.4211(f)(3)(i) are met.	O&M plans; facility procedures; O&M records; records of hourly meter readings and engine use; records review.

Table 7.6 Applicable Regulatory Requirements of A.A.C. R18-2-901.84 and 40 CFR 60 Subpart IIII (Emergency Engines) and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
40 CFR 60.4211(g)(3) A.A.C. R18-2-901.84	If the engine that is greater than 500 hp is not installed, configured, operated, or maintained according to the manufacturer's emission-related written instructions, or if emission-related settings are changed in a way that is not permitted by the manufacturer, then a maintenance plan and records of conducted maintenance must be kept and, to the extent practicable, the engine must be maintained and operated in a manner consistent with good air pollution control practice for minimizing emissions. In addition, an initial performance test shall be conducted to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after the engine is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after the emission-related settings are changed in a way that is not permitted by the manufacturer. Subsequent performance testing must be completed every 8,760 hours of engine operation or 3 years, whichever comes first, thereafter, to demonstrate compliance with the applicable emission standards.	Facility procedure; records of O&M plans; O&M records; records of performance test results and reports (if necessary).
40 CFR 60.4214(b) A.A.C. R18-2-901.84	For an emergency stationary engine, initial notification is not required. Starting with the model years in Table 5 of 40 CFR 60 Subpart IIII, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The time of operation of the engine and the reason the engine was in operation during that time must be recorded.	Facility procedure; records of hourly meter readings, engine use, and the reason the engine was in operation; records review.
40 CFR 60.4214(d) A.A.C. R18-2-901.84	For an emergency stationary CI engine with a maximum engine power more than 100 hp that for the purpose specified in 40 CFR 60.4211(f)(3)(i), submit an annual report according to the requirements in 40 CFR 60.4214(d)(1) through (3).	Submittal of annual reports (if necessary); maintenance of records.
40 CFR 60.4218 A.A.C. R18-2-901.84	Comply with the General Provisions as specified in Table 8 of 40 CFR 60 Subpart IIII.	Facility procedure; records review.

Table 7.7 Applicable Regulatory Requirements of A.A.C. R18-2-901.85 and 40 CFR 60 Subpart JJJJ (Emergency Engines) and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
40 CFR 60.4233(c) 40 CFR 60.4231(c) A.A.C. R18-2-901.85	For emergency SI engine greater than 25 hp and less than 130 hp that are rich burn engines that use LPG and that are manufactured on or after the applicable date in 40 CFR 60.4230(a)(4), comply with the Phase 1 emission standards in 40 CFR 1054 Appendix I, applicable to class II engines, and other requirements for new nonroad SI engines in 40 CFR 1054.	Records of manufacturer's certifications; O&M plans; manufacturer's emission-related instructions; operations and maintenance records.
40 CFR 60.4234 A.A.C. R18-2-901.85	Operate and maintain the stationary SI ICE that achieves the emission standards of 40 CFR 60.4233 over the entire life of the engine.	Records of manufacturers' certifications; O&M plans; manufacturers' emission-related instructions; operations and maintenance records.
40 CFR 60.4237(c) A.A.C. R18-2-901.85	For an emergency stationary SI engine that is less than 130 hp, was built on or after July 1, 2008, and does not meet the standards applicable to non-emergency engines, install a non-resettable hour meter upon startup.	Facility procedure; record of non-resettable hour meter installed on all emergency engines.
40 CFR 60.4243(a) A.A.C. R18-2-901.85	For SI ICE subject to the emission standards specified in 40 CFR 60.4233(a) through (c), purchase an engine certified to the emission standards in 40 CFR 60.4231(a) and (c) for the same engine class and maximum engine power and meet one of the following: (1) Operate and maintain the engine and control device according to manufacturer's emission-related written instructions, keep records of conducted maintenance, and meet the applicable requirements of 40 CFR 1068, Subparts A and D. (2) Do not operate and maintain the engine and control device according to manufacturer's emission-related written instructions but keep a maintenance plan and records of conducted maintenance and, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. No performance testing is required.	Records of manufacturers' certifications; records of installation and configuration according to the manufacturer's emission-related specifications; O&M plans; manufacturers' emission-related instructions; facility procedures; operation and maintenance records.

Table 7.7 Applicable Regulatory Requirements of A.A.C. R18-2-901.85 and 40 CFR 60 Subpart JJJJ (Emergency Engines) and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
40 CFR 60.4243(d) A.A.C. R18-2-901.85	Operate the emergency stationary SI ICE as follows to retain classification as an emergency engine: • Unlimited operation for use in emergency situations; • Maximum of 100 hr/year (yr) for maintenance checks and readiness testing (provided that the tests are recommended); and • Maximum of 50 hr/yr in non-emergency situations (counted towards the 100 hr/yr in 40 CFR 60.4243(d)(2)). The 50 hr/yr for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity unless all conditions in 40 CFR 60.4243(d)(3)(i) are met.	O&M plans; facility procedures; operation and maintenance records; records of hourly meter readings and engine use; records review.
40 CFR 60.4243(f) A.A.C. R18-2-901.85	For SI ICE that is less than or equal to 500 hp and either a non-certified engine or not operated and maintained according to the manufacturer's written emission-related instructions, perform initial performance testing as indicated in 40 CFR 60.4243, but do not conduct subsequent performance testing unless the stationary engine undergoes rebuild, major repair or maintenance. Engine rebuilding means to overhaul an engine or to otherwise perform extensive service on the engine (or on a portion of the engine or engine system). For the purpose of 40 CFR 60.4243(f), perform extensive service means to disassemble the engine (or portion of the engine or engine system), inspect and/or replace many of the parts, and reassemble the engine (or portion of the engine or engine system) in such a manner that significantly increases the service life of the resultant engine.	Facility procedure; records of O&M plans; O&M records; records of performance test results and reports (if necessary).

Table 7.7 Applicable Regulatory Requirements of A.A.C. R18-2-901.85 and 40 CFR 60 Subpart JJJJ (Emergency Engines) and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
40 CFR 60.4245(a) A.A.C. R18-2-901.85	Maintain records of the following: • All notifications submitted to comply with 40 CFR 60 Subpart JJJJ and all documentation supporting any notification; • Maintenance conducted on the engine; • If the stationary SI ICE is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR Parts 1048, 1054, and 1060, as applicable; and • If the stationary SI ICE is not a certified engine or is a certified engine operating in a non-certified manner and subject to 40 CFR 60.4243(a)(2), documentation that the engine meets the emission standards.	Facility procedures; records of notifications and supporting documentation, manufacturer's certifications, maintenance conducted on the engines, and performance test results and reports (if necessary).
40 CFR 60.4245(b) A.A.C. R18-2-901.85	For a stationary SI emergency engine greater than 25 hp and less than 130 hp manufactured on or after July 1, 2008, that does not meet the standards applicable to non-emergency engines, keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. Document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation.	Facility procedure; records of hourly meter readings, engine use, and what classified the operation as emergency; records review.
40 CFR 60.4245(d) A.A.C. R18-2-901.85	For stationary SI ICE that are subject to performance testing, submit a copy of each performance test as conducted in 40 CFR 60.4244 within 60 days after the test has been completed. Performance test reports using EPA Method 18, EPA Method 320, or ASTM D6348-03 (incorporated by reference—see 40 CFR 60.17) to measure VOC require reporting of all QA/QC data. For Method 18, report results from sections 8.4 and 11.1.1.4; for Method 320, report results from sections 8.6.2, 9.0, and 13.0; and for ASTM D6348-03 report results of all QA/QC procedures in Annexes 1-7.	Records of performance test reports (if necessary).

Table 7.7 Applicable Regulatory Requirements of A.A.C. R18-2-901.85 and 40 CFR 60 Subpart JJJJ (Emergency Engines) and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
40 CFR 60.4246 A.A.C. R18-2-901.85	Comply with the General Provisions as specified in Table 3 of 40 CFR 60 Subpart JJJJ.	Facility procedure; records review.

Table 7.8 Applicable Regulatory Requirements of A.A.C. R18-2-1101.B.81 and 40 CFR 63 Subpart ZZZZ (New Emergency Engines) and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
40 CFR 63.6590(c) A.A.C. R18-2-1101.B.81	For a new stationary reciprocating internal combustion engine (RICE) located at an area source, meet the requirements of 40 CFR 63 Subpart ZZZZ by meeting the requirements of 40 CFR 60 Subpart IIII for compression ignition engines and 40 CFR 60 Subpart JJJJ for spark ignition engines (as applicable). No further requirements apply for such engines under 40 CFR 63 Subpart ZZZZ.	See individual applicable requirements for engines subject to NSPS Subparts IIII and JJJJ.

8 INSIGNIFICANT AND TRIVIAL ACTIVITY INFORMATION

8.1 INSIGNIFICANT ACTIVITIES

The proposed insignificant activities associated with the proposed updated design of AOS1 are presented in Table 8.1. Pursuant to A.A.C. R18-2-304.F.8, insignificant activities shall be listed in a permit application, but the application need not provide emissions data, except as requested by ADEQ following submittal of the application. Therefore, any emissions from the equipment and activities presented in Table 8.1 are not considered in this application.

8.2 TRIVIAL ACTIVITIES

The proposed trivial activities associated with the proposed updated design of AOS1 are presented in Table 8.2. Although trivial activities can be omitted from permit applications, FMBI is identifying them in this application for ADEQ's concurrence and future reference purposes. Table 8.2 is not intended to be an exhaustive list of all the equipment and activities associated with the proposed updated design of AOS1 that meet the trivial activities classification.

Table 8.1 Proposed Insignificant Activities

Proposed Insignificant Activity	Insignificant Activity Reference
Diesel fuels and fuel oil in storage tanks with capacity of 40,000 gallons or less	A.A.C. R18-2-101.68.a.i
Lubricating oil, transformer oil, and used oil tanks	A.A.C. R18-2-101.68.a.i
Gasoline storage tanks with capacity of 10,000 gallons or less	A.A.C. R18-2-101.68.a.ii
Storage and piping of natural gas, butane, propane, or liquified petroleum gas	A.A.C. R18-2-101.68.a.iii
Housekeeping activities and associated products used for cleaning purposes, including collecting spilled and accumulated materials	A.A.C. R18-2-101.68.d.i
Noncommercial (in-house) experimental, analytical laboratory equipment which is bench scale in nature, including quality control/quality assurance laboratories and research and development laboratories	A.A.C. R18-2-101.68.e.i

Table 8.2 Proposed Trivial Activities

Proposed Insignificant Activity	Insignificant Activity Reference
Transfers from HPGR Product Bin to HPGR Product Recycle Feeder, HPGR Product Feeder 1, and HPGR Product Feeder 2	A.A.C. R18-2-101.146
Ball Mill Ball Delivery System	A.A.C. R18-2-101.146
Cyclones	A.A.C. R18-2-101.146
Filter Presses	A.A.C. R18-2-101.146
Nitrogen System	A.A.C. R18-2-101.146
Thickeners and Clarifiers	A.A.C. R18-2-101.146
Discharge of collected dust back to the process (minimized by wet suppression)	A.A.C. R18-2-101.146
Material handling and processing of clean, washed ore	A.A.C. R18-2-101.146
Material handling and processing of wet, saturated ore	A.A.C. R18-2-101.146
Addition of the molybdenum collector to AG Mills 1/2 and Ball Mills 1/2	A.A.C. R18-2-101.146
Solid reagents transferred directly into liquid tanks	A.A.C. R18-2-101.146
Liquid chemical reagent systems	A.A.C. R18-2-101.146
Manual cleanup around conveyor belts and chutes	A.A.C. R18-2-101.146
Ammonium nitrate emulsion bins	A.A.C. R18-2-101.146
Electric heaters	A.A.C. R18-2-101.146
Combustion emissions from propulsion of mobile sources	A.A.C. R18-2-101.146.a.i
Process water filtration systems and demineralizers	A.A.C. R18-2-101.146.b.xv
Electric Motors	A.A.C. R18-2-101.146.b.xxiv
Plant and building maintenance and upkeep activities, including grounds-keeping, general repairs, cleaning, painting, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots	A.A.C. R18-2-101.146.c.i

Table 8.2 Proposed Trivial Activities

Proposed Insignificant Activity	Insignificant Activity Reference
Repair or maintenance shop activities	A.A.C. R18-2-101.146.c.ii
Janitorial services and consumer use of janitorial products	A.A.C. R18-2-101.146.c.iii
Routine calibration and maintenance of laboratory equipment or other analytical instruments	A.A.C. R18-2-101.146.c.v
Air conditioning and electric heaters	A.A.C. R18-2-101.146.d.i
General office activities, such as paper shredding, copying, photographic activities, pencil sharpening and blueprinting, but not including incineration	A.A.C. R18-2-101.146.d.v
Use of consumer products, including hazardous substances where the product is used at a source in the same manner as normal consumer use	A.A.C. R18-2-101.146.d.ix
Storage tanks, vessels, and containers holding or storing liquid substances that will not emit any VOC or HAP	A.A.C. R18-2-101.146.e.i
Sewage Treatment Plants (at the primary crusher and concentrator/tailings areas)	A.A.C. R18-2-101.146.e.iv
Storage cabinets for flammable products	A.A.C. R18-2-101.146.e.v
Individual sampling points, analyzers, and process instrumentation, whose operation may result in emissions but that are not regulated as emission units	A.A.C. R18-2-101.146.f.vii

9 COMPLIANCE SCHEDULE

At the time of this application’s submittal, FMBI is in compliance with all applicable requirements and therefore a compliance schedule is not required.

10 MINOR NSR APPLICABILITY DETERMINATION

10.1 GENERAL INFORMATION

According to A.A.C. R18-2-334.A.1, minor New Source Review (NSR) applies to:

- Construction of any new Class I or Class II source, including the construction of any source requiring a Class II permit under A.A.C. R18-2-302.01.C.4; or
- Any minor NSR modification to a Class I or Class II source.

A minor NSR modification is:

1. Any physical change in or change in the method of operation of an emission unit or a stationary source that either:
   a. Increases the PTE of a regulated minor NSR pollutant by an amount greater than the permitting exemption thresholds; or
   b. Results in emissions of a regulated minor NSR pollutant not previously emitted by such emission unit or stationary source in an amount greater than the permitting exemption thresholds.
2. Construction of one or more new emissions units that have a PTE of regulated minor NSR pollutants at an amount greater than the permitting exemption threshold.

The notice of final rulemaking promulgating the minor NSR program on page 1549 of Volume 18, Issue 27 of the Arizona Administrative Register states, "the use of emissions decreases to reduce the net emissions increase from a modification in order to avoid minor NSR applicability is not allowed, except in the case of the replacement of an existing emission unit with a new one." Consequently, FMBI understands that ADEQ's interpretation in determining applicability under these rules is that only the difference in PTE is counted when replacing an existing emission unit.

10.2 APPLICABILITY DETERMINATION

As described in Section 2.1, FMBI proposes to update the design of AOS1. This includes some increases and some decreases in the PTE of emission units associated with AOS1. Therefore, FMBI completed a two-step analysis. The first step evaluates if the changes in PTE from the entire scope of AOS1 are greater than the permitting exemption thresholds. The second step considers each emission unit in the proposed updated design of AOS1 as a replacement for the corresponding emission unit in the design of AOS1 in Class II Air Quality Permit #77414. Then, only the emission unit pairs with increases in PTE are totaled with the PTE of new emission units and compared to the permitting exemption thresholds.

The changes in PTE due to the updates to the design of AOS1 are presented in Tables 10.1 and 10.2 on a comparable emission unit basis. As shown in Tables 10.1 and 10.2, both the Step 1 and Step 2 analyses conclude that the total increases in PTE of regulated minor NSR pollutants are below the permitting exemption thresholds. Consequently, the updates to the design of AOS1 will not be subject to minor NSR as a minor NSR modification for any regulated minor NSR pollutant.

10.3 CALCULATION METHODOLOGY

The methodology used to calculate the changes in PTE as shown in Tables 10.1 and 10.2 is presented in Appendix F (equivalent to the calculations presented in Section 5.1). The Excel spreadsheets used to make the calculations are reproduced in Appendix G. An electronic copy of the emission calculations will be provided via email with the SPR application.

Table 10.1 Change in PTE and Comparison to the Permitting Exemption Thresholds - Particulate Emissions

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process Number	Process/Emission Unit Description - Proposed Updated Design of AOS1	Non-Fugitive or Fugitive Classification	Change in PTE (tpy)		
					PM_{10}	$PM_{2.5}$	Pb
Mining Operations (AOS1)							
026-3 (AOS1)	Drilling (AOS1)	026-3 (AOS1)	Drilling (AOS1)	Fugitive	--	--	1.94E-04
026-2 (AOS1)	Blasting (AOS1)	026-2 (AOS1)	Blasting (AOS1)	Fugitive	--	--	4.80E-03
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	Fugitive	--	--	2.01E-02
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	Fugitive	--	--	6.69E-03
023-3 (AOS1)	Other Vehicle Travel (AOS1)	023-3 (AOS1)	Other Vehicle Travel (AOS1)	Fugitive	--	--	6.08E-02
023-1 (AOS1)	Dozer Operation (AOS1)	023-1 (AOS1)	Dozer Operation (AOS1)	Fugitive	--	--	1.09E-03
023-2 (AOS1)	Road Grader Operation (AOS1)	023-2 (AOS1)	Road Grader Operation (AOS1)	Fugitive	--	--	3.86E-04
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Fugitive	--	--	6.86E-04
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Fugitive	--	--	8.93E-05
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Fugitive	--	--	-1.68E-06
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Fugitive	--	--	-1.66E-04
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Fugitive	--	--	7.65E-04

Table 10.1 Change in PTE and Comparison to the Permitting Exemption Thresholds - Particulate Emissions

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process Number	Process/Emission Unit Description - Proposed Updated Design of AOS1	Non-Fugitive or Fugitive Classification	Change in PTE (tpy)		
					PM_{10}	$PM_{2.5}$	Pb
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)							
001-16 (AOS1)	Dust Collector AE-001 (AOS1)	001-2 (AOS1)	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	Non-Fugitive	-1.50	-1.88	-1.85E-05
001-17 (AOS1)	Dust Collector AE-014 (AOS1)	001-8 (AOS1)	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	Non-Fugitive	-0.71	-1.10	-8.82E-06
001-18 (AOS1)	Dust Collector AE-015 (AOS1)	001-9 (AOS1)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	Non-Fugitive	-0.71	-1.10	-8.82E-06
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Fugitive	--	--	1.57E-04
--	--	001-10 (AOS1)	Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	Fugitive	--	--	1.03E-04
001-19 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	001-3 (AOS1)	Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Fugitive	--	--	-2.23E-05
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	Fugitive	--	--	-6.01E-06
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)							
001-12 (AOS1)	Dust Collector AE-002 (AOS1)	001-12 (AOS1)	PC1 Dust Collector 1 (AOS1)	Non-Fugitive	0.08	0.08	9.97E-07
001-13 (AOS1)	Dust Collector AE-003 (AOS1)	001-13 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	Non-Fugitive	-0.02	-0.02	-2.74E-07
001-14 (AOS1)	Dust Collector AE-016 (AOS1)	001-14 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	Non-Fugitive	0.27	0.27	3.34E-06
001-15 (AOS1)	Dust Collector AE-017 (AOS1)	001-15 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	Non-Fugitive	0.27	0.27	3.34E-06

Table 10.1 Change in PTE and Comparison to the Permitting Exemption Thresholds - Particulate Emissions

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process Number	Process/Emission Unit Description - Proposed Updated Design of AOS1	Non-Fugitive or Fugitive Classification	Change in PTE (tpy)		
					PM_{10}	$PM_{2.5}$	Pb
001-20 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6	001-20 (AOS1)	PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	Fugitive	--	--	4.12E-04
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	Fugitive	--	--	6.01E-06
Sycamore Milling Operations (AOS1)							
002-7 (AOS1)	Dust Collector AE-008 (AOS1)	002-7 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	Non-Fugitive	-2.98	-2.98	-3.68E-05
002-8 (AOS1)	Dust Collector AE-009 (AOS1)	002-8 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	Non-Fugitive	0.73	0.73	8.99E-06
002-9 (AOS1)	Dust Collector AE-010 (AOS1)	002-9 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	Non-Fugitive	0.03	0.03	4.17E-07
002-10 (AOS1)	Dust Collector AE-011 (AOS1)	002-10 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	Non-Fugitive	1.16	1.16	1.43E-05
002-11 (AOS1)	Dust Collector AE-007 (AOS1)	002-11 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	Non-Fugitive	0.99	0.99	1.22E-05
002-12 (AOS1)	Dust Collector AE-012 (AOS1)	002-12 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	Non-Fugitive	-2.36	-2.36	-2.91E-05
002-13 (AOS1)	Dust Collector AE-013 (AOS1)	002-13 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	Non-Fugitive	-0.89	-0.89	-1.10E-05
Sycamore Concentrate Handling Operations (AOS1)							
--	--	006-11 (AOS1)	Copper Concentrate Filters 1/2 (AOS1) to Copper Concentrate Filter Drop Storage (AOS1)	Fugitive	--	--	4.31E-06

Table 10.1 Change in PTE and Comparison to the Permitting Exemption Thresholds - Particulate Emissions

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process Number	Process/Emission Unit Description - Proposed Updated Design of AOS1	Non-Fugitive or Fugitive Classification	Change in PTE (tpy)		
					PM_{10}	$PM_{2.5}$	Pb
--	--	006-12 (AOS1)	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader	Fugitive	--	--	4.31E-06
--	--	006-13 (AOS1)	Copper Concentrate Loadout Storage (AOS1) to Trucks via Front-End Loader	Fugitive	--	--	4.31E-06
--	--	027-8 (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1)	Fugitive	--	--	4.93E-04
--	--	052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	Non-Fugitive	0.28	0.28	4.23E-05
--	--	052-3 (AOS1)	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1)	Non-Fugitive	0.009	0.001	1.41E-06
--	--	052-4 (AOS1)	Dried Molybdenum Concentrate Storage Bin (AOS1) to Molybdenum Concentrate Bagging System (AOS1)	Fugitive	--	--	1.41E-06
Sycamore Lime and Other Regent Operations (AOS1)							
--	--	007-6 (AOS1)	Transfer of Lime to the Sycamore Lime Silo (AOS1)	Non-Fugitive	0.11	0.02	--
--	--	007-7 (AOS1)	Sycamore Lime Slaker (AOS1)	Non-Fugitive	0.06	0.06	--
--	--	055-1 (AOS1)	Transfer of Flocculant to Tailings Flocculant Bag Breaker Bin (AOS1)	Non-Fugitive	0.12	0.02	--

Table 10.1 Change in PTE and Comparison to the Permitting Exemption Thresholds - Particulate Emissions

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process Number	Process/Emission Unit Description - Proposed Updated Design of AOS1	Non-Fugitive or Fugitive Classification	Change in PTE (tpy)		
					PM_{10}	$PM_{2.5}$	Pb
--	--	055-2 (AOS1)	Transfer of Flocculant to Concentrate Flocculant Bag Breaker Bin (AOS1)	Non-Fugitive	0.008	0.001	--
Sycamore Prill Handling Operations (AOS1)							
--	--	050-7 (AOS1)	Delivery of Ammonium Nitrate Prill to Prill Bin 6 (AOS1)	Non-Fugitive	0.09	0.01	--
--	--	050-8 (AOS1)	Prill Bin 6 to ANFO Trucks for Transfer to Drill Holes	Non-Fugitive	0.09	0.01	--
Sycamore Emergency ICE (AOS1)							
--	--	049-59 (AOS1)	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	Non-Fugitive	0.05	0.05	--
--	--	049-60 (AOS1)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	Non-Fugitive	0.06	0.06	--
--	--	049-61 (AOS1)	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	Non-Fugitive	0.004	0.004	--
--	--	049-62 (AOS1)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	Non-Fugitive	0.004	0.004	--
Step 1: Total Change in PTE for the Entire Scope of AOS1 (tpy)					**-4.77**	**-6.29**	**0.10**
Step 2: Sum of the Increases in PTE for Replacement Emission Units (tpy)					**4.41**	**4.05**	**0.10**
Permitting Exemption Thresholds for Minor NSR Modification Applicability Purposes					7.5	5	0.30

Table 10.2 Change in PTE and Comparison to the Permitting Exemption Thresholds - Gaseous Emissions

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process Number	Process/Emission Unit Description - Proposed Updated Design of AOS1	Non-Fugitive or Fugitive Classification	Change in PTE (tpy)			
					CO	NO_X	SO_2	VOC
Sycamore Concentrate Handling Operations (AOS1)								
--	--	052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	Non-Fugitive	--	--	--	8.02
Sycamore Lime and Other Regent Operations (AOS1)								
--	--	053-2 (AOS1)	Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	Non-Fugitive	--	--	--	1.31
Sycamore Emergency ICE (AOS1)T								
--	--	049-59 (AOS1)	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	Non-Fugitive	0.88	0.93	0.002	0.07
--	--	049-60 (AOS1)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	Non-Fugitive	1.10	1.88	0.002	0.13
--	--	049-61 (AOS1)	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	Non-Fugitive	4.19	0.29	0.003	0.06
--	--	049-62 (AOS1)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	Non-Fugitive	4.19	0.29	0.003	0.06
Step 1: Total Change in PTE for the Entire Scope of AOS1 (tpy)					**10.35**	**3.38**	**0.009**	**9.65**
Step 2: Sum of the Increases in PTE for Replacement Emission Units (tpy)					**10.35**	**3.38**	**0.009**	**9.65**
Permitting Exemption Thresholds for Minor NSR Modification Applicability Purposes					50	20	20	20

11 IDENTIFICATION OF CONFIDENTIAL INFORMATION

FMBI does not claim confidentiality of any of the information presented in this application. All information can be made available to the public.

APPENDIX A STANDARD CLASS II PERMIT APPLICATION FORM

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Air Quality Division

1110 West Washington • Phoenix, AZ 85007 • Phone: (602) 771-2338

STANDARD CLASS II PERMIT APPLICATION FORM

(As required by A.R.S. § 49-426, and Chapter 2, Article 3, Arizona Administrative Code)

1. Permit to be issued to (Business license name of organization that is to receive permit): Freeport-McMoRan Bagdad Inc.

2. Mailing Address: P.O. Box 245
   City: Bagdad State: Arizona ZIP: 86321

3. Name (or names) of Responsible Official: Jeff Monteith
   Phone: 928-633-3446 Fax: N/A Email: jmonteit@fmi.com

4. Facility Manager/Contact Person and Title: Marcus Middleton, Manager Environmental Affairs
   Phone: 928-633-3263 Fax: N/A Email: mmiddlet@fmi.com

5. Facility Name: Freeport-McMoRan Bagdad Inc.
   Facility Location/Address (Current/Proposed): Terminus of Highway 96
   City: Bagdad County: Yavapai ZIP: 86321
   Indian Reservation (if applicable, which one): N/A
   Latitude/Longitude, Elevation: 34° 35' 23" N. Latitude/113° 14' 10" W. Longitude, 3,800 feet

6. General Nature of Business: Mining and processing of copper ore.

7. Type of Organization:
   ■ Corporation ☐ Individual Owner ☐ Partnership ☐ Government Entity ☐ LLC
   ☐ Other

8. Permit Application Basis: ☐ New Source ■ Revision ☐ Renewal of Existing Permit
   For renewal or modification, include existing permit number (and exp. date): #77414, 11/18/2024
   Date of Commencement of Construction or Modification: After issuance of the significant permit revision.
   Primary Standard Industrial Classification Code: 1021

9. I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by ADEQ as public record. I also attest that I am in compliance with the applicable requirements of the Permit and will continue to comply with such requirements and any future requirements that become effective during the life of the Permit. I will present a certification of compliance to ADEQ no less than annually and more frequently if specified by ADEQ. I further state that I will assume responsibility for the construction, modification, or operation of the source in accordance with Arizona Administrative Code, Title 18, Chapter 2 and any permit issued thereof.

   Signature of Responsible Official: JMonteith

   Printed Name of Signer/Official Title: Jeff Monteith, General Manager, Freeport-McMoRan Bagdad Inc.

   Date: 7/18/23 Telephone Number: 928-633-3446

APPENDIX B EQUIPMENT LIST

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
AOS1: Two Concentrator Operations						
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)						
Rock Breaker (AOS1)	N/A	NA	NA	NA	NA	RB
Primary Crusher 2 (AOS1)	7,000 tph	Metso	60x89, MK-III	TBD	2019	PC2
Dust Collector C51 (AOS1)	15,000 acfm	FARR	GS 36/30	NA	2013	C51
PC2 Surge Bin (AOS1)	640 tons	Designed by M3	NA	NA	2005	PC2SB
PC2 Apron Feeder (AOS1)	6,700 tph	Metso	84"	NA	2005	PC2AF
PC2 Dribble Conveyor (AOS1)	N/A	Turner Engineering	60"	NA	2005	PC2DC
Overland Conveyor 3A (AOS1)	7,600 tph	NA	60"	NA	2005	OC3A
Overland Conveyor 3 (AOS1)	7,600 tph	NA	54"	NA	1975	OC3
Overland Conveyor 4 (AOS1)	7,600 tph	NA	54"	NA	1975	OC4
Radial Stacker 5 (AOS1)	7,600 tph	NA	60"	NA	1975	RST5
Free-Standing Stacker 6 (AOS1)	7,600 tph	NA	60"	NA	1990	FSS6

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)						
PC1 Rock Breaker (AOS1)	N/A	TBD	TBD	TBD	TBD	2110-RKB-0021
Primary Crusher 1 (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	2110-CRG-0021
PC1 Dust Collector 1 (AOS1)	14,500 acfm	FARR	TBD	TBD	TBD	2140-DCD-0021
PC1 Surge Pocket (AOS1)	900 tons	TBD	TBD	TBD	TBD	2110-BIN-0021
PC1 Discharge Apron Feeder (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	2110-FDA-0021
PC1 Discharge Conveyor (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	2140-CVB-0021
PC1 Cross Country Conveyor 1 (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	2140-CVB-0022
PC1 CCC1 Dust Collector 2 (AOS1)	16,700 acfm	FARR	TBD	TBD	TBD	2140-DCD-0022
PC1 Cross Country Conveyor 2 (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	2140-CVB-0023
PC1 CCC2 Dust Collector 3 (AOS1)	16,700 acfm	FARR	TBD	TBD	TBD	2140-DCD-0023
PC1 Cross Country Conveyor 3 (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	2140-CVB-0024
PC1 CCC3 Dust Collector 4 (AOS1)	16,700 acfm	FARR	TBD	TBD	TBD	2140-DCD-0024

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
Sycamore Milling Operations (AOS1)						
Coarse Ore Reclaim Feeder 1 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	2210-FDA-0101
Coarse Ore Reclaim Feeder 2 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	2210-FDA-0102
Coarse Ore Reclaim Feeder 3 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	2210-FDA-0103
Coarse Ore Reclaim Conveyor 1 (AOS1)	4,954 tph	TBD	TBD	TBD	TBD	2210-CVB-0101
Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	22,000 acfm	FARR	TBD	TBD	TBD	2210-DCD-0101
Coarse Ore Reclaim Feeder 4 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	2210-FDA-0201
Coarse Ore Reclaim Feeder 5 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	2210-FDA-0202
Coarse Ore Reclaim Feeder 6 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	2210-FDA-0203
Coarse Ore Reclaim Conveyor 2 (AOS1)	4,954 tph	TBD	TBD	TBD	TBD	2210-CVB-0201
Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	22,000 acfm	FARR	TBD	TBD	TBD	2210-DCD-0201
AG Mill 1 (AOS1)	4,954 tph	TBD	TBD	TBD	TBD	2310-MLA-0101
AG Mill 1 Discharge Screen 1 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	2310-SCN-0101

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
AG Mill 1 Discharge Screen 2 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	2310-SCN-0102
AG Mill Rotatable Discharge Screen 1 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	2310-SCN-0103
Ball Mill 1 (AOS1)	4,376 tph	TBD	TBD	TBD	TBD	2340-MLB-0111
AG Mill 2 (AOS1)	4,954 tph	TBD	TBD	TBD	TBD	2310-MLA-0201
AG Mill 2 Discharge Screen 1 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	2310-SCN-0201
AG Mill 2 Discharge Screen 2 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	2310-SCN-0202
AG Mill Rotatable Discharge Screen 2 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	2310-SCN-0203
Ball Mill 2 (AOS1)	4,376 tph	TBD	TBD	TBD	TBD	2340-MLB-0211
Pebble Conveyor (AOS1)	4,080 tph	TBD	TBD	TBD	TBD	2330-CVB-0121
HPGR Feed Bin Feed Conveyor (AOS1)	4,080 tph	TBD	TBD	TBD	TBD	2330-CVB-0122
HPGR Feed Diverter (AOS1)	N/A	TBD	TBD	TBD	TBD	2330-DVT-0123
HPGR Feed Bin (AOS1)	11,400 ft3	TBD	TBD	TBD	TBD	2330-BIN-0130
HPGR Belt Feeder (AOS1)	4,080 tph	TBD	TBD	TBD	TBD	2330-FDB-0132

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
HPGR Feed Conveyor (AOS1)	5,626 tph	TBD	TBD	TBD	TBD	2330-CVB-0134
High Pressure Grinding Roll (AOS1)	5,626 tph	TBD	TBD	TBD	TBD	2330-CRH-0140
HPGR Discharge Dust Collector 7 (AOS1)	23,000 acfm	FARR	TBD	TBD	TBD	2330-DCD-0141
HPGR Discharge Conveyor 1 (AOS1)	5,626 tph	TBD	TBD	TBD	TBD	2330-CVB-0141
HPGR Discharge Conveyor 2 (AOS1)	5,626 tph	TBD	TBD	TBD	TBD	2330-CVB-0142
HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	27,000 acfm	FARR	TBD	TBD	TBD	2330-DCD-0142
HPGR Product Bin (AOS1)	20,700 ft3	TBD	TBD	TBD	TBD	2330-BIN-0150
HPGR Product Bin Dust Collector 9 (AOS1)	25,000 acfm	FARR	TBD	TBD	TBD	2330-DCD-0150
HPGR Product Recycle Feeder (AOS1)	1,546 tph	TBD	TBD	TBD	TBD	2330-FDB-0152
HPGR Product Feeder 1 (AOS1)	2,040 tph	TBD	TBD	TBD	TBD	2330-FDB-0163
HPGR Product Feeder 2 (AOS1)	2,040 tph	TBD	TBD	TBD	TBD	2330-FDB-0263
HPGR Product Return Conveyor 1 (AOS1)	2,040 tph	TBD	TBD	TBD	TBD	2330-CVB-0163

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
HPGR Product Transfer Dust Collector 10 (AOS1)	10,000 acfm	FARR	TBD	TBD	TBD	2330-DCD-0163
HPGR Product Return Conveyor 2 (AOS1)	2,040 tph	TBD	TBD	TBD	TBD	2330-CVB-0263
HPGR Product Transfer Dust Collector 11 (AOS1)	10,000 acfm	FARR	TBD	TBD	TBD	2330-DCD-0263
Sycamore Bulk and Molybdenum Flotation Operations (AOS1)						
Sycamore Bulk Flotation Equipment (AOS1)	59.1 tph total conc.	TBD	TBD	TBD	TBD	S-FLO-B
Sycamore Regrind Mill 1 (AOS1)	250 tph	TBD	TBD	TBD	TBD	2420-MLV-0303
Sycamore Regrind Mill 2 (AOS1)	250 tph	TBD	TBD	TBD	TBD	2420-MLV-0304
Sycamore Molybdenum Flotation Equipment (AOS1)	59.1 tph total conc.	NA	NA	NA	varies	S-FLO-M
Sycamore Concentrate Handling Operations (AOS1)						
Copper Filter Feed Tank Trash Screen (AOS1)	57 tph	TBD	TBD	TBD	TBD	2630-SCN-0410
Molybdenum Thickener Trash Screen (AOS1)	N/A	TBD	TBD	TBD	TBD	2520-SCN-0517
Molybdenum Concentrate Filter Discharge Hopper 1 (AOS1)	N/A	TBD	TBD	TBD	TBD	2520-HPR-0576

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
Molybdenum Concentrate Filter Discharge Hopper 2 (AOS1)	N/A	TBD	TBD	TBD	TBD	2520-HPR-0577
Molybdenum Concentrate Dryer Screw Feeder (AOS1)	2.1 tph	TBD	TBD	TBD	TBD	2520-CVS-0576
Molybdenum Concentrate Dryer (AOS1)	2.1 tph	Holoflite	TBD	TBD	TBD	2520-DRY-0576
Molybdenum Dryer Wet Scrubber System (AOS1)	337 acfm	TBD	TBD	TBD	TBD	2520-SCU-0576
Dried Molybdenum Concentrate Storage Bin (AOS1)	2.6 tons	TBD	TBD	TBD	TBD	2520-BIN-0576
Molybdenum Concentrate Bagging System (AOS1)	2.1 tph	TBD	TBD	TBD	TBD	2520-SYS-0576
Sycamore Lime and Other Regent Operations (AOS1)						
Sycamore Lime Silo (AOS1)	617 tons	TBD	TBD	TBD	TBD	2360-SLO-0140
Sycamore Lime Silo Baghouse (AOS1)	590 ft3	TBD	TBD	TBD	TBD	2360-BGH-0141
Sycamore Lime Screw Feeder (AOS1)	19.5 tph	TBD	TBD	TBD	TBD	2360-FDR-0140
Sycamore Lime Slaker (AOS1)	11.36 tph	TBD	TBD	TBD	TBD	2360-MLV-0140
Sycamore Lime System Scrubber (AOS1)	4,400 scfm	TBD	TBD	TBD	TBD	2360-SCU-0140

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
Tailings Flocculant Bag Breaker Bin (AOS1)	2.0 tons	TBD	TBD	TBD	TBD	2720-BIN-0720
Tailings Flocculant Screw Feeder (AOS1)	0.83 tph	TBD	TBD	TBD	TBD	2720-FDR-0720
Concentrate Flocculant Bag Breaker Bin (AOS1)	1.0 tons	TBD	TBD	TBD	TBD	2510-BIN-0580
Concentrate Flocculant Screw Feeder (AOS1)	0.06 tph	TBD	TBD	TBD	TBD	2510-FDR-0580
Xanthate Mix Tank (AOS1)	1,575 ft3	TBD	TBD	TBD	TBD	2440-TNK-0150
Xanthate Holding Tank (AOS1)	2,040 ft3	TBD	TBD	TBD	TBD	2440-TNK-0152
Test Reagent Mix Tank (AOS1)	1,575 ft3	TBD	TBD	TBD	TBD	2440-TNK-0160
Test Reagent Holding Tank (AOS1)	2,040 ft3	TBD	TBD	TBD	TBD	2440-TNK-0162
NaHS Storage Tank (AOS1)	7,540 ft3	TBD	TBD	TBD	TBD	2520-TNK-0591
NaHS Distribution Tank (AOS1)	700 ft3	TBD	TBD	TBD	TBD	2520-TNK-0592
Sycamore NaHS System Scrubber (AOS1)	735 acfm	TBD	TBD	TBD	TBD	2520-SCU-0591
Sycamore Prill Handling Operations (AOS1)						
Prill Bin 6 (AOS1)	100 tons	NA	NA	NA	TBD	PB6

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
Prill Bin Vent 6 (no filter) (AOS1)	NA	NA	NA	NA	TBD	PBV06
Sycamore Emergency ICE (AOS1)						
Sycamore Diesel Emergency Generator 1 (AOS1)	609 hp engine	Caterpillar	C13	TBD	TBD	2440-GEN-0101
Sycamore Diesel Emergency Generator 2 (AOS1)	762 hp engine	Caterpillar	C15	TBD	TBD	2500-GEN-0501
Sycamore Propane Emergency Generator 1 (AOS1)	84.70 hp engine	Cummins	QSJ5.9G-G1	TBD	2023	3650-GEN-0801
Sycamore Propane Emergency Generator 2 (AOS1)	84.70 hp engine	Cummins	QSJ5.9G-G1	TBD	2023	3650-GEN-0802

* This table includes the equipment subject to permitting and associated with the updated design of AOS1 that is proposed to be added to Class II Air Quality Permit #77414.

APPENDIX C EMISSION SOURCE FORM

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
Mining Operations (AOS1)							
026-3 (AOS1)	Drilling (AOS1) / Drilling (AOS1)	PM	260.00	58.50	637.31	69.04	10.54
		PM_{10}	156.00	35.10	382.39	41.43	6.33
		$PM_{2.5}$	28.89	6.50	70.81	7.67	1.17
		Lead	3.30E-03	7.44E-04	8.65E-03	9.37E-04	1.94E-04
		Total HAPs [b]	5.33E-02	1.20E-02	1.37E-01	1.48E-02	2.86E-03
026-2 (AOS1)	Blasting (AOS1) / Blasting (AOS1)	PM	1,252.20	119.12	4,919.42	486.50	367.39
		PM_{10}	651.14	61.94	2,558.10	252.98	191.04
		$PM_{2.5}$	37.57	3.57	147.58	14.60	11.02
		CO	4,064.40	914.49	15,319.65	1,659.63	745.14
		NO_X	180.00	40.50	678.46	73.50	33.00
		SO_2	1.23	0.28	4.64	0.50	0.23
		CO_2	38,066.47	8,564.96	143,484.81	15,544.19	6,979.23
		CH_4	1.49	0.33	5.60	0.61	0.27
		N_2O	0.29	0.07	1.11	0.12	0.05
		CO_2e	38,191.09	8,593.00	143,954.54	15,595.07	7,002.08
		Lead	1.59E-02	1.79E-03	6.58E-02	6.59E-03	4.80E-03
		Total HAPs [b]	3.44E-01	4.86E-02	1.38E+00	1.40E-01	9.19E-02

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1) / Haul Truck Travel Inside the Pit (AOS1)	PM	1,014.96	2,492.53	4,702.74	5,559.65	3,067.13
		PM_{10}	278.95	685.04	1,292.50	1,528.01	842.97
		$PM_{2.5}$	27.90	68.50	129.25	152.80	84.30
		Lead	5.91E-03	1.45E-02	2.93E-02	3.46E-02	2.01E-02
		Total HAPs [b]	9.53E-02	2.34E-01	4.63E-01	5.48E-01	3.14E-01
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1) / Haul Truck Travel Outside the Pit (AOS1)	PM	338.32	830.84	1,567.58	1,853.22	1,022.38
		PM_{10}	92.98	228.35	430.83	509.34	280.99
		$PM_{2.5}$	9.30	22.83	43.08	50.93	28.10
		Lead	1.97E-03	4.84E-03	9.75E-03	1.15E-02	6.69E-03
		Total HAPs [b]	3.18E-02	7.80E-02	1.54E-01	1.83E-01	1.05E-01
023-3 (AOS1)	Other Vehicle Travel (AOS1) / Other Vehicle Travel (AOS1)	PM	1,044.33	1,338.92	4,595.56	11,026.21	9,687.29
		PM_{10}	287.02	367.99	1,263.04	3,030.43	2,662.45
		$PM_{2.5}$	28.70	36.80	126.30	303.04	266.24
		Lead	6.08E-03	7.80E-03	2.86E-02	6.86E-02	6.08E-02
		Total HAPs [b]	9.80E-02	1.26E-01	4.53E-01	1.09E+00	9.61E-01

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
023-1 (AOS1)	Dozer Operation (AOS1) / Dozer Operation (AOS1)	PM	141.54	345.20	194.61	589.25	244.04
		PM_{10}	25.69	62.66	35.33	106.96	44.30
		$PM_{2.5}$	14.86	36.25	20.43	61.87	25.62
		Lead	5.44E-04	1.33E-03	7.99E-04	2.42E-03	1.09E-03
		Total HAPs [b]	8.78E-03	2.14E-02	1.27E-02	3.83E-02	1.69E-02
023-2 (AOS1)	Road Grader Operation (AOS1) / Road Grader Operation (AOS1)	PM	10.58	20.91	16.93	74.16	53.24
		PM_{10}	3.30	6.53	5.29	23.16	16.63
		$PM_{2.5}$	0.33	0.65	0.52	2.30	1.65
		Lead	7.00E-05	1.38E-04	1.20E-04	5.24E-04	3.86E-04
		Total HAPs [b]	1.13E-03	2.23E-03	1.90E-03	8.30E-03	6.07E-03
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1) / Loading Mined Material into Haul Trucks (AOS1)	PM	80.51	290.62	103.82	336.16	45.54
		PM_{10}	38.08	137.46	49.10	158.99	21.54
		$PM_{2.5}$	5.77	20.81	7.44	24.08	3.26
		Lead	8.07E-04	2.91E-03	1.11E-03	3.60E-03	6.86E-04
		Total HAPs [b]	1.30E-02	4.70E-02	1.76E-02	5.70E-02	1.00E-02

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1) / Unloading Ore to Primary Crusher 1 (AOS1)	PM	16.97	43.33	21.11	58.61	15.28
		PM_{10}	8.03	20.50	9.98	27.72	7.23
		$PM_{2.5}$	1.22	3.10	1.51	4.20	1.09
		Lead	9.04E-05	2.53E-04	1.23E-04	3.42E-04	8.93E-05
		Total HAPs [b]	2.22E-03	6.21E-03	3.03E-03	8.40E-03	2.19E-03
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1) / Unloading Ore to Primary Crusher 2 (AOS1)	PM	16.97	43.33	18.47	43.05	-0.29
		PM_{10}	8.03	20.50	8.73	20.36	-0.14
		$PM_{2.5}$	1.22	3.10	1.32	3.08	-0.02
		Lead	1.08E-04	2.53E-04	1.08E-04	2.51E-04	-1.68E-06
		Total HAPs [b]	2.65E-03	6.21E-03	2.65E-03	6.17E-03	-4.12E-05
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1) / Unloading Ore to Leaching Areas (AOS1)	PM	9.06	39.67	3.34	12.18	-27.50
		PM_{10}	4.28	18.76	1.58	5.76	-13.01
		$PM_{2.5}$	0.65	2.84	0.24	0.87	-1.97
		Lead	5.48E-05	2.40E-04	2.02E-05	7.37E-05	-1.66E-04
		Total HAPs [b]	9.41E-04	4.12E-03	3.47E-04	1.27E-03	-2.86E-03

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1) / Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	PM	37.51	164.28	60.91	222.32	58.04
		PM_{10}	17.74	77.70	28.81	105.15	27.45
		$PM_{2.5}$	2.69	11.77	4.36	15.92	4.16
		Lead	4.94E-04	2.17E-03	8.03E-04	2.93E-03	7.65E-04
		Total HAPs [b]	6.94E-03	3.04E-02	1.13E-02	4.12E-02	1.07E-02
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)							
001-5 (AOS1)	Dust Collector C51 (AOS1) / Dust Collector C51 (AOS1)	PM	1.74	7.60	1.74	7.60	0
		PM_{10}	1.74	7.60	1.74	7.60	0
		$PM_{2.5}$	1.74	7.60	1.74	7.60	0
		Lead	2.14E-05	9.39E-05	2.14E-05	9.39E-05	0.00E+00
		Total HAPs [b]	5.26E-04	2.30E-03	5.26E-04	2.30E-03	0.00E+00
001-16 (AOS1)	Dust Collector AE-001 (AOS1) / Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	PM	0.45	1.95	0.22	0.97	-0.99
		PM_{10}	0.45	1.95	0.10	0.46	-1.50
		$PM_{2.5}$	0.45	1.95	0.02	0.07	-1.88
		Lead	5.50E-06	2.41E-05	1.29E-06	5.64E-06	-1.85E-05
		Total HAPs [b]	1.35E-04	5.92E-04	3.16E-05	1.39E-04	-4.53E-04

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
001-17 (AOS1)	Dust Collector AE-014 (AOS1) / Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	PM	0.27	1.17	0.22	0.97	-0.21
		PM_{10}	0.27	1.17	0.10	0.46	-0.71
		$PM_{2.5}$	0.27	1.17	0.02	0.07	-1.10
		Lead	3.30E-06	1.45E-05	1.29E-06	5.64E-06	-8.82E-06
		Total HAPs [b]	8.11E-05	3.55E-04	3.16E-05	1.39E-04	-2.17E-04
001-18 (AOS1)	Dust Collector AE-015 (AOS1) / Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	PM	0.27	1.17	0.22	0.97	-0.21
		PM_{10}	0.27	1.17	0.10	0.46	-0.71
		$PM_{2.5}$	0.27	1.17	0.02	0.07	-1.10
		Lead	3.30E-06	1.45E-05	1.29E-06	5.64E-06	-8.82E-06
		Total HAPs [b]	8.11E-05	3.55E-04	3.16E-05	1.39E-04	-2.17E-04
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1) / Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	PM	20.05	43.33	20.05	70.26	26.92
		PM_{10}	9.48	20.50	9.48	33.23	12.73
		$PM_{2.5}$	1.44	3.10	1.44	5.03	1.93
		Lead	1.17E-04	2.53E-04	1.17E-04	4.10E-04	1.57E-04
		Total HAPs [b]	2.87E-03	6.21E-03	2.87E-03	1.01E-02	3.86E-03

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		USE THIS SECTION FOR MODIFICATIONS ONLY: CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
001-10 (AOS1)	N/A / Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	PM	--	--	20.05	17.56	17.56
		PM_{10}	--	--	9.48	8.31	8.31
		$PM_{2.5}$	--	--	1.44	1.26	1.26
		Lead	--	--	1.17E-04	1.03E-04	1.03E-04
		Total HAPs [b]	--	--	2.87E-03	2.52E-03	2.52E-03
001-19 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 5 (AOS1) / Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	PM	10.46	21.38	20.05	17.56	-3.81
		PM_{10}	4.95	10.11	9.48	8.31	-1.80
		$PM_{2.5}$	0.75	1.53	1.44	1.26	-0.27
		Lead	6.11E-05	1.25E-04	1.17E-04	1.03E-04	-2.23E-05
		Total HAPs [b]	1.50E-03	3.06E-03	2.87E-03	2.52E-03	-5.47E-04
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1) / Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	PM	2.18	9.56	1.96	8.59	-0.97
		PM_{10}	1.09	4.78	0.98	4.29	-0.49
		$PM_{2.5}$	0.16	0.72	0.15	0.64	-0.07
		Lead	1.35E-05	5.90E-05	1.21E-05	5.30E-05	-6.01E-06
		Total HAPs [b]	3.31E-04	1.45E-03	2.97E-04	1.30E-03	-1.47E-04

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)							
001-12 (AOS1)	Dust Collector AE-002 (AOS1) / PC1 Dust Collector 1 (AOS1)	PM	0.27	1.17	0.29	1.25	0.08
		PM_{10}	0.27	1.17	0.29	1.25	0.08
		$PM_{2.5}$	0.27	1.17	0.29	1.25	0.08
		Lead	3.30E-06	1.45E-05	3.53E-06	1.55E-05	9.97E-07
		Total HAPs [b]	8.11E-05	3.55E-04	8.66E-05	3.79E-04	2.45E-05
001-13 (AOS1)	Dust Collector AE-003 (AOS1) / PC1 CCC1 Dust Collector 2 (AOS1)	PM	0.33	1.46	0.33	1.44	-0.02
		PM_{10}	0.33	1.46	0.33	1.44	-0.02
		$PM_{2.5}$	0.33	1.46	0.33	1.44	-0.02
		Lead	4.13E-06	1.81E-05	4.07E-06	1.78E-05	-2.74E-07
		Total HAPs [b]	1.01E-04	4.44E-04	9.98E-05	4.37E-04	-6.71E-06
001-14 (AOS1)	Dust Collector AE-016 (AOS1) / PC1 CCC2 Dust Collector 3 (AOS1)	PM	0.27	1.17	0.33	1.44	0.27
		PM_{10}	0.27	1.17	0.33	1.44	0.27
		$PM_{2.5}$	0.27	1.17	0.33	1.44	0.27
		Lead	3.30E-06	1.45E-05	4.07E-06	1.78E-05	3.34E-06
		Total HAPs [b]	8.11E-05	3.55E-04	9.98E-05	4.37E-04	8.20E-05

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
001-15 (AOS1)	Dust Collector AE-017 (AOS1) / PC1 CCC3 Dust Collector 4 (AOS1)	PM	0.27	1.17	0.33	1.44	0.27
		PM_{10}	0.27	1.17	0.33	1.44	0.27
		$PM_{2.5}$	0.27	1.17	0.33	1.44	0.27
		Lead	3.30E-06	1.45E-05	4.07E-06	1.78E-05	3.34E-06
		Total HAPs [b]	8.11E-05	3.55E-04	9.98E-05	4.37E-04	8.20E-05
001-20 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6 / PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	PM	5.01	21.96	21.11	92.44	70.49
		PM_{10}	2.37	10.38	9.98	43.72	33.34
		$PM_{2.5}$	0.36	1.57	1.51	6.62	5.05
		Lead	2.93E-05	1.28E-04	1.23E-04	5.40E-04	4.12E-04
		Total HAPs [b]	7.19E-04	3.15E-03	3.03E-03	1.33E-02	1.01E-02
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1) / Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	PM	0.74	3.25	0.96	4.22	0.97
		PM_{10}	0.37	1.63	0.48	2.11	0.49
		$PM_{2.5}$	0.06	0.24	0.07	0.32	0.07
		Lead	4.58E-06	2.01E-05	5.95E-06	2.61E-05	6.01E-06
		Total HAPs [b]	1.12E-04	4.93E-04	1.46E-04	6.40E-04	1.47E-04

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
Sycamore Milling Operations (AOS1)							
002-7 (AOS1)	Dust Collector AE-008 (AOS1) / Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	PM	1.11	4.88	0.43	1.90	-2.98
		PM_{10}	1.11	4.88	0.43	1.90	-2.98
		$PM_{2.5}$	1.11	4.88	0.43	1.90	-2.98
		Lead	1.38E-05	6.03E-05	5.36E-06	2.35E-05	-3.68E-05
		Total HAPs [b]	3.38E-04	1.48E-03	1.31E-04	5.76E-04	-9.03E-04
002-8 (AOS1)	Dust Collector AE-009 (AOS1) / Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	PM	0.27	1.17	0.43	1.90	0.73
		PM_{10}	0.27	1.17	0.43	1.90	0.73
		$PM_{2.5}$	0.27	1.17	0.43	1.90	0.73
		Lead	3.30E-06	1.45E-05	5.36E-06	2.35E-05	8.99E-06
		Total HAPs [b]	8.11E-05	3.55E-04	1.31E-04	5.76E-04	2.21E-04
002-9 (AOS1)	Dust Collector AE-010 (AOS1) / HPGR Discharge Dust Collector 7 (AOS1)	PM	0.45	1.95	0.45	1.99	0.03
		PM_{10}	0.45	1.95	0.45	1.99	0.03
		$PM_{2.5}$	0.45	1.95	0.45	1.99	0.03
		Lead	5.50E-06	2.41E-05	5.60E-06	2.45E-05	4.17E-07
		Total HAPs [b]	1.35E-04	5.92E-04	1.37E-04	6.02E-04	1.02E-05

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
002-10 (AOS1)	Dust Collector AE-011 (AOS1) / HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	PM	0.27	1.17	0.53	2.33	1.16
		PM_{10}	0.27	1.17	0.53	2.33	1.16
		$PM_{2.5}$	0.27	1.17	0.53	2.33	1.16
		Lead	3.30E-06	1.45E-05	6.57E-06	2.88E-05	1.43E-05
		Total HAPs [b]	8.11E-05	3.55E-04	1.61E-04	7.07E-04	3.52E-04
002-11 (AOS1)	Dust Collector AE-007 (AOS1) / HPGR Product Bin Dust Collector 9 (AOS1)	PM	0.27	1.17	0.49	2.16	0.99
		PM_{10}	0.27	1.17	0.49	2.16	0.99
		$PM_{2.5}$	0.27	1.17	0.49	2.16	0.99
		Lead	3.30E-06	1.45E-05	6.09E-06	2.67E-05	1.22E-05
		Total HAPs [b]	8.11E-05	3.55E-04	1.49E-04	6.54E-04	2.99E-04
002-12 (AOS1)	Dust Collector AE-012 (AOS1) / HPGR Product Transfer Dust Collector 10 (AOS1)	PM	0.74	3.22	0.20	0.86	-2.36
		PM_{10}	0.74	3.22	0.20	0.86	-2.36
		$PM_{2.5}$	0.74	3.22	0.20	0.86	-2.36
		Lead	9.08E-06	3.98E-05	2.43E-06	1.07E-05	-2.91E-05
		Total HAPs [b]	2.23E-04	9.76E-04	5.98E-05	2.62E-04	-7.15E-04

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
002-13 (AOS1)	Dust Collector AE-013 (AOS1) / HPGR Product Transfer Dust Collector 11 (AOS1)	PM	0.40	1.76	0.20	0.86	-0.89
		PM_{10}	0.40	1.76	0.20	0.86	-0.89
		$PM_{2.5}$	0.40	1.76	0.20	0.86	-0.89
		Lead	4.95E-06	2.17E-05	2.43E-06	1.07E-05	-1.10E-05
		Total HAPs [b]	1.22E-04	5.33E-04	5.98E-05	2.62E-04	-2.71E-04
Sycamore Bulk and Molybdenum Flotation Operations (AOS1)							
044-2 (AOS1)	N/A / Sycamore Bulk and Molybdenum Flotation Equipment	VOC	--	--	0.27	1.18	1.18
		H_2S	--	--	0.50	2.18	2.18
		Total HAPs [b]	--	--	2.38E-02	1.04E-01	1.04E-01
Sycamore Concentrate Handling Operations (AOS1)							
006-11 (AOS1)	N/A / Copper Concentrate Filters 1/2 (AOS1) to Copper Concentrate Filter Drop Storage (AOS1)	PM	--	--	0.003	0.01	0.01
		PM_{10}	--	--	0.001	0.006	0.006
		$PM_{2.5}$	--	--	0.0002	0.0009	0.0009
		Lead	--	--	9.85E-07	4.31E-06	4.31E-06
		Total HAPs [b]	--	--	2.99E-06	1.31E-05	1.31E-05

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
006-12 (AOS1)	N/A / Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader	PM	--	--	0.003	0.01	0.01
		PM_{10}	--	--	0.001	0.006	0.006
		$PM_{2.5}$	--	--	0.0002	0.0009	0.0009
		Lead	--	--	9.85E-07	4.31E-06	4.31E-06
		Total HAPs [b]	--	--	2.99E-06	1.31E-05	1.31E-05
006-13 (AOS1)	N/A / Copper Concentrate Loadout Storage (AOS1) to Trucks via Front-End Loader	PM	--	--	0.003	0.01	0.01
		PM_{10}	--	--	0.001	0.006	0.006
		$PM_{2.5}$	--	--	0.0002	0.0009	0.0009
		Lead	--	--	9.85E-07	4.31E-06	4.31E-06
		Total HAPs [b]	--	--	2.99E-06	1.31E-05	1.31E-05
027-8 (AOS1)	N/A / Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1)	PM	--	--	0.31	1.35	1.35
		PM_{10}	--	--	0.15	0.68	0.68
		$PM_{2.5}$	--	--	0.02	0.10	0.10
		Lead	--	--	1.13E-04	4.93E-04	4.93E-04
		Total HAPs [b]	--	--	3.41E-04	1.50E-03	1.50E-03

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
052-2 (AOS1)	N/A / Molybdenum Dryer Wet Scrubber System (AOS1)	PM	--	--	0.06	0.28	0.28
		PM_{10}	--	--	0.06	0.28	0.28
		$PM_{2.5}$	--	--	0.06	0.28	0.28
		VOC	--	--	1.83	8.02	8.02
		Lead	--	--	9.67E-06	4.23E-05	4.23E-05
		Total HAPs [b]	--	--	1.61E-01	7.07E-01	7.07E-01
052-3 (AOS1)	N/A / Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1)	PM	--	--	0.004	0.02	0.02
		PM_{10}	--	--	0.002	0.009	0.009
		$PM_{2.5}$	--	--	0.0003	0.001	0.001
		Lead	--	--	3.22E-07	1.41E-06	1.41E-06
		Total HAPs [b]	--	--	2.86E-06	1.25E-05	1.25E-05
052-4 (AOS1)	N/A / Dried Molybdenum Concentrate Storage Bin (AOS1) to Molybdenum Concentrate Bagging System (AOS1)	PM	--	--	0.004	0.02	0.02
		PM_{10}	--	--	0.002	0.009	0.009
		$PM_{2.5}$	--	--	0.0003	0.001	0.001
		Lead	--	--	3.22E-07	1.41E-06	1.41E-06
		Total HAPs [b]	--	--	2.86E-06	1.25E-05	1.25E-05

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
Sycamore Lime and Other Regent Operations (AOS1)							
007-6 (AOS1)	N/A / Transfer of Lime to Sycamore Lime Silo (AOS1)	PM	--	--	0.15	0.30	0.30
		PM_{10}	--	--	0.05	0.11	0.11
		$PM_{2.5}$	--	--	0.008	0.02	0.02
007-7 (AOS1)	N/A / Sycamore Lime Slaker (AOS1)	PM	--	--	0.01	0.06	0.06
		PM_{10}	--	--	0.01	0.06	0.06
		$PM_{2.5}$	--	--	0.01	0.06	0.06
055-1 (AOS1)	N/A / Transfer of Flocculant to Tailings Flocculant Bag Breaker Bin (AOS1)	PM	--	--	0.06	0.25	0.25
		PM_{10}	--	--	0.03	0.12	0.12
		$PM_{2.5}$	--	--	0.004	0.02	0.02
055-2 (AOS1)	N/A / Transfer of Flocculant to Concentrate Flocculant Bag Breaker Bin (AOS1)	PM	--	--	0.004	0.02	0.02
		PM_{10}	--	--	0.002	0.008	0.008
		$PM_{2.5}$	--	--	0.0003	0.001	0.001
053-2 (AOS1)	N/A / Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	VOC	--	--	0.49	1.31	1.31
		Greatest Single HAP (Carbon Disulfide)	--	--	4.94E-01	1.31E+00	1.31E+00
		Total HAPs [b]	--	--	4.94E-01	1.31E+00	1.31E+00
055-3 (AOS1)	N/A / Sycamore NaHS System Scrubber (AOS1)	H_2S	--	--	0.04	0.17	0.17

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
Sycamore Prill Handling Operations (AOS1)							
050-7 (AOS1)	N/A / Delivery of Ammonium Nitrate Prill to Prill Bin 6 (AOS1)	PM	--	--	0.52	0.25	0.25
		PM_{10}	--	--	0.18	0.09	0.09
		$PM_{2.5}$	--	--	0.03	0.01	0.01
050-8 (AOS1)	N/A / Prill Bin 6 to ANFO Trucks for Transfer to Drill Holes	PM	--	--	1.00	0.25	0.25
		PM_{10}	--	--	0.35	0.09	0.09
		$PM_{2.5}$	--	--	0.05	0.01	0.01
Sycamore Emergency ICE (AOS1)							
049-59 (AOS1)	N/A / Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	PM	--	--	0.20	0.05	0.05
		PM_{10}	--	--	0.20	0.05	0.05
		$PM_{2.5}$	--	--	0.20	0.05	0.05
		CO	--	--	3.50	0.88	0.88
		NO_X	--	--	3.74	0.93	0.93
		SO_2	--	--	0.007	0.002	0.002
		VOC	--	--	0.27	0.07	0.07
		CO_2	--	--	695.10	173.77	173.77
		CH_4	--	--	0.03	0.007	0.007
		N_2O	--	--	0.006	0.001	0.001
		CO_2e	--	--	697.48	174.37	174.37
		Total HAPs [b]	--	--	6.71E-03	1.68E-03	1.68E-03

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
049-60 (AOS1)	N/A / Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	PM	--	--	0.25	0.06	0.06
		PM_{10}	--	--	0.25	0.06	0.06
		$PM_{2.5}$	--	--	0.25	0.06	0.06
		CO	--	--	4.38	1.10	1.10
		NO_X	--	--	7.52	1.88	1.88
		SO_2	--	--	0.008	0.002	0.002
		VOC	--	--	0.50	0.13	0.13
		CO_2	--	--	869.73	217.43	217.43
		CH_4	--	--	0.04	0.009	0.009
		N_2O	--	--	0.007	0.002	0.002
		CO_2e	--	--	872.71	218.18	218.18
		Total HAPs [b]	--	--	8.39E-03	2.10E-03	2.10E-03

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY: PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
049-61 (AOS1)	N/A / Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	PM	--	--	0.02	0.004	0.004
		PM_{10}	--	--	0.02	0.004	0.004
		$PM_{2.5}$	--	--	0.02	0.004	0.004
		CO	--	--	16.77	4.19	4.19
		NO_X	--	--	1.14	0.29	0.29
		SO_2	--	--	0.01	0.003	0.003
		VOC	--	--	0.25	0.06	0.06
		CO_2	--	--	123.27	30.82	30.82
		CH_4	--	--	0.006	0.001	0.001
		N_2O	--	--	0.001	0.0003	0.0003
		CO_2e	--	--	123.77	30.94	30.94
		Total HAPs [b]	--	--	2.89E-02	7.22E-03	7.22E-03

Emission Point		Regulated Air Pollutant Name	PTE [a]		USE THIS SECTION FOR MODIFICATIONS ONLY		
					PTE AFTER MODIFICATION		CHANGE IN PTE
Number	Name (Current / Proposed)		lb/hr	tons/yr	lb/hr	tons/yr	tons/yr
049-62 (AOS1)	N/A / Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	PM	--	--	0.02	0.004	0.004
		PM_{10}	--	--	0.02	0.004	0.004
		$PM_{2.5}$	--	--	0.02	0.004	0.004
		CO	--	--	16.77	4.19	4.19
		NO_X	--	--	1.14	0.29	0.29
		SO_2	--	--	0.01	0.003	0.003
		VOC	--	--	0.25	0.06	0.06
		CO_2	--	--	123.27	30.82	30.82
		CH_4	--	--	0.006	0.001	0.001
		N_2O	--	--	0.001	0.0003	0.0003
		CO_2e	--	--	123.77	30.94	30.94
		Total HAPs [b]	--	--	2.89E-02	7.22E-03	7.22E-03

[a] The values in the "PTE" column represent potential emissions prior to the proposed facility changes and updates.

[b] See Appendix G for individual HAPs.

APPENDIX D PROCESS FLOW DIAGRAMS OF THE DESIGN OF AOS1 IN CLASS II AIR QUALITY PERMIT #77414

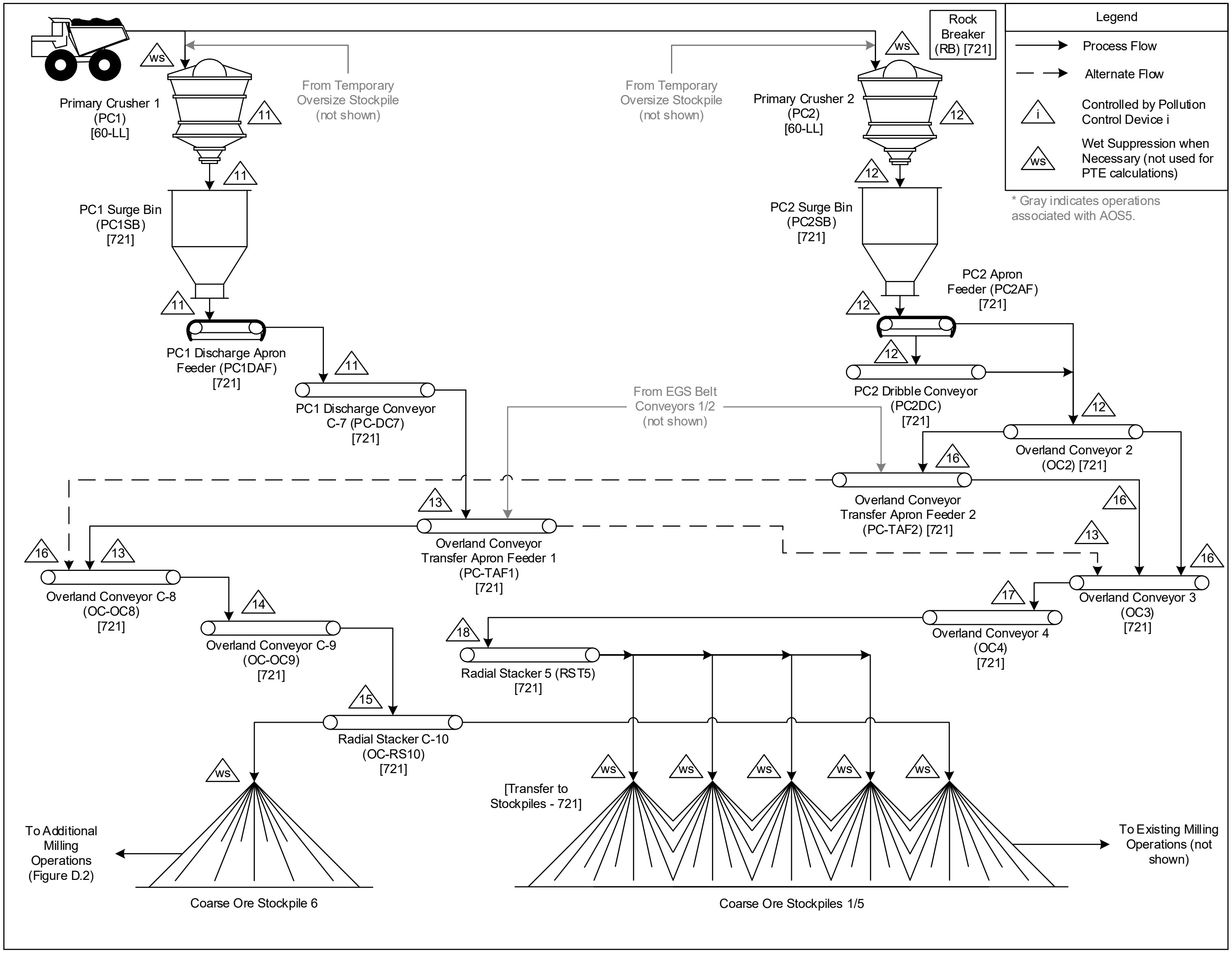

Figure D.1 Primary Crushing and Overland Conveying Operations (AOS1 – Design in Permit #77414)

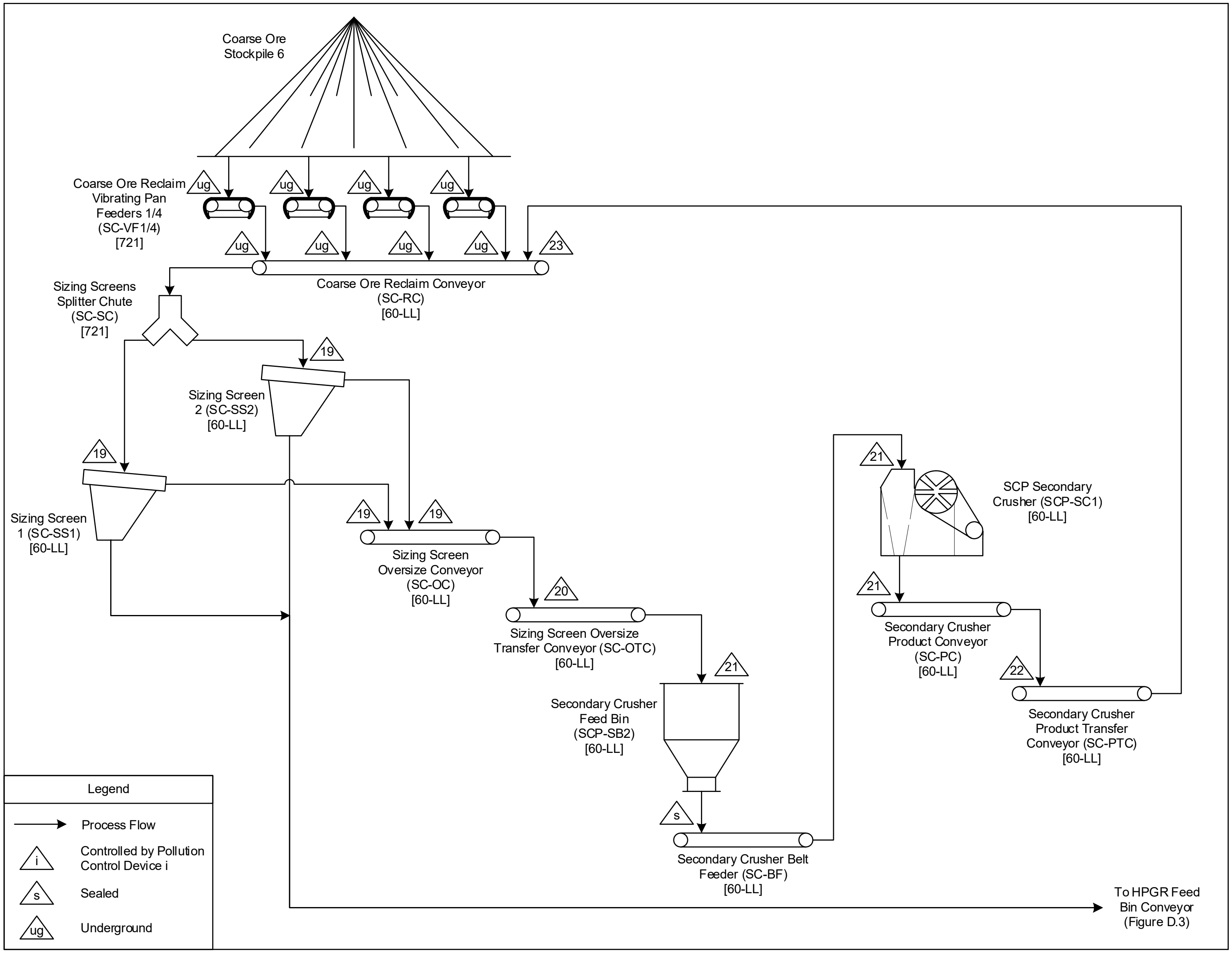

Figure D.2 Additional Milling Operations - Part 1 (AOS1 – Design in Permit #77414)

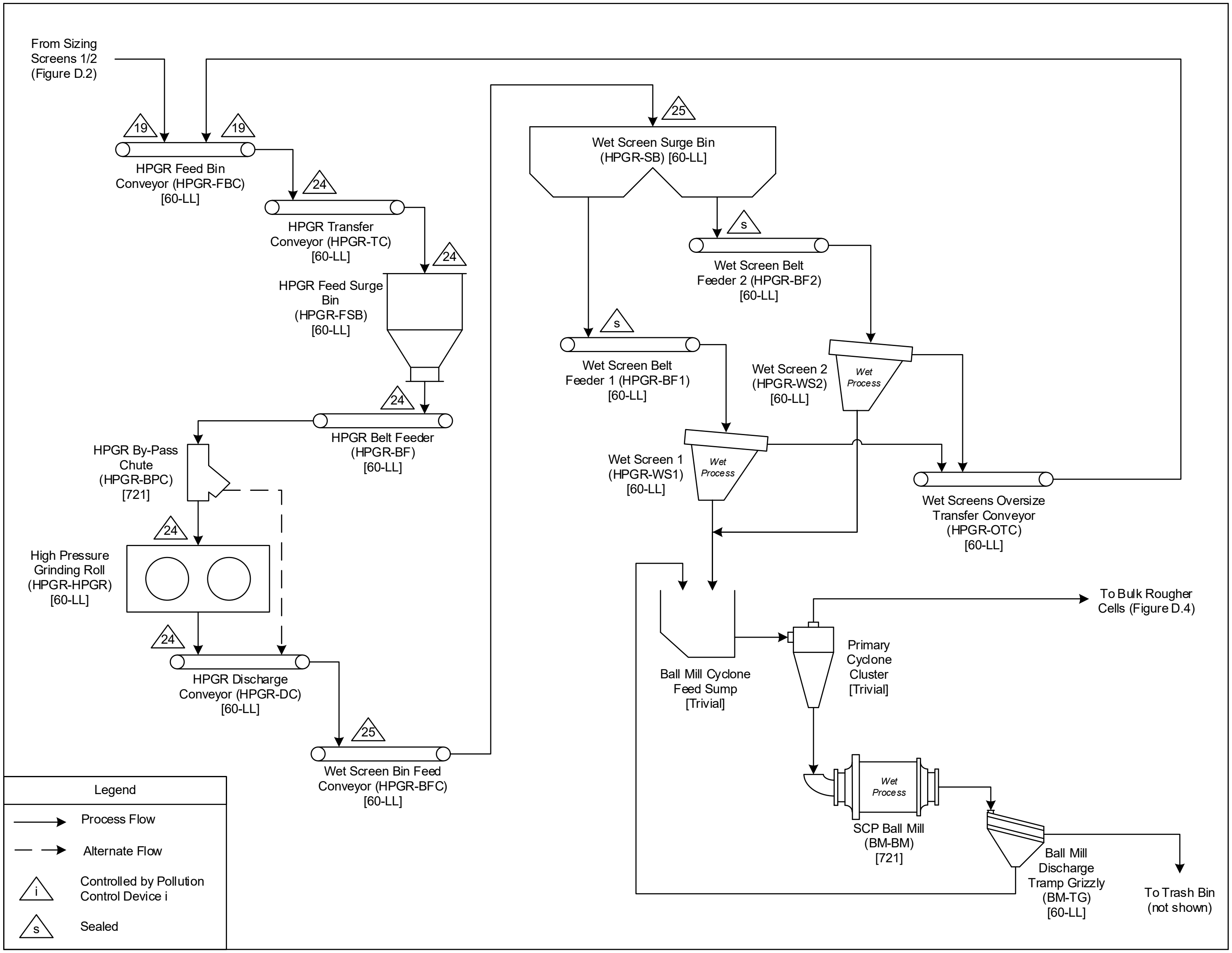

Figure D.3 Additional Milling Operations - Part 2 (AOS1 – Design in Permit #77414)

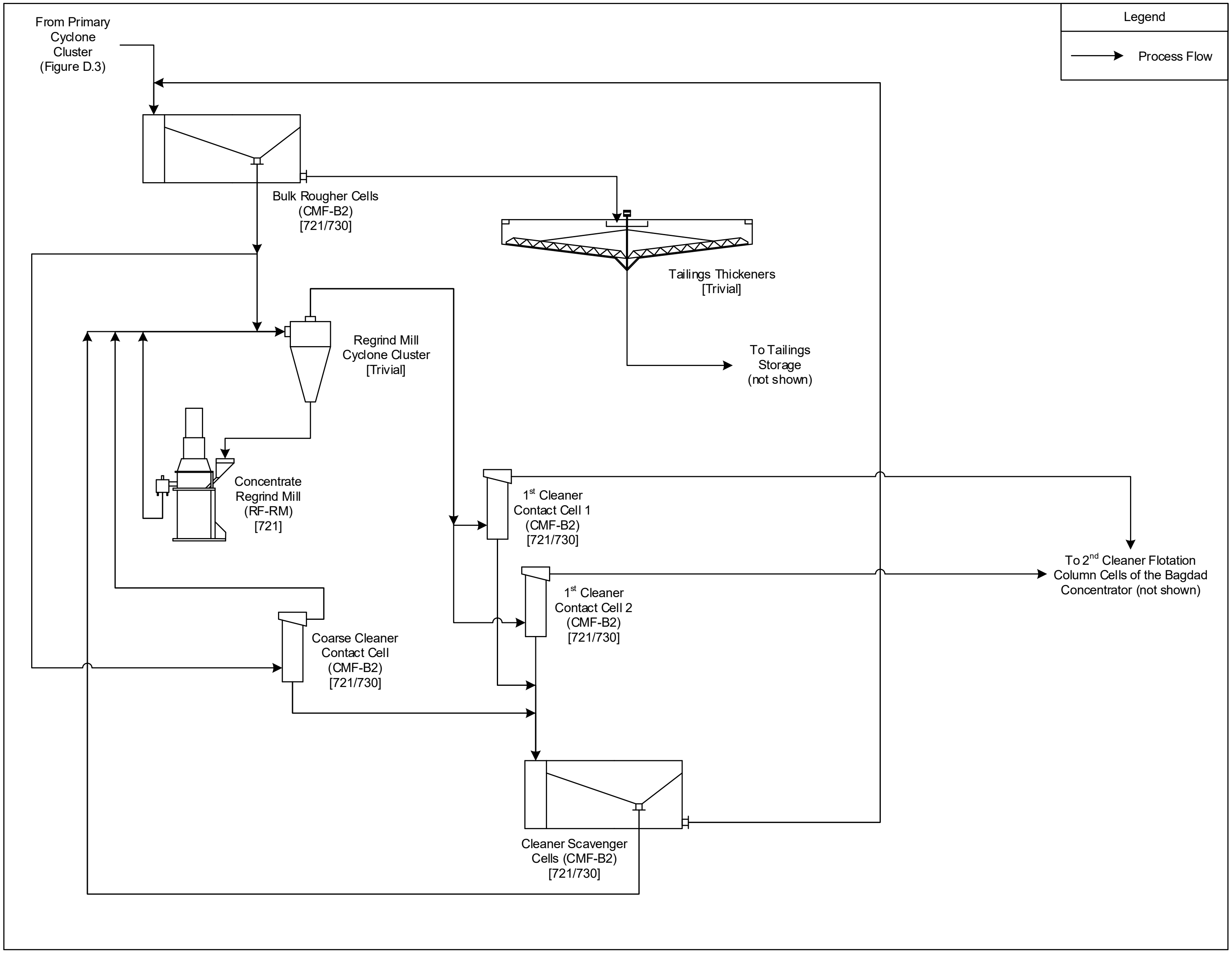

Figure D.4 Additional Bulk Flotation Operations (AOS1 – Design in Permit #77414)

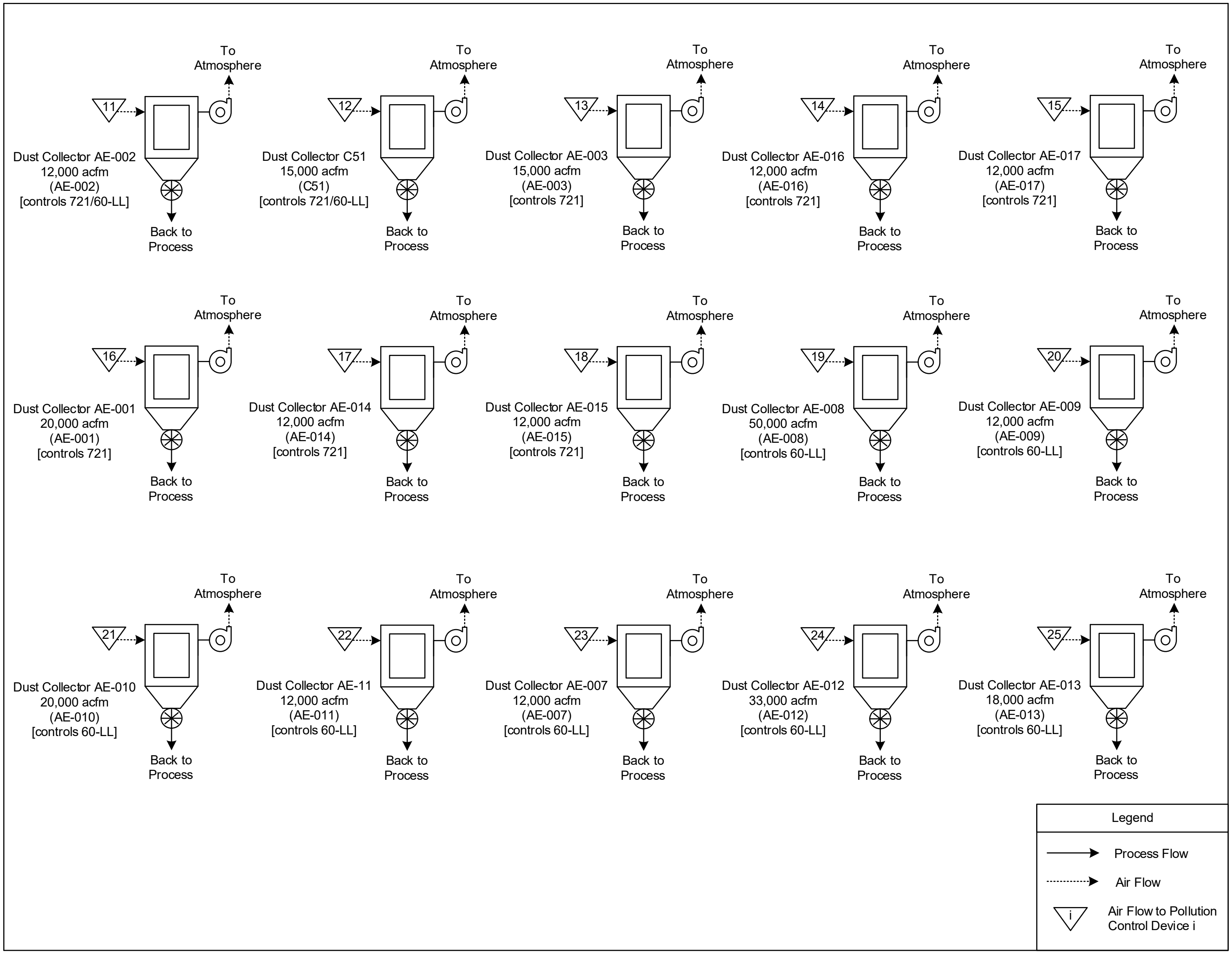

Figure D.5 Pollution Control Devices (AOS1 – Design in Permit #77414)

APPENDIX E PROCESS FLOW DIAGRAMS OF THE PROPOSED UPDATED DESIGN OF AOS1

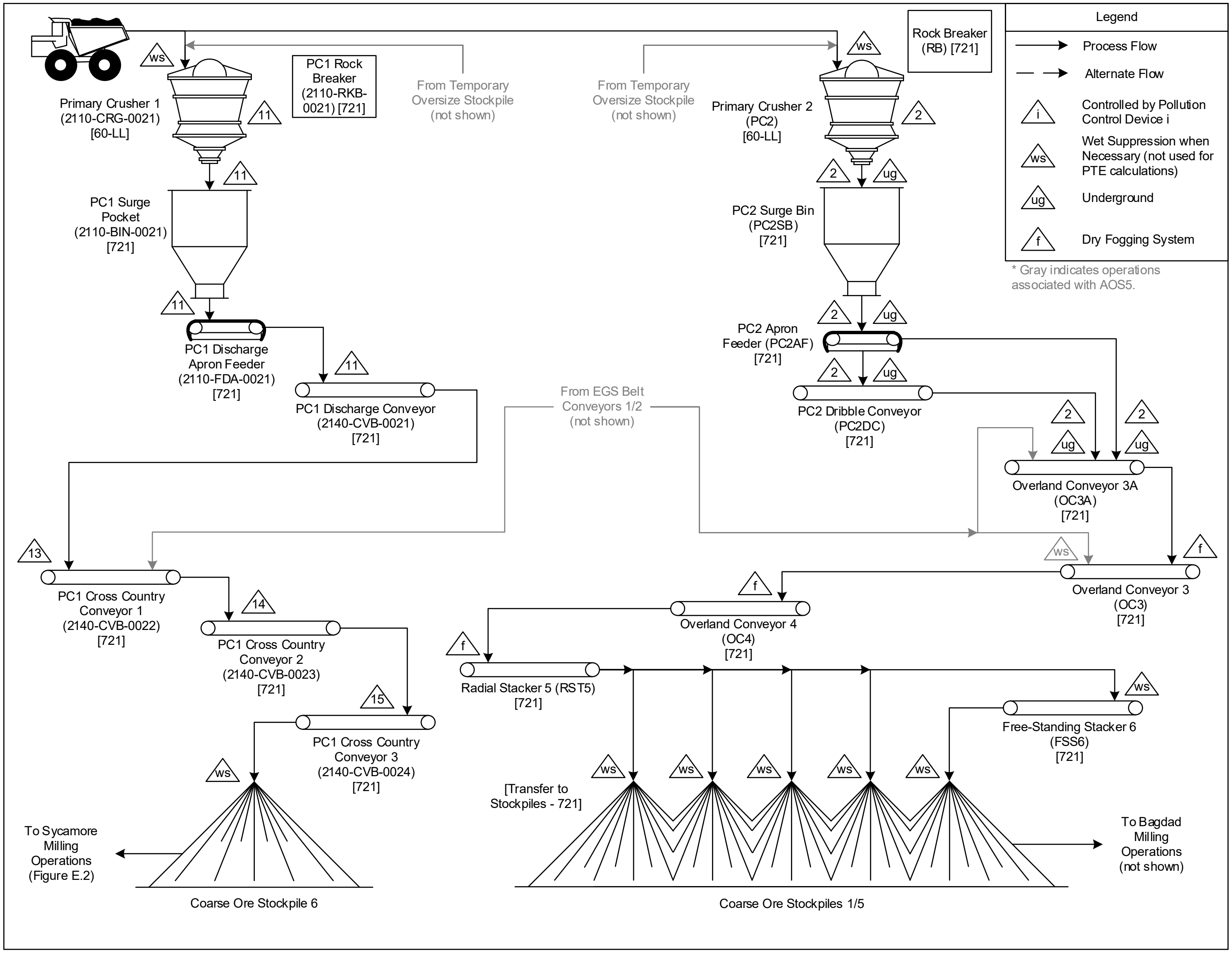

Figure E.1 Primary Crushing and Overland Conveying Operations (AOS1 – Proposed Updated Design)

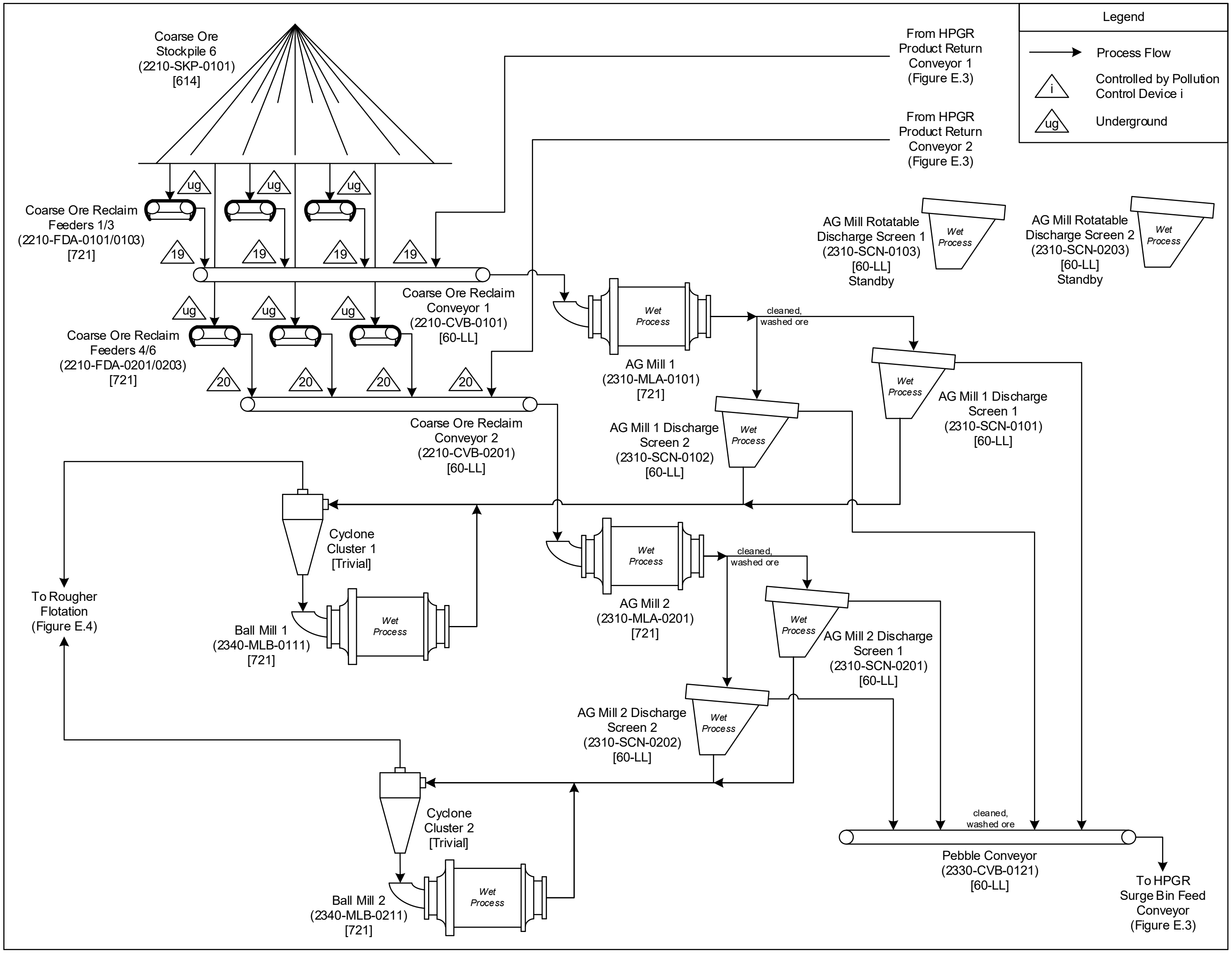

Figure E.2 Sycamore Milling Operations 1 (AOS1 – Proposed Updated Design)

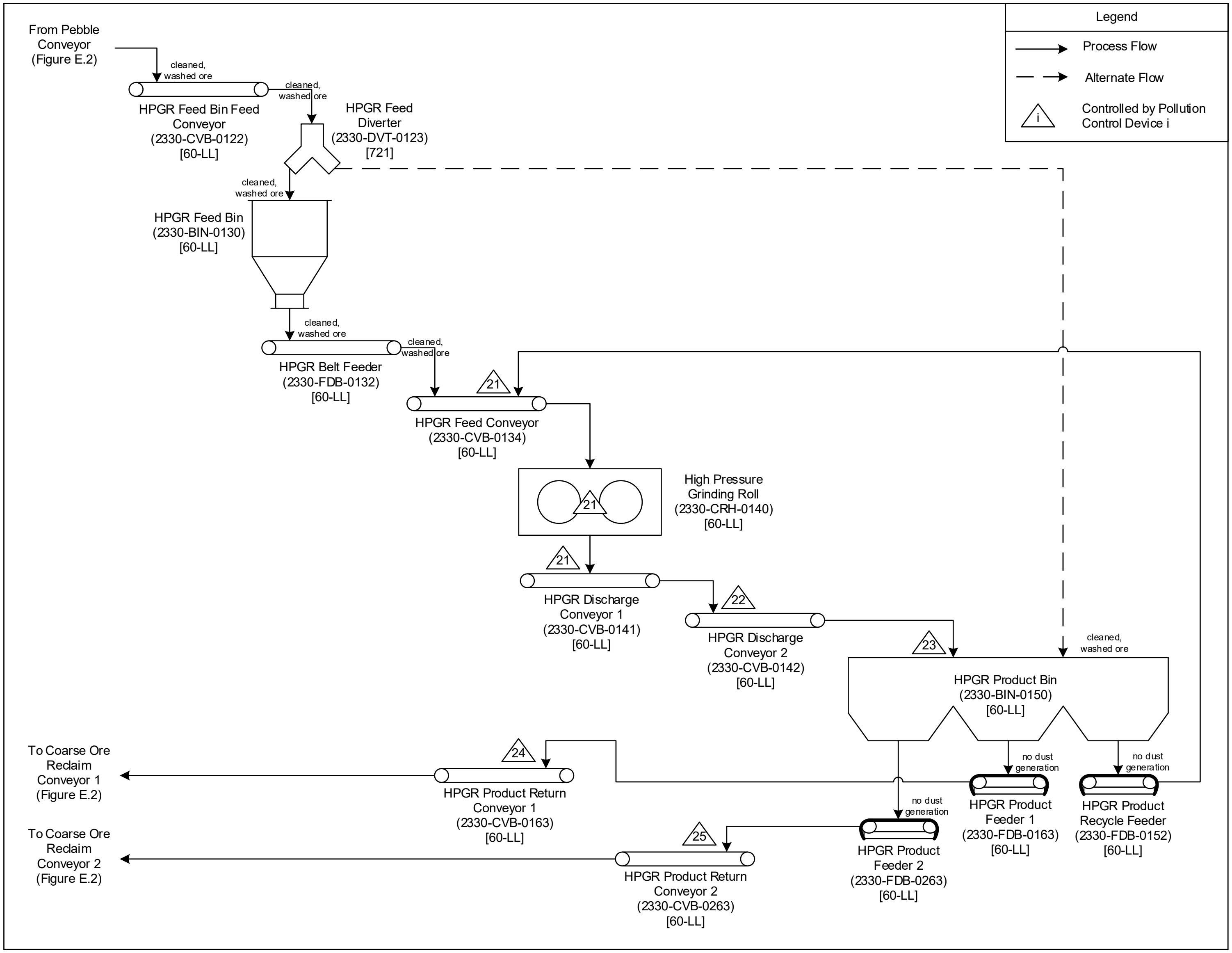

Figure E.3 Sycamore Milling Operations 2 (AOS1 – Proposed Updated Design)

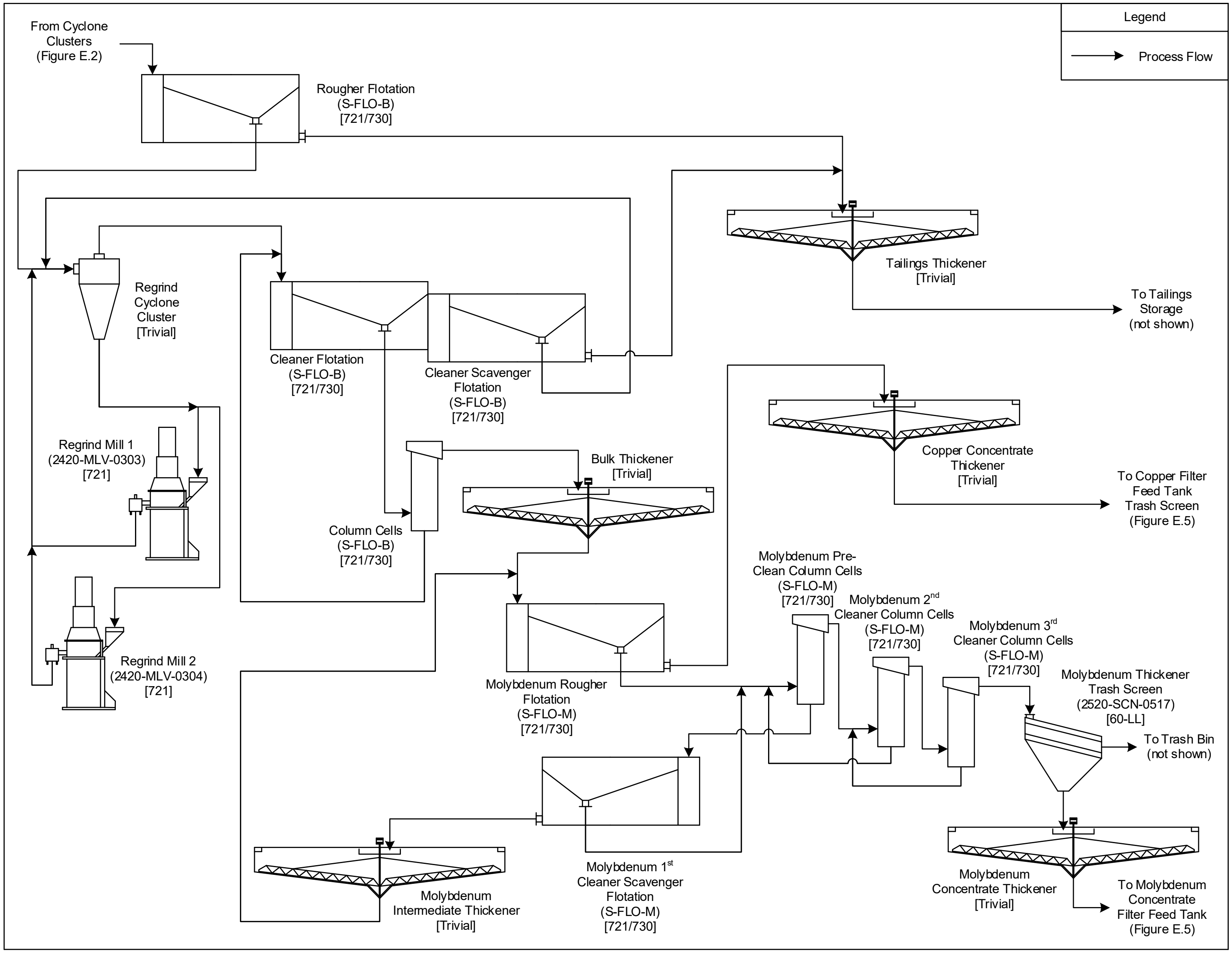

Figure E.4 Sycamore Flotation Operations (AOS1 – Proposed Updated Design)

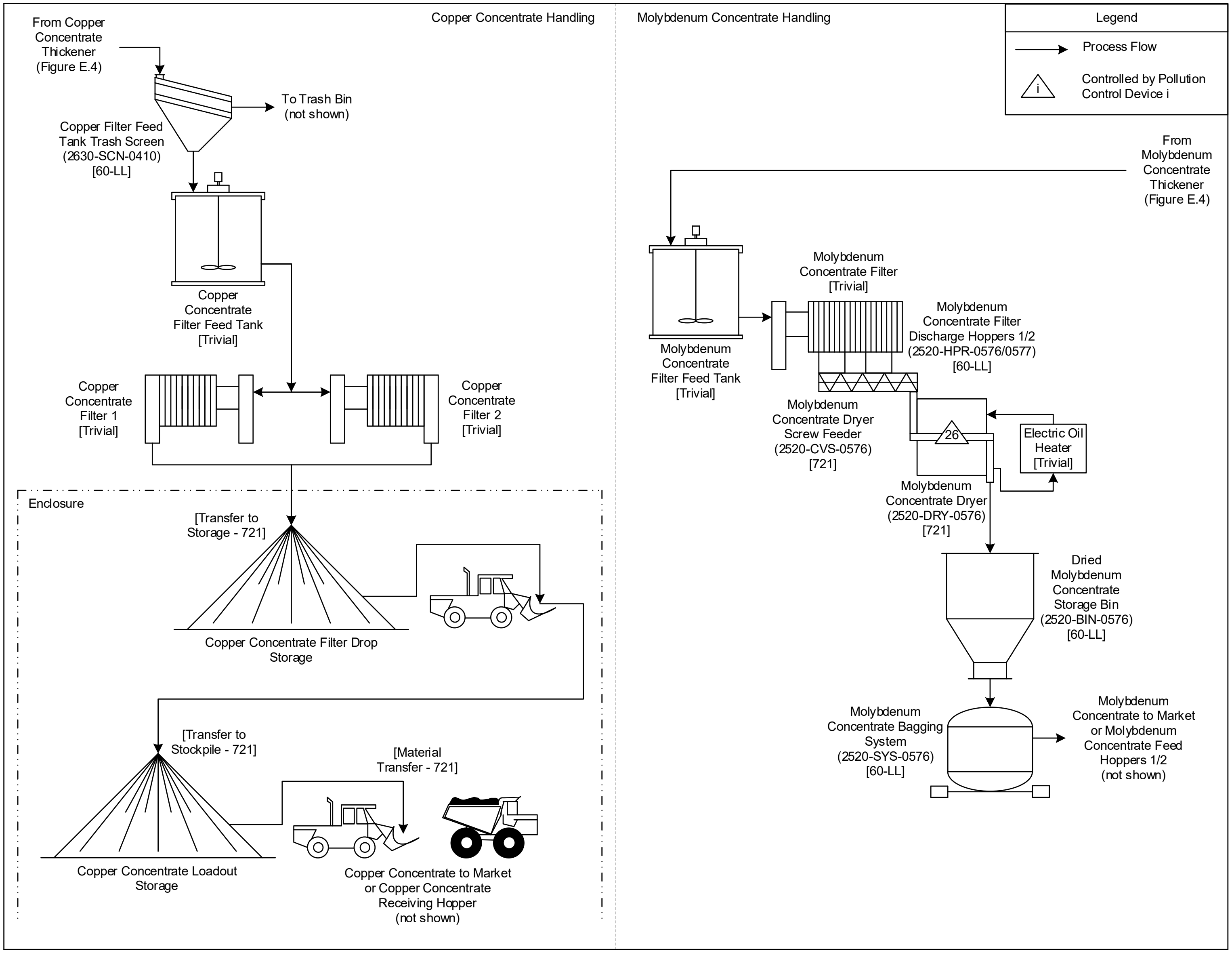

Figure E.5 Sycamore Concentrate Handling Operations (AOS1 – Proposed Updated Design)

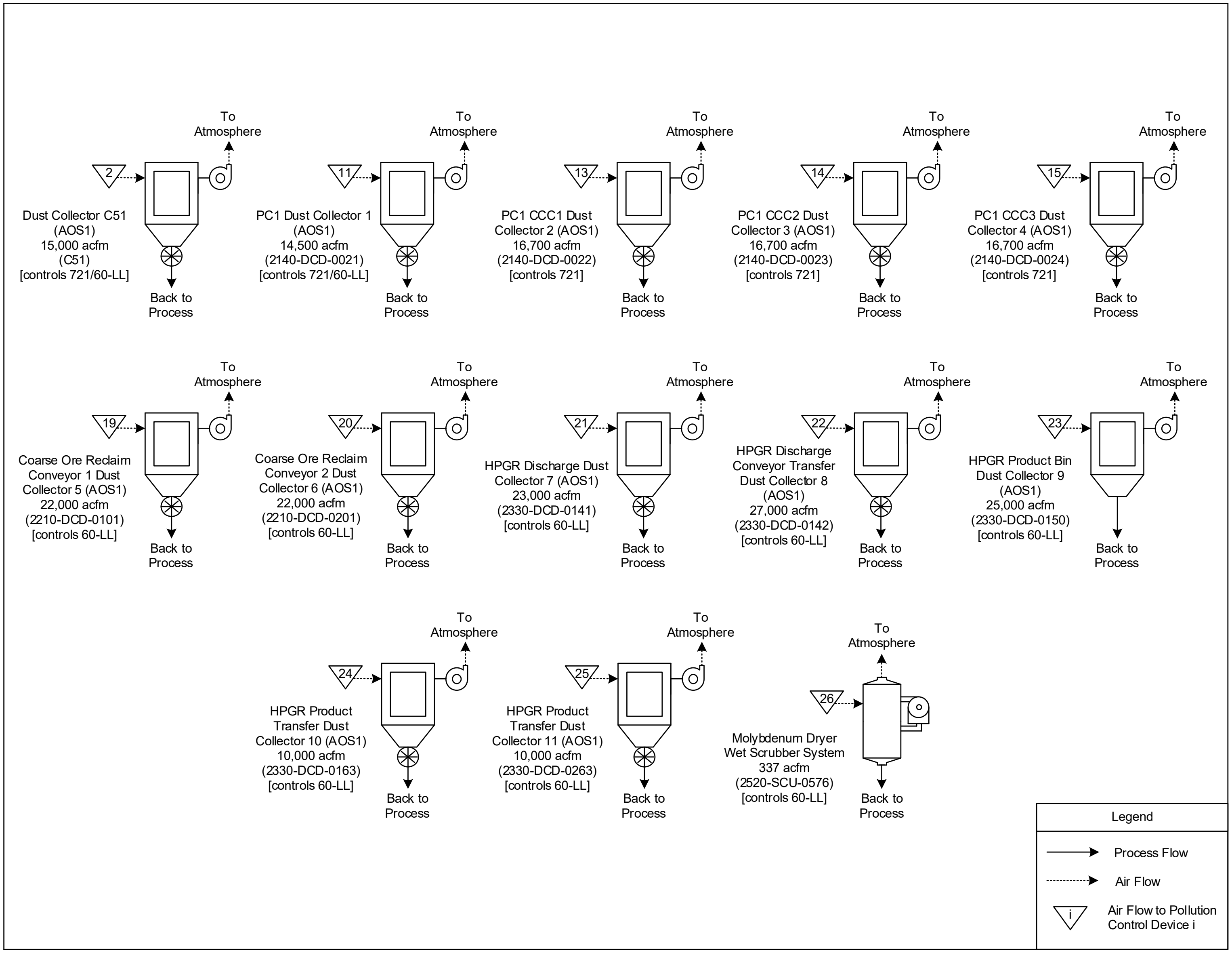

Figure E.6 Pollution Control Devices (AOS1 – Proposed Updated Design)

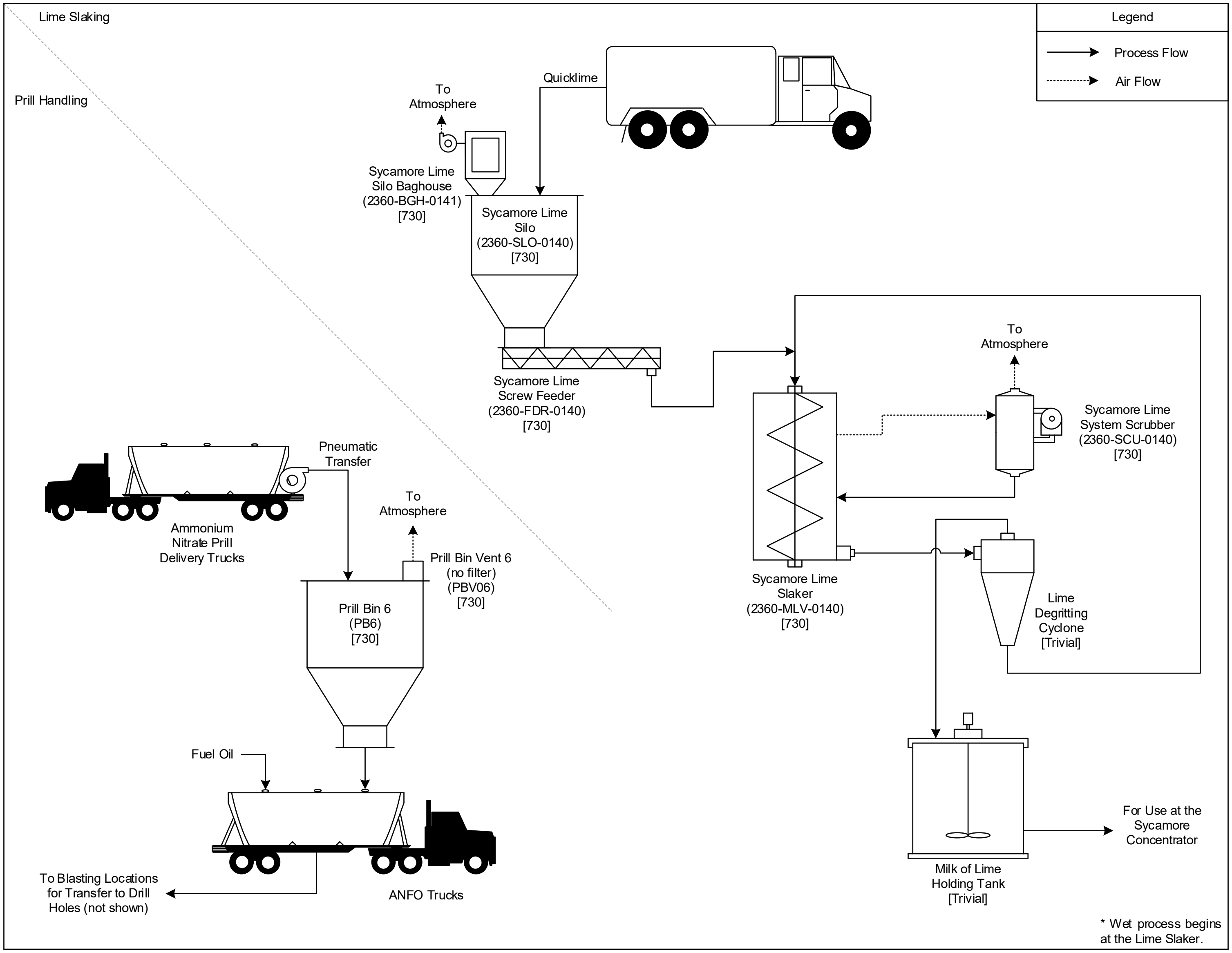

Figure E.7 Sycamore Prill Handling and Lime Slaking Operations (AOS1 – Proposed Updated Design)

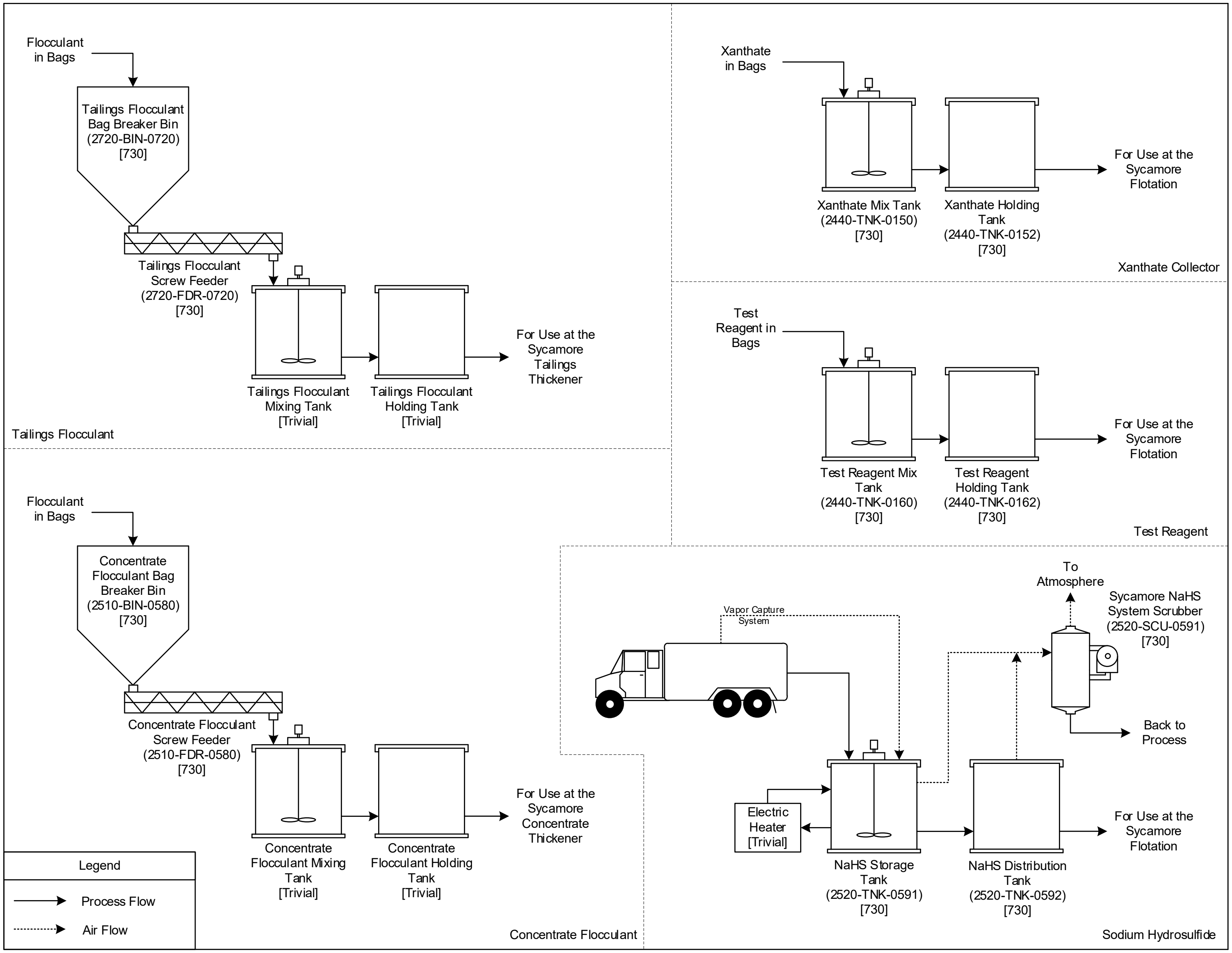

Figure E.8 Sycamore Reagent Delivery and Handling Operations (AOS1 – Proposed Updated Design)

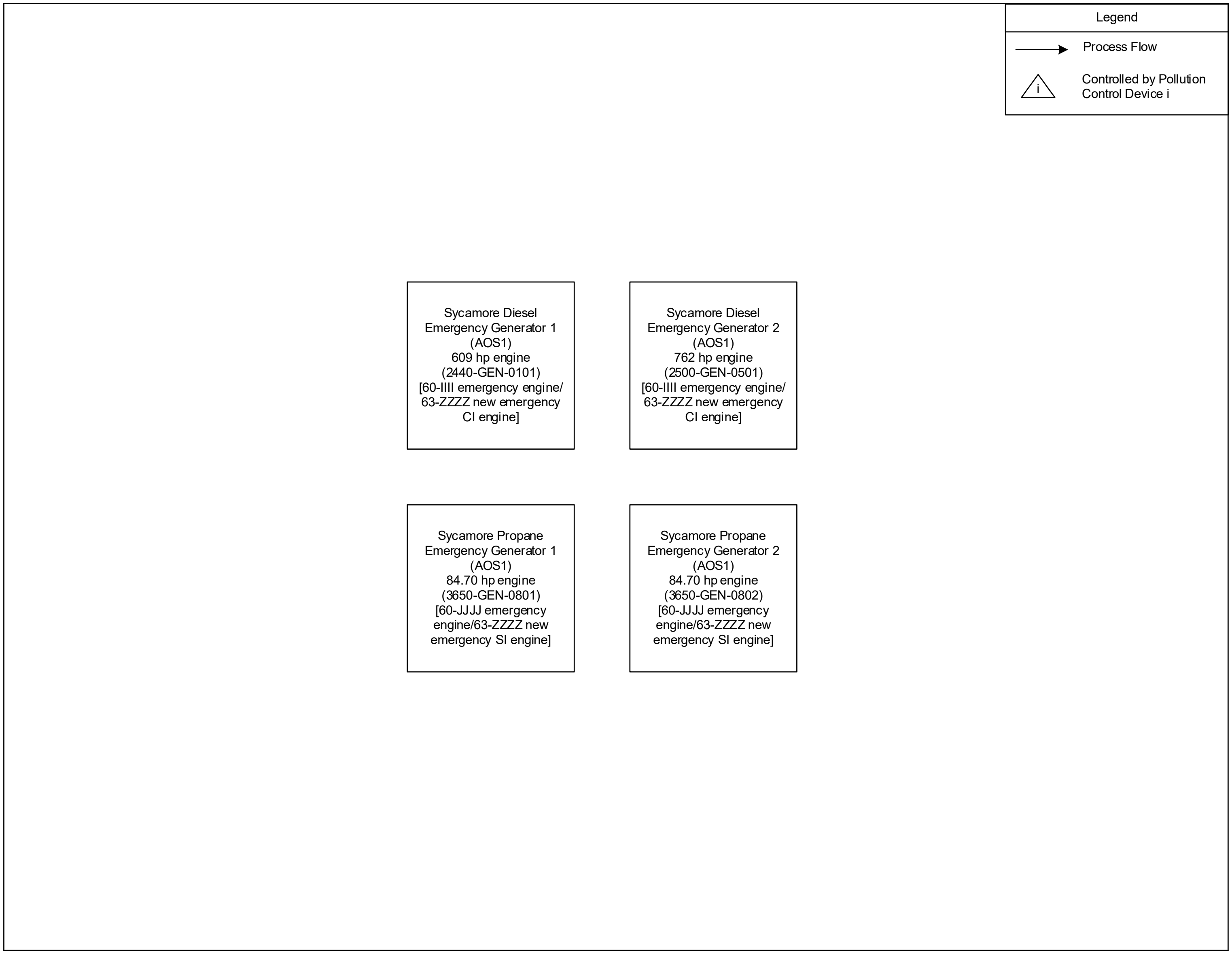

Figure E.9 Sycamore Emergency ICE (AOS1 – Proposed Updated Design)

APPENDIX F CALCULATION METHODOLOGY

F.1 INTRODUCTION

The methodology used to calculate the emission rates presented in Sections 5 and 10 and Appendices C and F of this application is explained in the following sections, including identification of process rates, emission factors, and control efficiencies. Emissions are calculated using the following general equations:

$$E_A = PR_A \times EF \times \left(1 - \frac{CE}{100}\right) \times \left(\frac{1 \text{ ton}}{2{,}000 \text{ lb}}\right)$$

$$E_H = PR_H \times EF \times \left(1 - \frac{CE}{100}\right)$$

where:

E_A	=	calculated emissions on an annual basis (tons of pollutant/yr);
E_H	=	calculated emissions on an hourly basis (lb of pollutant/hr);
PR_A	=	annual process rate associated with the emission unit (activity/yr);
PR_H	=	hourly process rate associated with the emission unit (activity/hr);
EF	=	emission factor (lb of pollutant/activity); and
CE	=	control efficiency (%).

F.2 PROCESSES CONTROLLED BY DUST COLLECTORS WITH OUTLET GRAIN LOADING EMISSION FACTORS

F.2.1 Process Rates

The annual and hourly process rates for the processes controlled by dust collectors with outlet grain loading emission factors are based on the hours of operation and the exhaust flow rate of the dust collectors in units of dscfm. When necessary, the exhaust flow rate of the dust collectors in units of cfm is assumed equal to dscfm. The exhaust flow rate in units of dscfm will always be less than the exhaust flow rate in units of acfm due to the ambient pressure of the FMBI facility and the expected dust collectors exhaust temperature. Therefore, assuming dscfm is equal to cfm is a worst-case estimate in regard to emission calculations. The exhaust flow rates, and process rates of the processes controlled by dust collectors with outlet grain loading emission factors are presented in Table F.1.

F.2.2 Emission Factors

PM and PM_{10} emissions from the processes controlled by dust collectors with outlet grain loading emission factors are based on voluntary emission limitations (see Section 6) converted to units of lb/dscf. $PM_{2.5}$ emissions are assumed equal to PM_{10} emissions as a worst-case emission estimate.

HAP emissions from the processes controlled by dust collectors with outlet grain loading emission factors are calculated by multiplying the concentration of HAPs in the associated process material by the PM_{10} emission factor. It is assumed that the concentration of HAPs in the associated process material is equivalent to the concentration of HAPs in the PM_{10} emitted. The HAP concentrations of the various process material are presented in Table F.28.

The emission factors for the processes controlled by dust collectors with outlet grain loading emission factors are presented in Table F.1.

F.2.3 Control Efficiencies

The control methods and corresponding control efficiencies for the processes controlled by dust collectors with outlet grain loading emission factors are presented in Table F.29.

F.3 PROCESSES CONTROLLED BY SCRUBBERS WITH LB/HR EMISSION FACTORS

F.3.1 Process Rates

The annual and hourly process rates for the processes controlled by scrubbers with lb/hr emission factors are based on the hours of operation. The process rates are presented in Table F.2.

F.3.2 Emission Factors

F.3.2.1 Molybdenum Dryer Wet Scrubber System

PM emissions from the Molybdenum Dryer Wet Scrubber System are assumed to have a maximum rate equal to the emission standard of 40 CFR 60 Subpart LL (see Section 7) converted to units of lb/hr using an exhaust flow rate of 337 acfm. The exhaust flow rate of the scrubber in units of acfm is assumed equal to dscfm as a worst-case emission estimate. PM_{10} and $PM_{2.5}$ emissions are assumed equal to PM emissions as a worst-case emission estimate.

Particulate based HAP emissions from the Molybdenum Dryer Wet Scrubber System are calculated by multiplying the concentration of HAPs in the molybdenum concentrate by the PM_{10} emission factor. It is assumed that the concentration of HAPs in the molybdenum concentrate is equivalent to the concentration of HAPs in the PM_{10} emitted. The HAP concentrations of the molybdenum concentrate is presented in Table F.28.

VOC emissions from the Molybdenum Dryer Wet Scrubber System are calculated using emission factors developed from performance test results of a scrubber controlling a similar drying process but scaled to the process rate at the FMBI facility and with an added 20% safety factor. VOC-based HAP emissions are calculated by applying diesel vapor mass fractions to the VOC emission factor. Diesel is similar to the primary organic used in the flotation equipment and which would remain in the molybdenum concentrate.

The emission factors for the Molybdenum Dryer Wet Scrubber System are presented in Table F.2.

F.3.2.2 Sycamore NaHS System Scrubber

H_2S emissions from the Sycamore NaHS System Scrubber are calculated using the following emission factor expression:

$$EF = (FR)\left(\frac{60\ min}{hour}\right)(OC)\left(\frac{28.3168\ L\ H_2S}{ft^3\ H_2S}\right)\left(\frac{1}{MV}\right)(MM)\left(\frac{1\ lb\ H_2S}{453.59237\ g\ H_2S}\right)$$

where:

EF	=	emission factor (lb/hr)
FR	=	exhaust flow rate of the Sycamore NaHS System Scrubber (735 ft^3/min)
OC	=	H_2S outlet concentration (10 ppm_v, maximum concentration expected by the manufacturer)
MV	=	molar volume of H_2S at 25°C and 1 atm (24.45 L/mol, assume H_2S is similar to an ideal gas)
MM	=	molar mass of H_2S (34.0809 g/mol)

The emission factors for the Sycamore NaHS System Scrubber are presented in Table F.2.

F.3.3 Control Efficiencies

The control methods and corresponding control efficiencies for the processes controlled by scrubbers with lb/hr emission factors are presented in Table F.29.

F.4 DRILLING

F.4.1 Process Rates

The annual and hourly process rates for drilling are based on the number of holes necessary for the quantity of blasts described in Section F.5.1. The process rates for drilling and a description of how they were determined are presented in Table F.3.

F.4.2 Emission Factors

PM emissions from drilling are calculated using the emission factor from Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition (AP-42) Table 11.9-4 (10/98) for total suspended particulates (TSP) from drilling of overburden at western surface coal mines. The TSP emission factor is assumed to be applicable for PM. PM_{10} and $PM_{2.5}$ emissions from drilling are not listed in AP-42 Table 11.9-4. PM_{10} and $PM_{2.5}$ emissions are assumed equal to 60% and 11.1%, respectively, of PM emissions based on the ratio determined using the emission factors in AP-42 Table 11.9.2-2 and Figure 11.19-4 (08/04) for tertiary crushing (controlled).

HAP emissions from drilling are calculated by multiplying the concentration of HAPs in the associated process material by the PM_{10} emission factor. It is assumed that the concentration of HAPs in the associated process material is equivalent to the concentration of HAPs in the PM_{10} emitted. The HAP concentrations of the various process material are presented in Table F.28.

The emission factors for drilling are presented in Table F.4.

F.4.3 Control Efficiencies

The control methods and corresponding control efficiencies for drilling are presented in Table F.29.

F.5 BLASTING

F.5.1 Process Rates

The annual process rate for blasting is based on the number of blasts necessary to achieve the maximum mining rate. The hourly process rate is based on a maximum of one blast being able to occur per hour. The process rates for blasting are presented in Table F.3.

F.5.2 Emission Factors

PM, PM_{10}, and $PM_{2.5}$ emissions from blasting are calculated using the following emission factor expression from AP-42 Table 11.9-1 (10/98) for blasting at western surface coal mines:

$$EF_h = (k)(0.000014)\left(A_{max}^{\ 1.5}\right)$$

$$EF_a = (k)(0.000014)\left(A_{avg}^{\ 1.5}\right)$$

where:

EF_h	=	emission factor on an hourly basis (lb/blast);
EF_a	=	emission factor on an annual basis (lb/blast);
k	=	particle size multiplier (1 for TSP, assumed to be equivalent to PM, 0.52 for PM_{10}, 0.03 for $PM_{2.5}$);
A_{max}	=	maximum horizontal area of a blast (200,000 square feet [ft^2] maximum for the design of AOS1 in Class II Air Quality Permit #77414, 497,956 ft^2 for the proposed updated design of AOS1); and
A_{avg}	=	average horizontal area of the blasts (93,000 ft^2 average for the design of AOS1 in Class II Air Quality Permit #77414, 414,963 ft^2 for the proposed updated design of AOS1).

Particulate based HAP emissions from blasting are calculated by multiplying the concentration of HAPs in the associated process material by the PM_{10} emission factor. It is assumed that the concentration of HAPs in the associated process material is equivalent to the concentration of HAPs in the PM_{10} emitted. The HAP concentrations of the various process material are presented in Table F.28.

CO emissions from blasting are calculated using an emission factor from the article titled *Factors Affecting ANFO Fumes Production* by The National Institute for Occupational Safety and Health (NIOSH) (2001). The emission factor is based on the data points in Figure 2 for ANFO with a 6% fuel oil content. NO_X emissions are calculated using the average emission factor from the journal article titled *NO_X Emissions from Blasting Operations in Open-Cut Coal Mining* from Atmospheric Environment 42 (2008), which presents the results of a more successful technique used to measure NO_X emissions from blasting. SO_2 emissions are calculated assuming all the sulfur in the ANFO is converted to SO_2

emissions. The sulfur content of the diesel fuel is a maximum of 0.0015% while the sulfur content of the animal fat used in the ANFO emulsions is estimated at a worst-case value of 500 ppm based on a 03/2003 EPA document that states biofuels reduce SO_2 emissions more than No. 2 diesel. CO_2, CH_4, and N_2O emissions are calculated using the emission factors from 40 CFR 98 Tables C-1 and C-2 for distillate fuel oil No. 2 and rendered animal fat.

Supplementary HAP emissions from blasting are calculated using emission factors from AP-42 Tables 1.3-8 and 1.3-10 (05/10) for distillate fuel oil combustion. The formaldehyde emission factor is assumed to be equal to the high-end value of the formaldehyde range as a worst-case emission estimate. Additionally, it is assumed that HAP emissions from diesel combustion are an upper limit for HAP emissions from animal fat combustion.

The following parameters are used to express the blasting emission factors in units of lb/blast:

- A diesel fuel density of 7.05 lb/gal (AP-42 Table 1.3-12);
- An animal fat density of 7.34 lb/gal (*A Demonstration of Fat and Grease as an Industrial Boiler Fuel*);
- Maximum annual and hourly usage of ammonium nitrate prill, ammonium nitrate solution, diesel fuel, and animal fat (planned mining process rates with a 94% ammonium nitrate and 6% fuel oil blasting mixture);
- The ammonium nitrate prill contains 99.8% ammonium nitrate;
- The ammonium nitrate solution contains 78% ammonium nitrate;
- The solution used to make ANFO emulsions contains 78.5% diesel and 21.5% animal fat;
- A diesel heating value of 137,000 Btu/gal; and
- An animal fat heating value of 0.125 MMBtu/gal.

The emission factors for blasting are presented in Tables F.5 and F.6. Because the inputs and parameters used to calculate the emission factors vary on an annual and hourly basis, two sets of emission factors are developed for both the design of AOS1 in Class II Air Quality Permit #77414 and the proposed updated design of AOS1.

F.5.3 Control Efficiencies

The control methods and corresponding control efficiencies for blasting are presented in Table F.29.

F.6 HAUL TRUCK AND OTHER VEHICLE TRAVEL ON UNPAVED ROADS

F.6.1 Process Rates

The annual and hourly process rates for haul truck and other vehicle travel on unpaved roads are based on the miles traveled by the various vehicles to support the mining and processing operations. The annual and hourly process rates for haul truck and other vehicle travel on unpaved roads are presented in Tables F.7 and F.8.

F.6.2 Emission Factors

PM, PM_{10}, and $PM_{2.5}$ emissions from haul truck and other vehicle travel on unpaved roads are calculated using the following equations from AP-42 Section 13.2.2 (11/06):

$$EF_h = (k)\left(\frac{s}{12}\right)^a\left(\frac{W}{3}\right)^b$$

$$EF_a = (k)\left(\frac{s}{12}\right)^a\left(\frac{W}{3}\right)^b\left(\frac{(365\text{-}p)}{365}\right)$$

where:

EF_h	=	emission factor on an hourly basis (lb per vehicle miles traveled [VMT]);
EF_a	=	emission factor on an annual basis (lb/VMT);
k	=	particle size multiplier (4.9 for PM, 1.5 for PM_{10}, 0.15 for $PM_{2.5}$);
a	=	constant (0.7 for PM, 0.9 for PM_{10} and $PM_{2.5}$);
b	=	constant (0.45 for PM, PM_{10}, and $PM_{2.5}$);
s	=	surface material silt content (7.0%, site-specific historic value);
W	=	mean weight of the haul trucks and other vehicles traveling the unpaved roads (see Tables F.7 and F.8); and
p	=	number of days per year with precipitation greater than 0.01 inch (45 day/yr, based on 1925-2012 data from the Western Region Climate Center, Bagdad Station).

HAP emissions from haul truck and other vehicle travel on unpaved roads are calculated by multiplying the concentration of HAPs in the associated process material by the PM_{10} emission factor. It is assumed that the concentration of HAPs in the associated process material is equivalent to the concentration of HAPs in the PM_{10} emitted. The HAP concentrations of the various process material are presented in Table F.28.

The emission factors for vehicle travel on unpaved roads are presented in Tables F.9 and F.10.

F.6.3 Control Efficiencies

The control methods and corresponding control efficiencies for haul truck and other vehicle travel on unpaved roads are presented in Table F.29.

F.7 DOZER OPERATIONS

F.7.1 Process Rates

The annual and hourly process rates for dozer operations are based on the total operating hours of the dozer fleet. The process rates are calculated by multiplying the annual and hourly operating hours for each dozer by the quantity of dozers. The annual and hourly process rates for dozer operations are presented in Tables F.11 and F.12.

F.7.2 Emission Factors

PM, PM_{10}, and $PM_{2.5}$ emissions from dozer operations are calculated using the following equation from AP-42 Table 11.9-1 (10/98) for bulldozing overburden:

$$EF = (k)\left(\frac{s^a}{M^b}\right)$$

where:

EF	=	emission factor (lb/hr);
k	=	particle size multiplier (5.7 for PM, 0.75 for PM_{10}, 0.5985 for $PM_{2.5}$);
a	=	constant (1.2 for PM and $PM_{2.5}$, 1.5 for PM_{10});
b	=	constant (1.3 for PM and $PM_{2.5}$, 1.4 for PM_{10});
s	=	material silt content (4.0%, estimated value based on similar copper mines); and
M	=	material moisture content (2.564%, assumed equivalent to the mined material).

HAP emissions from dozer operations are calculated by multiplying the concentration of HAPs in the associated process material by the PM_{10} emission factor. It is assumed that the concentration of HAPs in the associated process material is equivalent to the concentration of HAPs in the PM_{10} emitted. The HAP concentrations of the various process material are presented in Table F.28.

The emission factors for dozer operations are presented in Table F.13.

F.7.3 Control Efficiencies

The control methods and corresponding control efficiencies for dozer operations are presented in Table F.29.

F.8 ROAD GRADER OPERATIONS

F.8.1 Process Rates

The annual and hourly process rates for road grader operations are based on the total vehicle miles traveled by the grader fleet. The annual and hourly miles traveled are determined using the quantity of graders, average speed, and annual and hourly operating hours for each grader. The annual and hourly process rates for road grader operations are presented in Tables F.10 and F.11.

F.8.2 Emission Factors

PM, PM_{10}, and $PM_{2.5}$ emissions from road grader operations are calculated using the following equation from AP-42 Table 11.9-1 (10/98) for grading:

$$EF = (k)(a)(S^b)$$

where:

EF	=	emission factor (lb/VMT);
k	=	particle size multiplier (1 for PM, 0.60 for PM_{10}, 0.031 for $PM_{2.5}$);
a	=	constant (0.040 for PM and $PM_{2.5}$, 0.051 for PM_{10});
b	=	constant (2.5 for PM and $PM_{2.5}$, 2.0 for PM_{10}); and
S	=	mean vehicle speed (6 miles per hour [mph], site-specific estimated value).

HAP emissions from road grader operations are calculated by multiplying the concentration of HAPs in the associated process material by the PM_{10} emission factor. It is assumed that the concentration of HAPs in the associated process material is equivalent to the concentration of HAPs in the PM_{10} emitted. The HAP concentrations of the various process material are presented in Table F.28.

The emission factors for road grader operations are presented in Table F.14.

F.8.3 Control Efficiencies

The control methods and corresponding control efficiencies for road grader operations are presented in Table F.29.

F.9 MATERIAL TRANSFER POINTS

F.9.1 Process Rates

The annual and hourly process rates for material transfer points are based on the amount of material transferred and can be determined using equipment capacities and hours of operations, delivery rates, or maximum expected throughputs. The annual and hourly process rates for material transfer points and a description of how they were determined are presented in Table F.15.

F.9.2 Emission Factors

The type and moisture content of the material processed by the transfer points is presented in Table F.16 along with identification of which of the following emission factors are used to calculate emissions.

F.9.2.1 Material Transfer of Mined Material, Concentrates, and Flocculant

PM, PM_{10}, and $PM_{2.5}$ emissions from the material transfer points associated with mined material, concentrates, and flocculant are calculated using the following emission factor expression from AP-42 Section 13.2.4.3 (11/06) for aggregate drop processes:

$$EF = (k)(0.0032)\left(\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}\right)$$

where:

EF	=	emission factor (lb/ton);
k	=	particle size multiplier (0.74 for PM, 0.35 for PM_{10}, 0.053 for $PM_{2.5}$);
U	=	mean wind speed; and
		The mean ambient wind speed at the FMBI facility is 7.10 mph based on 2018-2019 data from the Townsite Meteorological Monitor. This wind speed is used for unprotected material transfer points subject to ambient winds.
		The lowest wind speed able to be used in the aggregate drop process equation and retain an A rating is 1.3 mph. This wind speed is used for protected material transfer points such as those located indoors or underground or shielded from the ambient wind by enclosures, chutes, curtains, or seals.
M	=	material moisture content.

For each material transfer point, the type of material transferred, the moisture content of the material transferred, and the classification of the transfer as being either protected or unprotected is identified in Table F.16.

HAP emissions from the material transfer points associated with mined material, concentrates, and flocculant are calculated by multiplying the concentration of HAPs in the associated process material by the PM_{10} emission factor. It is assumed that the concentration of HAPs in the associated process material is equivalent to the concentration of HAPs in the PM_{10} emitted. The HAP concentrations of the various process material are presented in Table F.28.

The emission factors for the material transfer points associated with mined material, concentrates, and flocculant are presented in Table F.17.

F.9.2.2 Material Transfer of Lime

PM emissions from the material transfer points associated with lime are calculated using the emission factor from AP-42 Table 11.17-4 (02/98) for lime product loading, enclosed truck. PM_{10} and $PM_{2.5}$ emissions are estimated to be 35% and 5.3%, respectively, of PM emissions based on the particle size fractions in AP-42 Section 13.2.4.3 (11/06) for aggregate drop processes.

The emission factors for the material transfer points associated with lime are presented in Table F.18.

F.9.2.3 Material Transfer of Ammonium Nitrate Prill

PM emissions from the material transfer points associated with ammonium nitrate prill are calculated using the emission factor from AP-42 Table 8.3-2 (07/93) for ammonium nitrate bulk loading operations.

PM_{10} and $PM_{2.5}$ emissions are estimated to be 35% and 5.3%, respectively, of PM emissions based on the particle size fractions in AP-42 Section 13.2.4.3 (11/06) for aggregate drop processes.

The emission factors for the material transfer points associated with ammonium nitrate prill are presented in Table F.19.

F.9.3 Control Efficiencies

The control methods and corresponding control efficiencies for material transfer points are presented in Table F.29.

F.10 WIND EROSION OF CONTINUOUSLY ACTIVE STOCKPILES

F.10.1 Process Rates

The annual and hourly process rates for wind erosion of continuously active stockpiles are based on the acreage of the storage area. The annual and hourly process rates for the continuously active stockpiles are presented in Table F.20.

F.10.2 Emission Factors

PM, PM_{10}, and $PM_{2.5}$ emissions due to wind erosion of continuously active stockpiles are calculated using the following emission factor expressions derived from the 4th Edition of AP-42 Section 11.2.3 (05/83) for wind erosion of active storage piles:

$$EF_{annual}=(k)(1.7)\left(\frac{s}{1.5}\right)\left(\frac{365\text{-}p}{235}\right)\left(\frac{f}{15}\right)(a)$$

$$EF_{hourly}=(k)(1.7)\left(\frac{s}{1.5}\right)\left(\frac{365\text{-}p}{235}\right)\left(\frac{f}{15}\right)\left(\frac{1}{h}\right)$$

where:

EF_{annual}	=	emission factor on an annual basis (lb/acre-yr);
EF_{hourly}	=	emission factor on an hourly basis (lb/acre-hr);
k	=	particle size multiplier (1 for PM, 0.5 for PM_{10}, 0.075 for $PM_{2.5}$ from AP-42 Section 13.2.5 (11/06));
s	=	silt content of surface material (see Table F.20);
p	=	number of days per year with precipitation greater than 0.01 inch (45 day/yr, based on 1925-2012 data from the Western Region Climate Center, Bagdad Station);
f	=	percentage of time the mean wind speed is greater than 12 mph at the mean pile height (10.00%, based on 2018-2019 data from the Townsite Meteorological Monitor);
a	=	number of days per year the stockpile is used (365 day/yr); and

h = number of hours per day the stockpile is used (24 hr/day).

HAP emissions from the wind erosion of continuously active stockpiles are calculated by multiplying the concentration of HAPs in the associated process material by the PM_{10} emission factor. It is assumed that the concentration of HAPs in the associated process material is equivalent to the concentration of HAPs in the PM_{10} emitted. The HAP concentrations of the various process material are presented in Table F.28.

The emission factors for the wind erosion of continuously active stockpiles are presented in Table F.20.

F.10.3 Control Efficiencies

The control methods and corresponding control efficiencies for the wind erosion of continuously active stockpiles are presented in Table F.29.

F.11 LIME SLAKING

F.11.1 Process Rates

The annual and hourly process rates for lime slaking are based on the amount of lime slaked and are determined using equipment capacities and hours of operation. The annual and hourly process rates for lime slaking and a description of how they were determined are presented in Table F.15.

F.11.2 Emission Factors

PM emissions from the Sycamore Lime Slaker are calculated using manufacturer's information from a stack test performed on a similar slaker. The stack test results in units of lb of PM per hour were converted to units of lb of PM per ton of lime to account for the difference in the capacity of the slaker tested versus the Sycamore Lime Slaker. Additionally, a 20% safety factor was added to account for any differences in the configuration and/or location of the slaker. PM_{10} and $PM_{2.5}$ emission factors are assumed to equal the PM emission factor as a worst-case emission estimate.

The emission factors for the Sycamore Lime Slaker are presented in Table F.21.

F.11.3 Control Efficiencies

The control methods and corresponding control efficiencies for the Sycamore Lime Slaker are presented in Table F.29.

F.12 SYCAMORE BULK AND MOLYBDENUM FLOTATION EQUIPMENT

F.12.1 Process Rates

The annual and hourly process rates for the Sycamore Bulk and Molybdenum Flotation Equipment are based on the quantity of concentrate processed in the bulk flotation operations. The process rates of the Sycamore Bulk and Molybdenum Flotation Equipment are presented in Table F.22.

F.12.2 Emission Factors

VOC emissions from the Sycamore Bulk and Molybdenum Flotation Equipment are calculated using an emission factor of approximately 2.35 lb per ton of organic, based testing conducted at the Freeport-McMoRan Henderson Mill in 2009. The emission factor is converted to units of lb per ton of concentrate using organic reagent and concentrate data from 2018. HAP emissions are calculated by applying diesel vapor mass fractions to the VOC emission factor. Diesel is the primary organic used in the flotation equipment.

H_2S emissions from the Sycamore Bulk and Molybdenum Flotation Equipment are calculated using an emission factor of approximately 0.0084 lb/ton, from a Freeport-McMoRan Technology Center study titled *Hydrogen Sulfide and Carbon Dioxide Emissions from Flotation Cell Operations Under Targeted Conditions* conducted by Hazen Research Inc. (02/2013). The emission factor is a conservative value based on tests conducted using a pH of 9.5. The Sycamore Molybdenum Flotation Equipment will typically operate at a pH greater than or equal to 11.

The emission factor for the Sycamore Bulk and Molybdenum Flotation Equipment is presented in Table F.22.

F.12.3 Control Efficiencies

The control methods and corresponding control efficiencies for the Sycamore Bulk and Molybdenum Flotation Equipment are presented in Table F.29.

F.13 XANTHATE AND TEST REAGENT MIXING AND STORAGE TANKS

F.13.1 Process Rates

The annual and hourly process rates for the xanthate and test reagent mixing and storage tanks are based on xanthate or test reagent usage rates. The process rates are presented in Table F.23.

F.13.2 Emission Factors

VOC and HAP emissions from the xanthate and test reagent mixing and storage tanks are calculated using the following equation adapted from data presented in the *AERO Xanthate Handbook* (1972):

$$EF = \left(\frac{\text{L lb xan. loss}}{\text{100 lb xan. ·day}}\right)\left(\frac{\text{2,000 lb xan.}}{\text{1 ton xan.}}\right)\left(\frac{\text{1 mol xan. loss}}{\text{202.4 lb xan. loss}}\right)\left(\frac{\text{3 mol CS}_2\text{ gen.}}{\text{6 mol xan. loss}}\right)\left(\frac{\text{76.14 lb CS}_2\text{ gen.}}{\text{1 mol CS}_2\text{ gen.}}\right)(\text{T days})$$

where:

EF	=	emission factor (lb CS_2 generated/ton xanthate or test reagent);
L	=	xanthate decomposition rate (%, see Table F.23, from the *AERO Xanthate Handbook* for AERO 325 [sodium ethyl xanthate] at a 25% solution concentration and 2018 temperature data from the Townsite Meteorological Monitor, assume the test reagent generates CS_2 emissions at the same rate); and
T	=	average tank holding period (days, see Table F.23).

The emission factors for the xanthate and test reagent mixing and storage tanks are presented in Table F.23.

F.13.3 Control Efficiencies

The control methods and corresponding control efficiencies for the xanthate and test reagent mixing and storage tanks are presented in Table F.29.

F.14 DIESEL EMERGENCY GENERATORS

F.14.1 Process Rates

The annual and hourly process rates for diesel emergency generators are based on power ratings (capacity) of the associated engines and hours of operation. The annual and hourly process rates for diesel emergency generators and a description of how they were determined are presented in Table F.24.

F.14.2 Emission Factors

The diesel emergency generators are presented in Table F.24 along with identification of which of the following emission factors are used to calculate emissions from the associated engines.

F.14.2.1 Tier 2 Diesel Engines (kW > 560)

PM, CO, NO_X, and VOC emissions from Tier 2 diesel engines rated greater than 560 kW are calculated using the applicable exhaust emission standards from Table 2 of Appendix I of 40 CFR 1039. PM_{10} and $PM_{2.5}$ emissions are assumed to equal PM emissions as a worst-case emission estimate. The combined NO_X and VOC emission standard is separated based on Table 4-6 of the EPA document titled *Exhaust and Crankcase Emission Factors for Nonroad Compression Ignition Engines in MOVES3.0.2*, which states that NO_X and VOC emissions for Tier 2 engines rated greater than 560 kW are assumed to be equal to 93.75% and 6.25%, respectively, of the combined emission standard.

SO_2 emissions are calculated assuming all the sulfur in the diesel fuel combusted in the engine is converted to SO_2 emissions. The FMBI facility uses ultra-low sulfur diesel fuel, which has a maximum sulfur content of 0.0015%. CO_2, CH_4, and N_2O emissions are calculated using the emission factors from 40 CFR 98 Tables C-1 and C-2 for distillate fuel oil No. 2.

HAP emissions from Tier 2 diesel engines rated greater than 560 kW are calculated using the emission factors from AP-42 Tables 3.4-3 and 3.4-4 (10/96) for uncontrolled diesel engines. These emission factors are applicable to engines rated greater than 600 hp (447.42 kW).

When necessary, a diesel heating value of 19,300 Btu/lb of diesel fuel and an average brake-specific fuel consumption value of 7,000 Btu/hp-hr are used to calculate the emission factors in units of lb/hp-hr.

The emission factors for Tier 2 diesel engines rated greater than 560 kW are presented in Table F.25.

F.14.2.2 Tier 3 Diesel Engines (450 ≤ kW ≤ 560)

PM, CO, NO_X, and VOC emissions from Tier 3 diesel engines rated greater than or equal to 450 kW, but less than or equal to 560 kW are calculated using the applicable exhaust emission standards from Table 3 of Appendix I of 40 CFR 1039. PM_{10} and $PM_{2.5}$ emissions are assumed to equal PM emissions as a worst-case emission estimate. The combined NO_X and VOC emission standard is separated based on Table 4-6 of the EPA document titled *Exhaust and Crankcase Emission Factors for Nonroad Compression Ignition Engines in MOVES2014b*, which states that NO_X and VOC emissions for Tier 3 engines rated greater than or equal to 450 kW, but less than or equal to 560 kW are assumed to be equal to 93.33% and 6.67%, respectively, of the combined emission standard.

SO_2 emissions are calculated assuming all the sulfur in the diesel fuel combusted in the engine is converted to SO_2 emissions. The FMBI facility uses ultra-low sulfur diesel fuel, which has a maximum sulfur content of 0.0015%. CO_2, CH_4, and N_2O emissions are calculated using the emission factors from 40 CFR 98 Tables C-1 and C-2 for distillate fuel oil No. 2.

HAP emissions from Tier 3 diesel engines rated greater than or equal to 450 kW, but less than or equal to 560 kW are calculated using the emission factors from AP-42 Tables 3.4-3 and 3.4-4 (10/96) for uncontrolled diesel engines. These emission factors are applicable to engines rated greater than 600 hp (447.42 kW).

When necessary, a diesel heating value of 19,300 Btu/lb of diesel fuel and an average brake-specific fuel consumption value of 7,000 Btu/hp-hr are used to calculate the emission factors in units of lb/hp-hr.

The emission factors for Tier 3 diesel engines rated greater than or equal to 450 kW, but less than or equal to 560 kW are presented in Table F.26.

F.14.3 Control Efficiencies

The control methods and corresponding control efficiencies for the diesel emergency generators are presented in Table F.29.

F.15 SYCAMORE PROPANE EMERGENCY GENERATORS

F.15.1 Process Rates

The annual and hourly process rates for the Sycamore propane emergency generators are based on power ratings (capacity) of the associated engines and hours of operation. The annual and hourly process rates for the Sycamore propane emergency generators and a description of how they were determined are presented in Table F.24.

F.15.2 Emission Factors

PM and HAP emissions from the engines associated with the Sycamore propane emergency generators are calculated using the emission factors from AP-42 Table 3.2-3 (08/00) for 4-stroke rich burn natural gas engines. The PM emission factor is the sum of the filterable PM_{10} emission factor and the condensable PM emission factor. PM_{10} and $PM_{2.5}$ emissions are assumed to be equal to PM emissions since both the filterable and condensable particulate matter is assumed to be less than 1 micron in diameter.

The AP-42 section for natural gas fired reciprocating engines is used to estimate emissions from the propane emergency engines because AP-42 does not have a section for propane fired reciprocating engines. However, review of EPA reference documents (see the EPA document titled *Exhaust Emission Factors for Nonroad Engine Modeling - Spark-Ignition*) shows that emissions from propane fired engines are similar or less than emissions from natural gas engines.

CO, NO_X, and VOC emissions from the engines associated with the Sycamore propane emergency generators are calculated using certification values for EPA engine family PCEXB05.9ARC. The EPA engine family corresponds to the engines chosen for the Sycamore Concentrator operations.

SO_2 emissions from the engines associated with the Sycamore propane emergency generators are calculated assuming all the sulfur in the propane fuel is converted to SO_2 emissions and the sulfur content of the propane fuel is 10 gr/100 scf based on information from the Santa Barbara County Air Pollution Control District for HD-5 propane. CO_2, CH_4, and N_2O emissions are calculated using the emission factors from 40 CFR 98 Tables C-1 and C-2 for propane combustion.

When necessary, a propane higher heating value of 2,520 Btu/scf and a brake-specific fuel consumption value of 10,500 Btu/hp-hr are used to calculate the emission factors in units of lb/hp-hr.

The emission factors for the engines associated with the Sycamore propane emergency generators are presented in Table F.27.

F.15.3 Control Efficiencies

The control methods and corresponding control efficiencies for the Sycamore propane emergency generators are presented in Table F.29.

Table F.1 Process Rate and Emission Factor Information for Processes Controlled by Dust Collectors with Outlet Grain Loading Emission Factors

Process Number	Emission Unit Description	Exhaust Flow Rate (dscfm) [a]	Process Rates			Voluntary Emission Limitation (gr/dscf)		Emission Factors (lb/dscf)				
			Hourly (dscf/hr)	Annual (dscf/yr)	Description	PM	PM_{10}	PM	PM_{10}	$PM_{2.5}$	Lead	Total HAPs
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414												
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)												
001-5 (AOS1)	Dust Collector C51 (AOS1)	15,000	900,000	7.8840E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0135	0.0135	1.93E-06	1.93E-06	1.93E-06	2.38E-11	5.85E-10
001-16 (AOS1)	Dust Collector AE-001 (AOS1)	20,000	1,200,000	1.0512E+10	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
001-17 (AOS1)	Dust Collector AE-014 (AOS1)	12,000	720,000	6.3072E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
001-18 (AOS1)	Dust Collector AE-015 (AOS1)	12,000	720,000	6.3072E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)												
001-12 (AOS1)	Dust Collector AE-002 (AOS1)	12,000	720,000	6.3072E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
001-13 (AOS1)	Dust Collector AE-003 (AOS1)	15,000	900,000	7.8840E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10

Table F.1 Process Rate and Emission Factor Information for Processes Controlled by Dust Collectors with Outlet Grain Loading Emission Factors

Process Number	Emission Unit Description	Exhaust Flow Rate (dscfm) [a]	Process Rates			Voluntary Emission Limitation (gr/dscf)		Emission Factors (lb/dscf)				
			Hourly (dscf/hr)	Annual (dscf/yr)	Description	PM	PM_{10}	PM	PM_{10}	$PM_{2.5}$	Lead	Total HAPs
001-14 (AOS1)	Dust Collector AE-016 (AOS1)	12,000	720,000	6.3072E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
001-15 (AOS1)	Dust Collector AE-017 (AOS1)	12,000	720,000	6.3072E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
Sycamore Milling Operations (AOS1)												
002-7 (AOS1)	Dust Collector AE-008 (AOS1)	50,000	3,000,000	2.6280E+10	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
002-8 (AOS1)	Dust Collector AE-009 (AOS1)	12,000	720,000	6.3072E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
002-9 (AOS1)	Dust Collector AE-010 (AOS1)	20,000	1,200,000	1.0512E+10	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
002-10 (AOS1)	Dust Collector AE-011 (AOS1)	12,000	720,000	6.3072E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
002-11 (AOS1)	Dust Collector AE-007 (AOS1)	12,000	720,000	6.3072E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10

Table F.1 Process Rate and Emission Factor Information for Processes Controlled by Dust Collectors with Outlet Grain Loading Emission Factors

Process Number	Emission Unit Description	Exhaust Flow Rate (dscfm) [a]	Process Rates			Voluntary Emission Limitation (gr/dscf)		Emission Factors (lb/dscf)				
			Hourly (dscf/hr)	Annual (dscf/yr)	Description	PM	PM_{10}	PM	PM_{10}	$PM_{2.5}$	Lead	Total HAPs
002-12 (AOS1)	Dust Collector AE-012 (AOS1)	33,000	1,980,000	1.7345E+10	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
002-13 (AOS1)	Dust Collector AE-013 (AOS1)	18,000	1,080,000	9.4608E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0026	0.0026	3.71E-07	3.71E-07	3.71E-07	4.59E-12	1.13E-10
Affected Emissions Units - Proposed Updated Design of AOS1												
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)												
001-5 (AOS1)	Dust Collector C51 (AOS1)	15,000	900,000	7.8840E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0135	0.0135	1.93E-06	1.93E-06	1.93E-06	2.38E-11	5.85E-10
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)												
001-12 (AOS1)	PC1 Dust Collector 1 (AOS1)	14,500	870,000	7.6212E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0023	0.0023	3.29E-07	3.29E-07	3.29E-07	4.06E-12	9.96E-11
001-13 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	16,700	1,002,000	8.7775E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0023	0.0023	3.29E-07	3.29E-07	3.29E-07	4.06E-12	9.96E-11
001-14 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	16,700	1,002,000	8.7775E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0023	0.0023	3.29E-07	3.29E-07	3.29E-07	4.06E-12	9.96E-11

Table F.1 Process Rate and Emission Factor Information for Processes Controlled by Dust Collectors with Outlet Grain Loading Emission Factors

Process Number	Emission Unit Description	Exhaust Flow Rate (dscfm) [a]	Process Rates			Voluntary Emission Limitation (gr/dscf)		Emission Factors (lb/dscf)				
			Hourly (dscf/hr)	Annual (dscf/yr)	Description	PM	PM_{10}	PM	PM_{10}	$PM_{2.5}$	Lead	Total HAPs
001-15 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	16,700	1,002,000	8.7775E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0023	0.0023	3.29E-07	3.29E-07	3.29E-07	4.06E-12	9.96E-11
Sycamore Milling Operations (AOS1)												
002-7 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	22,000	1,320,000	1.1563E+10	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0023	0.0023	3.29E-07	3.29E-07	3.29E-07	4.06E-12	9.96E-11
002-8 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	22,000	1,320,000	1.1563E+10	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0023	0.0023	3.29E-07	3.29E-07	3.29E-07	4.06E-12	9.96E-11
002-9 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	23,000	1,380,000	1.2089E+10	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0023	0.0023	3.29E-07	3.29E-07	3.29E-07	4.06E-12	9.96E-11
002-10 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	27,000	1,620,000	1.4191E+10	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0023	0.0023	3.29E-07	3.29E-07	3.29E-07	4.06E-12	9.96E-11
002-11 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	25,000	1,500,000	1.3140E+10	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0023	0.0023	3.29E-07	3.29E-07	3.29E-07	4.06E-12	9.96E-11
002-12 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	10,000	600,000	5.2560E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0023	0.0023	3.29E-07	3.29E-07	3.29E-07	4.06E-12	9.96E-11

Table F.1 Process Rate and Emission Factor Information for Processes Controlled by Dust Collectors with Outlet Grain Loading Emission Factors

Process Number	Emission Unit Description	Exhaust Flow Rate (dscfm) [a]	Process Rates			Voluntary Emission Limitation (gr/dscf)		Emission Factors (lb/dscf)				
			Hourly (dscf/hr)	Annual (dscf/yr)	Description	PM	PM_{10}	PM	PM_{10}	$PM_{2.5}$	Lead	Total HAPs
002-13 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	10,000	600,000	5.2560E+09	Assume continuous operation (60 min/hr and 8,760 hr/yr) at the full exhaust flow rate.	0.0023	0.0023	3.29E-07	3.29E-07	3.29E-07	4.06E-12	9.96E-11

[a] When necessary, the exhaust flow rate of the pollution control device in units of dscfm is assumed to equal the design flow rate in units of acfm as a worst-case emission estimate.

Table F.2 Process Rate and Emission Factor Information for Processes Controlled by Scrubbers with lb/hr Emission Factors

Process Number	Process/Emission Unit Description	Process Rates			Emission Factors	
		Hourly (hr/hr)	Annual (hr/yr)	Description	Regulated Air Pollutant	Value (lb/hr)
Affected Emissions Units - Proposed Updated Design of AOS1						
Sycamore Concentrate Handling Operations (AOS1)						
052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	1	8,760	Assume continuous operation (60 min/hr and 8,760 hr/yr)	PM	0.063
					PM_{10}	0.063
					$PM_{2.5}$	0.063
					VOC	1.83
					Lead	9.67E-06
					Total HAPs	1.61E-01
Sycamore Lime and Other Regent Operations (AOS1)						
055-3 (AOS1)	Sycamore NaHS System Scrubber (AOS1)	1	8,760	Assume continuous operation (60 min/hr and 8,760 hr/yr)	H_2S	0.038

Table F.3 Process Rate Information for Drilling and Blasting

Process Number	Process/Emission Unit Description	Hourly Process Rate			Annual Process Rate		
		Value	Units	Description	Value	Units	Description
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414							
Mining Operations (AOS1)							
026-3 (AOS1)	Drilling (AOS1)	200	holes	Estimated value based on the current mining process rates.	90,000	holes	Maximum expected value based on the current mining process rates.
026-2 (AOS1)	Blasting (AOS1)	1	blasts	Because of the duration of a blast, only one blast can occur in an hour.	600	blasts	Maximum expected value based on the current mining process rates.
Affected Emissions Units - Proposed Updated Design of AOS1							
Mining Operations (AOS1)							
026-3 (AOS1)	Drilling (AOS1)	490	holes	20% greater than the average annual holes/blast and assuming all drilling for a blast occurs in one hour.	106,219	holes	Maximum expected value based on the updated mining process rates.
026-2 (AOS1)	Blasting (AOS1)	1	blasts	Because of the duration of a blast, only one blast can occur in an hour.	260	blasts	Maximum expected value based on the updated mining process rates.

Table F.4 Emission Factors for Drilling

Pollutant	Emission Factor		Reference
	Design of AOS1 in Class II Air Quality Permit #77414	Proposed Updated Design of AOS1	
PM	1.30 lb/ton	1.30 lb/ton	AP-42 Table 11.9-4 (10/98), Drilling Overburden
PM_{10}	0.78 lb/ton	0.78 lb/ton	60% of the PM Emission Factor Based on the PM_{30} and PM_{10} Emission Factors from AP-42 Table 11.9.2-2 and Figure 11.19-4 (08/04), Tertiary Crushing (controlled)
$PM_{2.5}$	0.14 lb/ton	0.14 lb/ton	11.1% of the PM Emission Factor Based on the PM_{30} and $PM_{2.5}$ Emission Factors from AP-42 Table 11.9.2-2 and Figure 11.19-4 (08/04), Tertiary Crushing (controlled)
Total HAPs	2.66E-04 lb/ton	2.80E-04 lb/ton	PM_{10} emission factor multiplied by the concentration of the HAPs (see Table F.28)

Table F.5 Emission Factors for Blasting - Design of AOS1 in Class II Air Quality Permit #77414

Pollutant	Hourly Emission Factor		Annual Emission Factor		Reference
	As Presented in Reference	Unit Conversion	As Presented in Reference	Unit Conversion	
PM	1,252.20 lb/blast	--	397.06 lb/blast	--	AP-42 Table 11.9-1 (10/98), Blasting Overburden
PM_{10}	651.14 lb/blast	--	206.47 lb/blast	--	
$PM_{2.5}$	37.57 lb/blast	--	11.91 lb/blast	--	
CO	17.8 L/kg	4,064.40 lb/blast	17.8 L/kg	3,048.30 lb/blast	*Factors Affecting ANFO Fumes Production* from NIOSH (2001)
NO_X	0.9 kg/metric ton	180.00 lb/blast	0.9 kg/metric ton	135.00 lb/blast	*NO_X Emissions from Blasting Operations in Open-Cut Coal Mining* from Atmospheric Environment 42 (2008)
SO_2	--	1.23 lb/blast	--	0.92 lb/blast	Complete Sulfur Conversion Using a Diesel Sulfur Content of 15 ppm, and an Animal Fat Sulfur Content of 500 ppm (worst case assumption based on a 03/2003 EPA document that says biofuels reduce SO_2 emissions compared to No. 2 diesel)
CO_2	73.96 kg/MMBtu	38,066.47 lb/blast	73.96 kg/MMBtu	28,549.85 lb/blast	40 CFR 98 Tables C-1 and C-2 for Distillate Fuel Oil No. 2 and Rendered Animal Fat
	71.06 kg/MMBtu		71.06 kg/MMBtu		
CH_4	3.00E-03 kg/MMBtu	1.49 lb/blast	3.00E-03 kg/MMBtu	1.11 lb/blast	
	1.10E-03 kg/MMBtu		1.10E-03 kg/MMBtu		
N_2O	6.00E-04 kg/MMBtu	0.29 lb/blast	6.00E-04 kg/MMBtu	0.22 lb/blast	
	1.10E-04 kg/MMBtu		1.10E-04 kg/MMBtu		
Total HAPs	varies	0.34 lb/blast	varies	0.16 lb/blast	AP-42 Tables 1.3-8 and 1.3-10 (05/10), 137,000 Btu/gal, 0.125 MMBtu/gal Animal Fat, and 7.34 lb/gal Animal Fat, PM_{10} emission factor multiplied by the concentration of the HAPs (see Table F.28)

Table F.6 Emission Factors for Blasting - Proposed Updated Design of AOS1

Pollutant	Hourly Emission Factor		Annual Emission Factor		Reference
	As Presented in Reference	Unit Conversion	As Presented in Reference	Unit Conversion	
PM	4,919.42 lb/blast	--	3,742.33 lb/blast	--	AP-42 Table 11.9-1 (10/98), Blasting Overburden
PM_{10}	2,558.10 lb/blast	--	1,946.01 lb/blast	--	
$PM_{2.5}$	147.58 lb/blast	--	112.27 lb/blast	--	
CO	17.8 L/kg	15,319.65 lb/blast	17.8 L/kg	12,766.38 lb/blast	*Factors Affecting ANFO Fumes Production* from NIOSH (2001)
NO_X	0.9 kg/metric ton	678.46 lb/blast	0.9 kg/metric ton	565.38 lb/blast	*NO_X Emissions from Blasting Operations in Open-Cut Coal Mining* from Atmospheric Environment 42 (2008)
SO_2	--	4.64 lb/blast	--	3.86 lb/blast	Complete Sulfur Conversion Using a Diesel Sulfur Content of 15 ppm, and an Animal Fat Sulfur Content of 500 ppm (worst case assumption based on a 03/2003 EPA document that says biofuels reduce SO_2 emissions compared to No. 2 diesel)
CO_2	73.96 kg/MMBtu	143,484.81 lb/blast	73.96 kg/MMBtu	119,570.67 lb/blast	40 CFR 98 Tables C-1 and C-2 for Distillate Fuel Oil No. 2 and Rendered Animal Fat
	71.06 kg/MMBtu		71.06 kg/MMBtu		
CH_4	3.00E-03 kg/MMBtu	5.60 lb/blast	3.00E-03 kg/MMBtu	4.67 lb/blast	
	1.10E-03 kg/MMBtu		1.10E-03 kg/MMBtu		
N_2O	6.00E-04 kg/MMBtu	1.11 lb/blast	6.00E-04 kg/MMBtu	0.92 lb/blast	
	1.10E-04 kg/MMBtu		1.10E-04 kg/MMBtu		
Total HAPs	varies	1.38 lb/blast	varies	1.08 lb/blast	AP-42 Tables 1.3-8 and 1.3-10 (05/10), 137,000 Btu/gal, 0.125 MMBtu/gal Animal Fat, and 7.34 lb/gal Animal Fat, PM_{10} emission factor multiplied by the concentration of the HAPs (see Table F.28)

Table F.7 Vehicle Travel on Unpaved Roads - Design of AOS1 in Class II Air Quality Permit #77414

Vehicle Description	Quantity of Vehicles	Vehicle Weight (tons)			Average Speed (mph)	Vehicle Miles Traveled (VMT)		Weighted Average Calculation (W*VMT)	
		Empty Weight	Loaded Weight	Average		Hourly	Annual	Hourly	Annual
793B Haul Trucks	11	158	423	290.50	17.5	193	1,023,966	55,921.25	297,462,171
793D Haul Trucks	23	158	423	290.50	17.5	403	2,141,020	116,926.25	621,966,358
777 Haul Trucks	2	83.10	181.50	132.30	17.5	35	186,176	4,630.50	24,631,041
Water Trucks	4	98.10	181.50	139.80	17.5	70	87,600	9,786.00	12,246,480
994 Loaders	2	213		213.00	213.00	8.4	17	258	3,578.40
988 Loaders	1	55		55.00	55.00	12.2	12	323	671.00
PV 271 Drills	5	84		84.00	84.00	1.0	5	2,143	420.00
Low Boys	1	134.5		134.50	134.50	15	15	7,761	2,017.50
Road Compactors	3	16		16.00	16.00	5	15	1,663	240.00
Excavators/Trackhoes	4	93.68		93.68	93.68	11.5	46	19,563	4,309.28
Backhoes	1	12.07		12.07	12.07	12.5	12	5,295	150.28
Cable Reel Trucks	3	--	--	58.26	17.0	51	21,689	2,971.26	1,263,628
Dump Trucks	2	--	--	58.26	17.5	35	14,885	2,039.10	867,196

Table F.7 Vehicle Travel on Unpaved Roads - Design of AOS1 in Class II Air Quality Permit #77414

Vehicle Description	Quantity of Vehicles	Vehicle Weight (tons)			Average Speed (mph)	Vehicle Miles Traveled (VMT)		Weighted Average Calculation (W*VMT)	
		Empty Weight	Loaded Weight	Average		Hourly	Annual	Hourly	Annual
Articulated Haul Trucks	2	15	30	22.50	17.0	34	8,907	765.00	200,400
Mill Recycle Loaders	1	15	20	17.50	12.2	12	909	213.50	15,909
Shipment/Delivery Trucks	--	15	40	27.50	17.5	54	394,368	1,485.63	10,845,120
Small Support/ Employee Vehicles	--	5.25		5.25	17.5	108	784,750	564.38	4,119,938
Total:						**1,116.17**	**4,701,277**	**206,689.33**	**976,838,100**
Mean Vehicle Weighted Average (tons):								**185.18**	**207.78**

Table F.8 Vehicle Travel on Unpaved Roads - Proposed Updated Design of AOS1

Vehicle Description	Quantity of Vehicles	Vehicle Weight (tons)			Average Speed (mph)	Vehicle Miles Traveled (VMT)		Weighted Average Calculation (W*VMT)	
		Empty Weight	Loaded Weight	Average		Hourly	Annual	Hourly	Annual
793B/C Haul Trucks	11	180.0	445.0	312.50	24	264	836,928	82,500.00	261,539,861
793D/F Haul Trucks	109	169.5	425.5	297.50	24	2,616	8,293,191	778,260.00	2,467,224,386
777 Haul Trucks	3	80	101	90.50	35	105	336,086	9,502.50	30,415,759
Water Trucks	8	58	182	120.00	20	160	108,680	19,200.00	13,041,600
994 Loaders	2	267		267.00	8	16	64,000	4,272.00	17,088,000
988 Loaders	0	55		55.00	12.2	0	0	0	0
PV 271 Drills	9	34		34.00	1	9	37,458	306.00	1,273,572
Low Boys	1	100		100.00	20	20	102,200	2,000.00	10,220,000
Road Compactors	5	36		36.00	7	35	38,325	1,260.00	1,379,700
Excavators/Trackhoes	3	73		73.00	2	6	25,200	438.00	1,839,600
Backhoes	3	12		12.00	10	30	126,000	360.00	1,512,000
Cable Reel Trucks	2	33		33.00	8	16	67,200	528.00	2,217,600
Dump Trucks	0	--	--	58.26	17.5	0	0	0	0

Table F.8 Vehicle Travel on Unpaved Roads - Proposed Updated Design of AOS1

Vehicle Description	Quantity of Vehicles	Vehicle Weight (tons)			Average Speed (mph)	Vehicle Miles Traveled (VMT)		Weighted Average Calculation (W*VMT)	
		Empty Weight	Loaded Weight	Average		Hourly	Annual	Hourly	Annual
Articulated Haul Trucks	2	15	30	22.50	17.0	34	8,907	765.00	200,400
Mill Recycle Loaders	1	15	20	17.50	12.2	12	909	213.50	15,909
Shipment/Delivery Trucks	--	15	40	27.50	17.5	97	709,930	2,674.39	19,523,081
Small Support/ Employee Vehicles	--	5.25		5.25	17.5	1,752	12,791,607	9,199.44	67,155,937
Total:						**5,172.73**	**23,546,620**	**911,478.84**	**2,894,647,405**
Mean Vehicle Weighted Average (tons):								**176.21**	**122.93**

Table F.9 Emission Factors for Vehicle Travel on Unpaved Roads - Design of AOS1 in Class II Air Quality Permit #77414

Pollutant	Emission Factor		Reference
	Hourly Basis	Annual Basis	
PM	21.48 lb/VMT	19.83 lb/VMT	AP-42 Section 13.2.2, Expressions 1a and 2 (11/06)
PM_{10}	5.90 lb/VMT	5.45 lb/VMT	
$PM_{2.5}$	0.59 lb/VMT	0.55 lb/VMT	
Total HAPs	2.02E-03 lb/VMT	1.86E-03 lb/VMT	PM_{10} emission factor multiplied by the concentration of the HAPs (see Table F.28)

Table F.10Emission Factors for Vehicle Travel on Unpaved Roads - Proposed Updated Design of AOS1

Pollutant	Emission Factor		Reference
	Hourly Basis	Annual Basis	
PM	21.01 lb/VMT	15.66 lb/VMT	AP-42 Section 13.2.2, Expressions 1a and 2 (11/06)
PM_{10}	5.77 lb/VMT	4.30 lb/VMT	
$PM_{2.5}$	0.58 lb/VMT	0.43 lb/VMT	
Total HAPs	2.07E-03 lb/VMT	1.54E-03 lb/VMT	PM_{10} emission factor multiplied by the concentration of the HAPs (see Table F.28)

Table F.11Process Rate Information for the Dozers and Graders - Design of AOS1 in Class II Air Quality Permit #77414

Vehicle Description	Quantity of Vehicles	Average Speed (mph)	Time Operated Per Vehicle (hr)		Total Hours Operated (hr)		Vehicle Miles Traveled (VMT)	
			Annual	Hourly	Annual	Hourly	Annual	Hourly
Dozers								
834 RTD	5	--	6,056	1	30,278	5	--	--
824 RTD	2	--	6,056	1	12,111	2	--	--
D10 Dozers	9	--	3,962	1	35,657	9	--	--
Total for Dozers					**78,046**	**16**	**--**	**--**
Graders								
Graders	5	6	3,953	1	--	--	118,587	30
Total for Graders					**--**	**--**	**118,587**	**30**

Table F.12Process Rate Information for the Dozers and Graders - Proposed Updated Design of AOS1

Vehicle Description	Quantity of Vehicles	Average Speed (mph)	Time Operated Per Vehicle (hr)		Total Hours Operated (hr)		Vehicle Miles Traveled (VMT)	
			Annual	Hourly	Annual	Hourly	Annual	Hourly
Dozers								
Dozers	14	--	6,056	1	84,777	14	--	--
Rubber Tire Dozers	8	--	6,056	1	48,444	8	--	--
Total for Dozers					**133,221**	**22**	**--**	**--**
Graders								
Graders	8	6	8,760	1	70,080	--	420,480	48
Total for Graders					**--**	**--**	**420,480**	**48**

Table F.13Emission Factors for Dozer Operations

Pollutant	Emission Factor		Reference
	Design of AOS1 in Class II Air Quality Permit #77414	Proposed Updated Design of AOS1	
PM	8.85 lb/hr	8.85 lb/hr	AP-42 Table 11.9-1 (10/98), Bulldozing Overburden
PM_{10}	1.61 lb/hr	1.61 lb/hr	
$PM_{2.5}$	0.93 lb/hr	0.93 lb/hr	
Total HAPs	5.49E-04 lb/hr	5.76E-04 lb/hr	PM_{10} emission factor multiplied by the concentration of the HAPs (see Table F.28)

Table F.14Emission Factors for Grader Operations

Pollutant	Emission Factor		Reference
	Design of AOS1 in Class II Air Quality Permit #77414	Proposed Updated Design of AOS1	
PM	3.53 lb/VMT	3.53 lb/VMT	AP-42 Table 11.9-1 (10/98), Grading
PM_{10}	1.10 lb/VMT	1.10 lb/VMT	
$PM_{2.5}$	0.11 lb/VMT	0.11 lb/VMT	
Total HAPs	3.76E-04 lb/VMT	3.95E-04 lb/VMT	PM_{10} emission factor multiplied by the concentration of the HAPs (see Table F.28)

Table F.15Process Rate Information for Material Transfer Points and Lime Slaking Operations

Process Number	Process/Emission Unit Description	Hourly Process Rate		Annual Process Rate		Type of Material Processed
		Quantity (tph)	Description	Quantity (tpy)	Description	
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414						
Mining Operations (AOS1)						
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	30,515	Sum of unloading to crushers, leaching areas, and storage areas.	220,314,000	Sum of unloading to crushers, leaching areas, and storage areas.	All Mined Material (Design of AOS1 in Class II Air Quality Permit #77414)
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	12,865	Equal to the maximum hourly capacities of the crushers.	65,700,000	Maximum expected value based on the current mining process rates.	Mill Ore
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)					
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	3,433	20% greater than the average annual tons/year.	30,076,000	Maximum expected value based on the current mining process rates.	Leach Ore
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	14,217	20% greater than the average annual tons/year.	124,538,000	Maximum expected value based on the current mining process rates.	Overburden/Low Grade Ore
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)						
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	7,600	Assume equal to the maximum capacity of the transfer.	32,850,000	Assume equal to half the sulfide mining rate.	Mill Ore
001-19 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	3,965	Assume equal to the maximum capacity of the transfer.	16,206,000	Assume equal to the quantity not sent to the other Coarse Ore Stockpiles.	Mill Ore

Table F.15Process Rate Information for Material Transfer Points and Lime Slaking Operations

Process Number	Process/Emission Unit Description	Hourly Process Rate		Annual Process Rate		Type of Material Processed
		Quantity (tph)	Description	Quantity (tpy)	Description	
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)						
001-20 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6	1,900	Assume equal to the maximum capacity of the transfer.	16,644,000	Assume equal to the maximum capacity of the transfer at continuous operation.	Mill Ore
Affected Emissions Units - Proposed Updated Design of AOS1						
Mining Operations (AOS1)						
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	39,352	Sum of unloading to crushers, leaching areas, and storage areas.	254,833,922	Sum of unloading to crushers, leaching areas, and storage areas.	All Mined Material (Proposed Updated Design of AOS1)
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	8,000	Equal to the maximum hourly capacity of the crusher.	44,433,881	Maximum expected value based on the updated mining process rates.	Mill Ore
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	7,000	Equal to the maximum hourly capacity of the crusher.	32,632,000	Maximum expected value based on the updated mining process rates.	Mill Ore
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	1,264	20% greater than the average annual tons/year.	9,230,000	Maximum expected value based on the updated mining process rates.	Leach Ore
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	23,087	20% greater than the average annual tons/year.	168,538,041	Maximum expected value based on the updated mining process rates.	Overburden/Low Grade Ore

Table F.15Process Rate Information for Material Transfer Points and Lime Slaking Operations

Process Number	Process/Emission Unit Description	Hourly Process Rate		Annual Process Rate		Type of Material Processed
		Quantity (tph)	Description	Quantity (tpy)	Description	
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)						
001-2 (AOS1)	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	7,600	Assume equal to the maximum capacity of the transfer.	66,576,000	Assume equal to the maximum capacity of the transfer at continuous operation.	Mill Ore
001-8 (AOS1)	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	7,600	Assume equal to the maximum capacity of the transfer.	66,576,000	Assume equal to the maximum capacity of the transfer at continuous operation.	Mill Ore
001-9 (AOS1)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	7,600	Assume equal to the maximum capacity of the transfer.	66,576,000	Assume equal to the maximum capacity of the transfer at continuous operation.	Mill Ore
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	7,600	Assume equal to the maximum capacity of the transfer.	53,260,800	Equal to 4/5 of the maximum capacity of the transfer at continuous operation.	Mill Ore
001-10 (AOS1)	Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	7,600	Assume equal to the maximum capacity of the transfer.	13,315,200	Equal to 1/5 the maximum capacity of the transfer at continuous operation.	Mill Ore
001-3 (AOS1)	Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	7,600	Assume equal to the maximum capacity of the transfer.	13,315,200	Assume equal to the quantity not sent to the other Coarse Ore Stockpiles.	Mill Ore
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)						
001-20 (AOS1)	PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	8,000	Assume equal to the maximum capacity of the transfer.	70,080,000	Assume equal to the maximum capacity of the transfer at continuous operation.	Mill Ore

Table F.15Process Rate Information for Material Transfer Points and Lime Slaking Operations

Process Number	Process/Emission Unit Description	Hourly Process Rate		Annual Process Rate		Type of Material Processed
		Quantity (tph)	Description	Quantity (tpy)	Description	
Sycamore Concentrate Handling Operations (AOS1)						
006-11 (AOS1)	Copper Concentrate Filters 1/2 (AOS1) to Copper Concentrate Filter Drop Storage (AOS1)	57.00	Assume equal to the maximum rate of the copper concentrate handling operations.	499,320	Assume equal to the maximum rate of the copper concentrate handling operations at continuous operation.	Copper Concentrate
006-12 (AOS1)	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader	57.00	Assume equal to the maximum rate of the copper concentrate handling operations.	499,320	Assume equal to the maximum rate of the copper concentrate handling operations at continuous operation.	Copper Concentrate
006-13 (AOS1)	Copper Concentrate Loadout Storage (AOS1) to Trucks via Front-End Loader	57.00	Assume equal to the maximum rate of the copper concentrate handling operations.	499,320	Assume equal to the maximum rate of the copper concentrate handling operations at continuous operation.	Copper Concentrate
052-3 (AOS1)	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1)	2.10	Assume equal to the maximum rate of the Molybdenum Concentrate Dryer.	18,396	Assume equal to the maximum rate of the Molybdenum Concentrate Dryer at continuous operation.	Molybdenum Concentrate
052-4 (AOS1)	Dried Molybdenum Concentrate Storage Bin (AOS1) to Molybdenum Concentrate Bagging System (AOS1)	2.10	Assume equal to the maximum rate of the Molybdenum Concentrate Bagging System.	18,396	Assume equal to the maximum rate of the Molybdenum Concentrate Bagging System at continuous operation.	Molybdenum Concentrate
Sycamore Lime and Other Regent Operations (AOS1)						
007-6 (AOS1)	Transfer of Lime to the Sycamore Lime Silo (AOS1)	25.00	Assume equal to the maximum delivery rate.	99,514	Assume equal to the maximum capacity of the slaker at continuous operation.	Lime

Table F.15Process Rate Information for Material Transfer Points and Lime Slaking Operations

Process Number	Process/Emission Unit Description	Hourly Process Rate		Annual Process Rate		Type of Material Processed
		Quantity (tph)	Description	Quantity (tpy)	Description	
007-7 (AOS1)	Sycamore Lime Slaker (AOS1)	11.36	Assume equal to the maximum capacity of the slaker	99,514	Assume equal to the maximum capacity of the slaker at continuous operation.	Lime
055-1 (AOS1)	Transfer of Flocculant to Tailings Flocculant Bag Breaker Bin (AOS1)	0.83	Assume equal to the maximum flocculant usage rate.	7,227	Assume equal to the maximum hourly usage rate at continuous operation.	Flocculant
055-2 (AOS1)	Transfer of Flocculant to Concentrate Flocculant Bag Breaker Bin (AOS1)	0.055	Assume equal to the maximum flocculant usage rate.	482	Assume equal to the maximum hourly usage rate at continuous operation.	Flocculant
Sycamore Prill Handling Operations (AOS1)						
050-7 (AOS1)	Delivery of Ammonium Nitrate Prill to Prill Bin 6 (AOS1)	25.75	Assume equal to the maximum delivery rate.	25,365	Equal to the additional prill needed for the Sycamore Concentrator based on maximum mining rates.	Ammonium Nitrate Prill
050-8 (AOS1)	Prill Bin 6 to ANFO Trucks for Transfer to Drill Holes	50.00	Equal to the ANFO truck capacities, the trucks can only be filled once per hour.	25,365	Equal to the additional prill needed for the Sycamore Concentrator based on maximum mining rates.	Ammonium Nitrate Prill

Table F.16Emission Factor Information for Material Transfer Points and Lime Slaking Operations

Process Number	Process/Emission Unit Description	Emission Factor				
		Type of Emission Unit	Type of Material Processed	Moisture Content of Material Processed	Protected or Unprotected Transfer Point	Reference
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414						
Mining Operations (AOS1)						
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Material Transfer Point	All Mined Material (Design of AOS1 in Class II Air Quality Permit #77414)	2.564% (site-specific)	Unprotected	See Section F.9.2.1
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)					
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Material Transfer Point	Leach Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Material Transfer Point	Overburden/Low Grade Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)						
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
001-19 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)						
001-20 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6	Material Transfer Point	Mill Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1

Table F.16Emission Factor Information for Material Transfer Points and Lime Slaking Operations

Process Number	Process/Emission Unit Description	Emission Factor				
		Type of Emission Unit	Type of Material Processed	Moisture Content of Material Processed	Protected or Unprotected Transfer Point	Reference
Affected Emissions Units - Proposed Updated Design of AOS1						
Mining Operations (AOS1)						
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Material Transfer Point	All Mined Material (Proposed Updated Design of AOS1)	2.564% (site-specific)	Unprotected	See Section F.9.2.1
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Material Transfer Point	Leach Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Material Transfer Point	Overburden/Low Grade Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)						
001-2 (AOS1)	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Protected	See Section F.9.2.1
001-8 (AOS1)	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Protected	See Section F.9.2.1
001-9 (AOS1)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Protected	See Section F.9.2.1

Table F.16Emission Factor Information for Material Transfer Points and Lime Slaking Operations

Process Number	Process/Emission Unit Description	Emission Factor				
		Type of Emission Unit	Type of Material Processed	Moisture Content of Material Processed	Protected or Unprotected Transfer Point	Reference
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
001-10 (AOS1)	Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
001-3 (AOS1)	Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)						
001-20 (AOS1)	PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	Material Transfer Point	Mill Ore	2.564% (site-specific)	Unprotected	See Section F.9.2.1
Sycamore Concentrate Handling Operations (AOS1)						
006-11 (AOS1)	Copper Concentrate Filters 1/2 (AOS1) to Copper Concentrate Filter Drop Storage (AOS1)	Material Transfer Point	Copper Concentrate	9% (site-specific)	Protected	See Section F.9.2.1
006-12 (AOS1)	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader	Material Transfer Point	Copper Concentrate	9% (site-specific)	Protected	See Section F.9.2.1
006-13 (AOS1)	Copper Concentrate Loadout Storage (AOS1) to Trucks via Front-End Loader	Material Transfer Point	Copper Concentrate	9% (site-specific)	Protected	See Section F.9.2.1
052-3 (AOS1)	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1)	Material Transfer Point	Molybdenum Concentrate	3% (site-specific)	Unprotected	See Section F.9.2.1
052-4 (AOS1)	Dried Molybdenum Concentrate Storage Bin (AOS1) to Molybdenum Concentrate Bagging System (AOS1)	Material Transfer Point	Molybdenum Concentrate	3% (site-specific)	Unprotected	See Section F.9.2.1

Table F.16Emission Factor Information for Material Transfer Points and Lime Slaking Operations

Process Number	Process/Emission Unit Description	Emission Factor				
		Type of Emission Unit	Type of Material Processed	Moisture Content of Material Processed	Protected or Unprotected Transfer Point	Reference
Sycamore Lime and Other Regent Operations (AOS1)						
007-6 (AOS1)	Transfer of Lime to the Sycamore Lime Silo (AOS1)	Material Transfer Point	Lime	N/A	N/A	See Section F.9.2.2
007-7 (AOS1)	Sycamore Lime Slaker (AOS1)	Lime Slaking	Lime	N/A	N/A	See Section F.11.2
055-1 (AOS1)	Transfer of Flocculant to Tailings Flocculant Bag Breaker Bin (AOS1)	Material Transfer Point	Flocculant	0.25% (site-specific)	Unprotected	See Section F.9.2.1
055-2 (AOS1)	Transfer of Flocculant to Concentrate Flocculant Bag Breaker Bin (AOS1)	Material Transfer Point	Flocculant	0.25% (site-specific)	Unprotected	See Section F.9.2.1
Sycamore Prill Handling Operations (AOS1)						
050-7 (AOS1)	Delivery of Ammonium Nitrate Prill to Prill Bin 6 (AOS1)	Material Transfer Point	Ammonium Nitrate Prill	N/A	N/A	See Section F.9.2.3
050-8 (AOS1)	Prill Bin 6 to ANFO Trucks for Transfer to Drill Holes	Material Transfer Point	Ammonium Nitrate Prill	N/A	N/A	See Section F.9.2.3

Table F.17Emission Factors for the Material Transfer Points Associated with Mined Material, Concentrates, and Flocculant

Material	Moisture Content (%)	Protected/ Unprotected	Wind Speed (mph)	Emission Factors (lb/ton)				
				PM	PM_{10}	$PM_{2.5}$	Lead	Total HAPs
All Mined Material (Design of AOS1 in Class II Air Quality Permit #77414)	2.56	Unprotected	7.10	0.0026	0.0012	0.00019	2.64E-08	4.26E-07
All Mined Material (Proposed Updated Design of AOS1)	2.56	Unprotected	7.10	0.0026	0.0012	0.00019	2.82E-08	4.47E-07
Mill Ore	2.56	Unprotected	7.10	0.0026	0.0012	0.00019	1.54E-08	3.78E-07
Mill Ore	2.56	Protected	1.30	0.00029	0.00014	0.000021	1.70E-09	4.16E-08
Leach Ore	2.56	Unprotected	7.10	0.0026	0.0012	0.00019	1.60E-08	2.74E-07
Overburden/Low Grade Ore	2.56	Unprotected	7.10	0.0026	0.0012	0.00019	3.48E-08	4.88E-07
Copper Concentrate	9.00	Protected	1.30	0.000050	0.000024	0.0000036	1.73E-08	5.24E-08
Molybdenum Concentrate	3.00	Unprotected	7.10	0.0021	0.0010	0.00015	1.54E-07	1.36E-06
Flocculant	0.25	Unprotected	7.10	0.069	0.032	0.0049	--	--

Table F.18Emission Factors for the Material Transfer Points Associated with Lime

Pollutant	Emission Factor	Reference
PM	0.61 lb/ton	AP-42 Table 11.17-4 (02/98), Product Loading Enclosed Truck
PM_{10}	0.21 lb/ton	35% of the PM Emission Factor Based on the PM_{10} Particle Size Multiplier from AP-42 Section 13.2.4, Expression 1 (11/06) for Aggregate Drop Processes
$PM_{2.5}$	0.032 lb/ton	5.3% of the PM Emission Factor Based on the $PM_{2.5}$ Particle Size Multiplier from AP-42 Section 13.2.4, Expression 1 (11/06) for Aggregate Drop Processes

Table F.19Emission Factors for the Material Transfer Points Associated with Ammonium Nitrate Prill

Pollutant	Emission Factor	Reference
PM	0.020 lb/ton	AP-42 Table 8.3-2 (07/93), Bulk Loading Operations
PM_{10}	0.0070 lb/ton	35% of the PM Emission Factor Based on the PM_{10} Particle Size Multiplier from AP-42 Section 13.2.4, Expression 1 (11/06) for Aggregate Drop Processes
$PM_{2.5}$	0.0011 lb/ton	5.3% of the PM Emission Factor Based on the $PM_{2.5}$ Particle Size Multiplier from AP-42 Section 13.2.4, Expression 1 (11/06) for Aggregate Drop Processes

Table F.20Process Rate and Emission Factor Information for Continuously Active Stockpiles

Process Number	Process/Emission Unit Description	Process Rate and Emission Factor Information			
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414					
Mining Operations (AOS1)					
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	Hourly/Annual Process Rate		6.88	acres
		Surface Material Silt Content		7.40	%, value used at comparable copper mines.
		Emission Factors on an Hourly Basis	PM	0.32	lb/acre-hr
			PM_{10}	0.16	lb/acre-hr
			$PM_{2.5}$	0.024	lb/acre-hr
			Lead	1.96E-06	lb/acre-hr
			Total HAPs	4.81E-05	lb/acre-hr
		Emission Factors on an Annual Basis	PM	2,778.90	lb/acre-yr
			PM_{10}	1,389.45	lb/acre-yr
			$PM_{2.5}$	208.42	lb/acre-yr
			Lead	1.72E-02	lb/acre-yr
			Total HAPs	4.21E-01	lb/acre-yr

Table F.20Process Rate and Emission Factor Information for Continuously Active Stockpiles

Process Number	Process/Emission Unit Description	Process Rate and Emission Factor Information			
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)					
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	Hourly/Annual Process Rate		2.34	acres
		Surface Material Silt Content		7.40	%, value used at comparable copper mines.
		Emission Factors on an Hourly Basis	PM	0.32	lb/acre-hr
			PM_{10}	0.16	lb/acre-hr
			$PM_{2.5}$	0.024	lb/acre-hr
			Lead	1.96E-06	lb/acre-hr
			Total HAPs	4.81E-05	lb/acre-hr
		Emission Factors on an Annual Basis	PM	2,778.90	lb/acre-yr
			PM_{10}	1,389.45	lb/acre-yr
			$PM_{2.5}$	208.42	lb/acre-yr
			Lead	1.72E-02	lb/acre-yr
			Total HAPs	4.21E-01	lb/acre-yr

Table F.20Process Rate and Emission Factor Information for Continuously Active Stockpiles

Process Number	Process/Emission Unit Description	Process Rate and Emission Factor Information			
Affected Emissions Units - Proposed Updated Design of AOS1					
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)					
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	Hourly/Annual Process Rate		6.18	acres
		Surface Material Silt Content		7.40	%, value used at comparable copper mines.
		Emission Factors on an Hourly Basis	PM	0.32	lb/acre-hr
			PM_{10}	0.16	lb/acre-hr
			$PM_{2.5}$	0.024	lb/acre-hr
			Lead	1.96E-06	lb/acre-hr
			Total HAPs	4.81E-05	lb/acre-hr
		Emission Factors on an Annual Basis	PM	2,778.90	lb/acre-yr
			PM_{10}	1,389.45	lb/acre-yr
			$PM_{2.5}$	208.42	lb/acre-yr
			Lead	1.72E-02	lb/acre-yr
			Total HAPs	4.21E-01	lb/acre-yr

Table F.20Process Rate and Emission Factor Information for Continuously Active Stockpiles

Process Number	Process/Emission Unit Description	Process Rate and Emission Factor Information			
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)					
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	Hourly/Annual Process Rate		3.04	acres
		Surface Material Silt Content		7.40	%, value used at comparable copper mines.
		Emission Factors on an Hourly Basis	PM	0.32	lb/acre-hr
			PM_{10}	0.16	lb/acre-hr
			$PM_{2.5}$	0.024	lb/acre-hr
			Lead	1.96E-06	lb/acre-hr
			Total HAPs	4.81E-05	lb/acre-hr
		Emission Factors on an Annual Basis	PM	2,778.90	lb/acre-yr
			PM_{10}	1,389.45	lb/acre-yr
			$PM_{2.5}$	208.42	lb/acre-yr
			Lead	1.72E-02	lb/acre-yr
			Total HAPs	4.21E-01	lb/acre-yr

Table F.20Process Rate and Emission Factor Information for Continuously Active Stockpiles

Process Number	Process/Emission Unit Description	Process Rate and Emission Factor Information			
Sycamore Concentrate Handling Operations (AOS1)					
027-8 (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1)	Hourly/Annual Process Rate		0.30	acres
		Surface Material Silt Content		96.00	%, value used at comparable copper mines.
		Emission Factors on an Hourly Basis	PM	4.12	lb/acre-hr
			PM_{10}	2.06	lb/acre-hr
			$PM_{2.5}$	0.31	lb/acre-hr
			Lead	1.50E-03	lb/acre-hr
			Total HAPs	4.55E-03	lb/acre-hr
		Emission Factors on an Annual Basis	PM	36,050.61	lb/acre-yr
			PM_{10}	18,025.30	lb/acre-yr
			$PM_{2.5}$	2,703.80	lb/acre-yr
			Lead	1.32E+01	lb/acre-yr
			Total HAPs	3.99E+01	lb/acre-yr

Table F.21Emission Factors for the Sycamore Lime Slaker

Pollutant	Emission Factor	Reference
PM	0.0012 lb/ton	Manufacturer's Information with a 20% Safety Factor, Assume PM=PM_{10}=$PM_{2.5}$
PM_{10}	0.0012 lb/ton	
$PM_{2.5}$	0.0012 lb/ton	

Table F.22Process Rate and Emission Factor Information for the Sycamore Bulk and Molybdenum Flotation Equipment

Process Number	Emission Unit Description	Process Rates			Emission Factors (lb/ton)		
		Hourly (tph)	Annual (tpy)	Description	VOC	H_2S	Total HAPs
Affected Emissions Units - Proposed Updated Design of AOS1							
Sycamore Bulk and Molybdenum Flotation Operations (AOS1)							
044-2 (AOS1)	Sycamore Bulk and Molybdenum Flotation Equipment	59.10	517,716	Quantity of concentrate processed in the bulk flotation operations (sum of the copper and molybdenum concentrate production rates).	0.0046	0.0084	4.02E-04

Table F.23Process Rate and Emission Factor Information for the Xanthate and Test Reagent Mixing and Storage Tanks

Process Number	Emission Unit Description	Process Rates			Xanthate/Test Reagent Decomposition Rate (% per day)	Xanthate/ Test Reagent Holding Time (days)	Emission Factors (lb/ton)		
		Hourly (tph)	Annual (tpy)	Description			VOC	Greatest Single HAP	Total HAPs
Affected Emissions Units - Proposed Updated Design of AOS1									
Sycamore Lime and Other Regent Operations (AOS1)									
053-2 (AOS1)	Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	0.04	213.11	Equal to the additional xanthate/test reagent needed for the Sycamore Concentrator based on maximum processing rates.	0.779%	3	12.34	12.34	12.34

Table F.24Process Rate and Emission Factor Information for Engines

Process Number	Emission Unit Description	Hourly Process Rate		Annual Process Rate		Emission Factor Reference
		hp-hr/hr	Description	hp-hr/yr	Description	
Affected Emissions Units - Proposed Updated Design of AOS1						
Sycamore Emergency ICE (AOS1)						
049-59 (AOS1)	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	609	Equal to the rated horsepower of the Sycamore Diesel Emergency Generator 1.	304,500	Based on the maximum hourly process rate of the Sycamore Diesel Emergency Generator 1 and 500 hr/yr. EPA guidance states 500 hr/yr can be used for emergency engines.	See Section F.14.2.2
049-60 (AOS1)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	762	Equal to the rated horsepower of the Sycamore Diesel Emergency Generator 2.	381,000	Based on the maximum hourly process rate of the Sycamore Diesel Emergency Generator 2 and 500 hr/yr. EPA guidance states 500 hr/yr can be used for emergency engines.	See Section F.14.2.1
049-61 (AOS1)	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	84.70	Equal to the rated horsepower of the Sycamore Propane Emergency Generator 1.	42,350	Based on the maximum hourly process rate of the Sycamore Propane Emergency Generator 1 and 500 hr/yr. EPA guidance states 500 hr/yr can be used for emergency engines.	See Section F.15.2
049-62 (AOS1)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	84.70	Equal to the rated horsepower of the Sycamore Propane Emergency Generator 2.	42,350	Based on the maximum hourly process rate of the Sycamore Propane Emergency Generator 2 and 500 hr/yr. EPA guidance states 500 hr/yr can be used for emergency engines.	See Section F.15.2

Table F.25Emission Factors for Tier 2 Diesel Engines (kW > 560)

Pollutant	Emission Factor		Reference
	As Presented in Reference	Unit Conversion	
PM	0.20 g/kW-hr	0.00033 lb/hp-hr	Tier 2 Emission Standards from 40 CFR 1039 Appendix I Table 2 for Engines Rated kW > 225, Assume PM=PM_{10}=$PM_{2.5}$
PM_{10}	0.20 g/kW-hr	0.00033 lb/hp-hr	
$PM_{2.5}$	0.20 g/kW-hr	0.00033 lb/hp-hr	
CO	3.50 g/kW-hr	0.0058 lb/hp-hr	
NO_X	6.40 g/kW-hr	0.010 lb/hp-hr	
VOC		0.00066 lb/hp-hr	
SO_2	--	0.000011 lb/hp-hr	Complete Sulfur Conversion Using a Diesel Sulfur Content of 15 ppm, 7,000 Btu/hp-hr, and 19,300 Btu/lb diesel
CO_2	73.96 kg/MMBtu	1.14 lb/hp-hr	40 CFR 98 Tables C-1 and C-2 for Distillate Fuel Oil No. 2 and 7,000 Btu/hp-hr
CH_4	3.00E-03 kg/MMBtu	0.000046 lb/hp-hr	
N_2O	6.00E-04 kg/MMBtu	0.0000093 lb/hp-hr	
Total HAPs	1.57E-03 lb/MMBtu	1.10E-05 lb/hp-hr	AP-42 Tables 3.4-3 and 3.4-4 (10/96) and 7,000 Btu/hp-hr

Table F.26Emission Factors for Tier 3 Diesel Engines (450 ≤ kW ≤ 560)

Pollutant	Emission Factor		Reference
	As Presented in Reference	Unit Conversion	
PM	0.20 g/kW-hr	0.00033 lb/hp-hr	Tier 3 Emission Standards from 40 CFR 1039 Appendix I Table 3 for Engines Rated 450 ≤ kW < 560, Assume PM=PM_{10}=$PM_{2.5}$
PM_{10}	0.20 g/kW-hr	0.00033 lb/hp-hr	
$PM_{2.5}$	0.20 g/kW-hr	0.00033 lb/hp-hr	
CO	3.50 g/kW-hr	0.0058 lb/hp-hr	
NO_X	4.00 g/kW-hr	0.0061 lb/hp-hr	
VOC		0.00044 lb/hp-hr	
SO_2	--	0.000011 lb/hp-hr	Complete Sulfur Conversion Using a Diesel Sulfur Content of 15 ppm, 7,000 Btu/hp-hr, and 19,300 Btu/lb diesel
CO_2	73.96 kg/MMBtu	1.14 lb/hp-hr	40 CFR 98 Tables C-1 and C-2 for Distillate Fuel Oil No. 2 and 7,000 Btu/hp-hr
CH_4	3.00E-03 kg/MMBtu	0.000046 lb/hp-hr	
N_2O	6.00E-04 kg/MMBtu	0.0000093 lb/hp-hr	
Total HAPs	1.57E-03 lb/MMBtu	1.10E-05 lb/hp-hr	AP-42 Tables 3.4-3 and 3.4-4 (10/96) and 7,000 Btu/hp-hr

Table F.27Emission Factors for the Engines Associated with the Sycamore Propane Emergency Generators

Pollutant	Emission Factor		Reference
	As Presented in Reference	Unit Conversion	
PM	0.019 lb/MMBtu	0.00020 lb/hp-hr	AP-42 Table 3.2-3 (08/00), 4-Stroke Rich Burn, 10,500 Btu/hp-hr, Assume PM=PM_{10}=$PM_{2.5}$
PM_{10}	0.019 lb/MMBtu	0.00020 lb/hp-hr	
$PM_{2.5}$	0.019 lb/MMBtu	0.00020 lb/hp-hr	
CO	120.40 g/kW-hr	0.20 lb/hp-hr	Certification Values for EPA Engine Family PCEXB05.9ARC
NO_X	8.20 g/kW-hr	0.013 lb/hp-hr	
VOC	1.80 g/kW-hr	0.0030 lb/hp-hr	
SO_2	--	0.00012 lb/hp-hr	Complete Sulfur Conversion Using a Propane Sulfur Content of 10 gr/100 scf, 2,520 Btu/scf, and 10,500 Btu/hp-hr
CO_2	62.87 kg/MMBtu	1.46 lb/hp-hr	40 CFR 98 Tables C-1 and C-2 for Propane and 10,500 Btu/hp-hr
CH_4	3.00E-03 kg/MMBtu	0.000069 lb/hp-hr	
N_2O	6.00E-04 kg/MMBtu	0.000014 lb/hp-hr	
Total HAPs	3.25E-02 lb/MMBtu	3.41E-04 lb/hp-hr	AP-42 Table 3.2-3 (08/00), 4-Stroke Rich Burn, and 10,500 Btu/hp-hr

Table F.28Metal HAP Content of the Process Material

HAP	HAP Concentrations (ppm)						
	Overburden/ Low Grade Ore	Mill Ore	Leach Ore	Copper Concentrate	Bagdad Molybdenum Concentrate	All Mined Material (weighted average)	
						Design of AOS1 in Class II Air Quality Permit #77414	Proposed Updated Design of AOS1
Antimony	6.60	0.91	0	482.50	482.50	4.00	4.64
Arsenic	14.75	14.98	1.20	521.67	156.92	12.97	14.33
Beryllium	1.20	1.05	2.76	10.00	10.00	1.37	1.21
Cadmium	0.47	0.77	0	37.50	37.50	0.50	0.54
Chromium	35.32	30.08	4.80	20.83	20.83	29.59	32.63
Cobalt	16.34	12.91	8.60	99.17	99.17	14.26	15.02
Lead	27.87	12.35	12.80	730.00	153.33	21.18	22.63
Manganese	262.49	209.18	182.60	44.17	44.17	235.69	243.47
Mercury	0.18	0.44	0	6.69	6.69	0.23	0.25
Nickel	23.91	17.64	7.00	95.00	95.00	19.73	21.40
Selenium	2.22	2.78	0	165.00	255.00	2.08	2.31
Total	**391.35**	**303.09**	**219.76**	**2,212.53**	**1,361.11**	**341.61**	**358.44**

Table F.29Control Methods and Corresponding Control Efficiencies for All Emission Units

Process Number	Process/Emission Unit Description	Control Method	Control Efficiency	Reference/Explanation
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414				
Mining Operations (AOS1)				
026-3 (AOS1)	Drilling (AOS1)	Best Operating Practices	--	--
026-2 (AOS1)	Blasting (AOS1)	Best Operating Practices	--	--
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	90%	Control of Open Fugitive Dust Sources (09/88), pages 5-9 through 5-14
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	90%	Control of Open Fugitive Dust Sources (09/88), pages 5-9 through 5-14
023-3 (AOS1)	Other Vehicle Travel (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	90%	Control of Open Fugitive Dust Sources (09/88), pages 5-9 through 5-14
023-1 (AOS1)	Dozer Operation (AOS1)	Best Operating Practices	--	--
023-2 (AOS1)	Road Grader Operation (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	90%	Control of Open Fugitive Dust Sources (09/88), pages 5-9 through 5-14
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Best Operating Practices	--	--
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Water Spray/Wet Suppression When Necessary	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)

Table F.29Control Methods and Corresponding Control Efficiencies for All Emission Units

Process Number	Process/Emission Unit Description	Control Method	Control Efficiency	Reference/Explanation
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	--	--	--
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Best Operating Practices	--	--
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Best Operating Practices	--	--
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)				
001-5 (AOS1)	Dust Collector C51 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-16 (AOS1)	Dust Collector AE-001 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-17 (AOS1)	Dust Collector AE-014 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-18 (AOS1)	Dust Collector AE-015 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Water Spray/Wet Suppression When Necessary	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-19 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Water Spray/Wet Suppression When Necessary	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	Best Operating Practices	--	--

Table F.29Control Methods and Corresponding Control Efficiencies for All Emission Units

Process Number	Process/Emission Unit Description	Control Method	Control Efficiency	Reference/Explanation
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)				
001-12 (AOS1)	Dust Collector AE-002 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-13 (AOS1)	Dust Collector AE-003 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-14 (AOS1)	Dust Collector AE-016 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-15 (AOS1)	Dust Collector AE-017 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-20 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6	Water Spray/Wet Suppression When Necessary	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	Best Operating Practices	--	--
Sycamore Milling Operations (AOS1)				
002-7 (AOS1)	Dust Collector AE-008 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
002-8 (AOS1)	Dust Collector AE-009 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
002-9 (AOS1)	Dust Collector AE-010 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)

Table F.29Control Methods and Corresponding Control Efficiencies for All Emission Units

Process Number	Process/Emission Unit Description	Control Method	Control Efficiency	Reference/Explanation
002-10 (AOS1)	Dust Collector AE-011 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
002-11 (AOS1)	Dust Collector AE-007 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
002-12 (AOS1)	Dust Collector AE-012 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
002-13 (AOS1)	Dust Collector AE-013 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
Affected Emissions Units - Proposed Updated Design of AOS1				
Mining Operations (AOS1)				
026-3 (AOS1)	Drilling (AOS1)	Best Operating Practices	--	--
026-2 (AOS1)	Blasting (AOS1)	Best Operating Practices	--	--
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	90%	Control of Open Fugitive Dust Sources (09/88), pages 5-9 through 5-14
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	90%	Control of Open Fugitive Dust Sources (09/88), pages 5-9 through 5-14
023-3 (AOS1)	Other Vehicle Travel (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	90%	Control of Open Fugitive Dust Sources (09/88), pages 5-9 through 5-14

Table F.29Control Methods and Corresponding Control Efficiencies for All Emission Units

Process Number	Process/Emission Unit Description	Control Method	Control Efficiency	Reference/Explanation
023-1 (AOS1)	Dozer Operation (AOS1)	Best Operating Practices	--	--
023-2 (AOS1)	Road Grader Operation (AOS1)	Unpaved Road Watering and/or Chemical Dust Suppression Use	90%	Control of Open Fugitive Dust Sources (09/88), pages 5-9 through 5-14
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Best Operating Practices	--	--
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Water Spray/Wet Suppression When Necessary	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Water Spray/Wet Suppression When Necessary	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Best Operating Practices	--	--
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Best Operating Practices	--	--
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)				
001-5 (AOS1)	Dust Collector C51 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-2 (AOS1)	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	Dry Fogging System	90%	Manufacturer's Information (Dust Solutions Incorporated)
001-8 (AOS1)	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	Dry Fogging System	90%	Manufacturer's Information (Dust Solutions Incorporated)

Table F.29Control Methods and Corresponding Control Efficiencies for All Emission Units

Process Number	Process/Emission Unit Description	Control Method	Control Efficiency	Reference/Explanation
001-9 (AOS1)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	Dry Fogging System	90%	Manufacturer's Information (Dust Solutions Incorporated)
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Water Spray/Wet Suppression When Necessary	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-10 (AOS1)	Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	Water Spray/Wet Suppression When Necessary	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-3 (AOS1)	Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Water Spray/Wet Suppression When Necessary	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	Best Operating Practices	--	--
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)				
001-12 (AOS1)	PC1 Dust Collector 1 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-13 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-14 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-15 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
001-20 (AOS1)	PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	Water Spray/Wet Suppression When Necessary	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)

Table F.29Control Methods and Corresponding Control Efficiencies for All Emission Units

Process Number	Process/Emission Unit Description	Control Method	Control Efficiency	Reference/Explanation
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	Best Operating Practices	--	--
Sycamore Milling Operations (AOS1)				
002-7 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
002-8 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
002-9 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
002-10 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
002-11 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
002-12 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
002-13 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	Dust Collector	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
Sycamore Bulk and Molybdenum Flotation Operations (AOS1)				
044-2 (AOS1)	Sycamore Bulk and Molybdenum Flotation Equipment	--	--	--

Table F.29Control Methods and Corresponding Control Efficiencies for All Emission Units

Process Number	Process/Emission Unit Description	Control Method	Control Efficiency	Reference/Explanation
Sycamore Concentrate Handling Operations (AOS1)				
006-11 (AOS1)	Copper Concentrate Filters 1/2 (AOS1) to Copper Concentrate Filter Drop Storage (AOS1)	Best Operating Practices	--	--
006-12 (AOS1)	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader	Best Operating Practices	--	--
006-13 (AOS1)	Copper Concentrate Loadout Storage (AOS1) to Trucks via Front-End Loader	Best Operating Practices	--	--
027-8 (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1)	3-Sided Enclosure	75%	South Coast Air Quality Management District Document on Fugitive Dust Mitigation Measures
052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	Scrubber	--	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
052-3 (AOS1)	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1)	Best Operating Practices	--	--
052-4 (AOS1)	Dried Molybdenum Concentrate Storage Bin (AOS1) to Molybdenum Concentrate Bagging System (AOS1)	Best Operating Practices	--	--
Sycamore Lime and Other Regent Operations (AOS1)				
007-6 (AOS1)	Transfer of Lime to the Sycamore Lime Silo (AOS1)	Sycamore Lime Silo Baghouse (AOS1)	99%	Minimum value from AP-42 Table B.2-3 (09/90)
007-7 (AOS1)	Sycamore Lime Slaker (AOS1)	Sycamore Lime System Scrubber (AOS1)	--	Control Efficiency Incorporated into Emission Factor

Table F.29Control Methods and Corresponding Control Efficiencies for All Emission Units

Process Number	Process/Emission Unit Description	Control Method	Control Efficiency	Reference/Explanation
055-1 (AOS1)	Transfer of Flocculant to Tailings Flocculant Bag Breaker Bin (AOS1)	Best Operating Practices	--	--
055-2 (AOS1)	Transfer of Flocculant to Concentrate Flocculant Bag Breaker Bin (AOS1)	Best Operating Practices	--	--
053-2 (AOS1)	Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	--	--	--
055-3 (AOS1)	Sycamore NaHS System Scrubber (AOS1)	--	--	--
Sycamore Prill Handling Operations (AOS1)				
050-7 (AOS1)	Delivery of Ammonium Nitrate Prill to Prill Bin 6 (AOS1)	Best Operating Practices	--	--
050-8 (AOS1)	Prill Bin 6 to ANFO Trucks for Transfer to Drill Holes	Best Operating Practices	--	--
Sycamore Emergency ICE (AOS1)				
049-59 (AOS1)	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	Best Operating Practices	--	--
049-60 (AOS1)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	Best Operating Practices	--	--
049-61 (AOS1)	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	Best Operating Practices	--	--

Table F.29Control Methods and Corresponding Control Efficiencies for All Emission Units

Process Number	Process/Emission Unit Description	Control Method	Control Efficiency	Reference/Explanation
049-62 (AOS1)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	Best Operating Practices	--	--

APPENDIX G EMISSION INVENTORY TABLES FOR POTENTIAL EMISSION CALCULATIONS

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information: Permitted Design	Input Information: Proposed Updated Design	Units	Information Description
General Facility Information						
--	Meteorological Information	Meteorological Information	45	45	days	Number of days with precipitation ≥ 0.01 inches (from 1925 – 2012 from the Western Region Climate Center, Bagdad Station)
			7.10	7.10	mph	Mean ambient wind speed at the FMBI facility (based on 2018-2019 data from the Townsite Meteorological Monitor)
			10.00	10.00	%	Percentage of time with mean wind speed greater than 12 mph at mean stockpile heights (based on 2018-2019 data from the Townsite Meteorological Monitor)
--	Silt Content Information	Silt Content Information	7.00	7.00	%	Silt content of unpaved roads
			4.00	4.00	%	Silt content of material being bulldozed (estimated value based on similar copper mines)
			7.40	7.40	%	Silt content of the material in Coarse Ore Stockpiles 1/5 (AOS1)
			7.40	7.40	%	Silt content of the material in Coarse Ore Stockpile 6 (AOS1)
			96	96	%	Silt content of the copper concentrate in the Copper Concentrate Filter Drop Loadout Storage (AOS1)
--	Moisture Content Information	Moisture Content Information	2.564	2.564	%	Moisture content of the mined material (site-specific)
			--	3.00	%	Moisture content of the Sycamore molybdenum concentrate post-dryer (site-specific)
			9.00	9.00	%	Moisture content of the copper concentrate (site-specific)
			--	0.10	%	Moisture content of flocculant (minimum expected value)
--	Metal HAP Content of the Overburden/Low Grade Ore	Overburden/Low Grade Ore HAP Information	6.60	6.60	ppm	Concentration of antimony
			14.75	14.75	ppm	Concentration of arsenic
			1.20	1.20	ppm	Concentration of beryllium
			0.47	0.47	ppm	Concentration of cadmium
			35.32	35.32	ppm	Concentration of chromium
			16.34	16.34	ppm	Concentration of cobalt
			27.87	27.87	ppm	Concentration of lead
			262.49	262.49	ppm	Concentration of manganese
			0.18	0.18	ppm	Concentration of mercury
			23.91	23.91	ppm	Concentration of nickel

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information		Units	Information Description
			Permitted Design	Proposed Updated Design		
-- (cont'd)	Metal HAP Content of the Overburden/Low Grade Ore (cont'd)	Overburden/Low Grade Ore HAP Information (cont'd)	2.22	2.22	ppm	Concentration of selenium
--	Metal HAP Content of the Mill Ore	Mill Ore HAP Information	0.91	0.91	ppm	Concentration of antimony
			14.98	14.98	ppm	Concentration of arsenic
			1.05	1.05	ppm	Concentration of beryllium
			0.77	0.77	ppm	Concentration of cadmium
			30.08	30.08	ppm	Concentration of chromium
			12.91	12.91	ppm	Concentration of cobalt
			12.35	12.35	ppm	Concentration of lead
			209.18	209.18	ppm	Concentration of manganese
			0.44	0.44	ppm	Concentration of mercury
			17.64	17.64	ppm	Concentration of nickel
			2.78	2.78	ppm	Concentration of selenium
--	Metal HAP Content of the Leach Ore	Leach Ore HAP Information	0	0	ppm	Concentration of antimony
			1.20	1.20	ppm	Concentration of arsenic
			2.76	2.76	ppm	Concentration of beryllium
			0	0	ppm	Concentration of cadmium
			4.80	4.80	ppm	Concentration of chromium
			8.60	8.60	ppm	Concentration of cobalt
			12.80	12.80	ppm	Concentration of lead
			182.60	182.60	ppm	Concentration of manganese
			0	0	ppm	Concentration of mercury
			7.00	7.00	ppm	Concentration of nickel
			0	0	ppm	Concentration of selenium

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information		Units	Information Description
			Permitted Design	Proposed Updated Design		
--	Metal HAP Content of the Copper Concentrate	Copper Concentrate HAP Information	482.50	482.50	ppm	Concentration of antimony
			521.67	521.67	ppm	Concentration of arsenic
			10.00	10.00	ppm	Concentration of beryllium
			37.50	37.50	ppm	Concentration of cadmium
			20.83	20.83	ppm	Concentration of chromium
			99.17	99.17	ppm	Concentration of cobalt
			730.00	730.00	ppm	Concentration of lead
			44.17	44.17	ppm	Concentration of manganese
			6.69	6.69	ppm	Concentration of mercury
			95.00	95.00	ppm	Concentration of nickel
			165.00	165.00	ppm	Concentration of selenium
--	Metal HAP Content of the Bagdad Molybdenum Concentrate	Bagdad Molybdenum Concentrate HAP Information	482.50	482.50	ppm	Concentration of antimony
			156.92	156.92	ppm	Concentration of arsenic
			10.00	10.00	ppm	Concentration of beryllium
			37.50	37.50	ppm	Concentration of cadmium
			20.83	20.83	ppm	Concentration of chromium
			99.17	99.17	ppm	Concentration of cobalt
			153.33	153.33	ppm	Concentration of lead
			44.17	44.17	ppm	Concentration of manganese
			6.69	6.69	ppm	Concentration of mercury
			95.00	95.00	ppm	Concentration of nickel
			255.00	255.00	ppm	Concentration of selenium
--	Metal HAP Content of All Mined Material	Metal HAP Content of All Mined Material	4.00	4.64	ppm	Concentration of antimony

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information		Units	Information Description
			Permitted Design	Proposed Updated Design		
-- (cont'd)	Metal HAP Content of All Mined Material (cont'd)	Metal HAP Content of All Mined Material (cont'd)	12.97	14.33	ppm	Concentration of arsenic
			1.37	1.21	ppm	Concentration of beryllium
			0.50	0.54	ppm	Concentration of cadmium
			29.59	32.63	ppm	Concentration of chromium
			14.26	15.02	ppm	Concentration of cobalt
			21.18	22.63	ppm	Concentration of lead
			235.69	243.47	ppm	Concentration of manganese
			0.23	0.25	ppm	Concentration of mercury
			19.73	21.40	ppm	Concentration of nickel
			2.08	2.31	ppm	Concentration of selenium
Mining Operations (AOS1)						
026-3 (AOS1)	Drilling (AOS1)	Drilling (AOS1)	90,000	106,219	holes/year	Annual quantity of holes drilled (maximum expected value based on the mining process rates)
			200	490	holes/hour	Hourly quantity of holes drilled (estimated at 200 holes/blast for the permitted design and 20% greater than the average annual holes/blast for the proposed design)
026-2 (AOS1)	Blasting (AOS1)	Blasting (AOS1)	600	260	blasts/year	Annual quantity of blasts (maximum expected value based on the mining process rates)
			1	1	blasts/hour	Hourly quantity of blasts
			55,800,000	107,890,420	ft^2	Annual total area of all blasts (permitted design = average of 93,000 ft^2/blast, proposed design = average blast size tonnage from the based on the mining process rates converted to ft^2 using a 50 ft bench height and 105 lb/ft^3 density)
			200,000	497,956	ft^2	Hourly total area of all blasts (estimated at 200,000 ft2 for the permitted design and 20% greater than the average blast size)
			1,984	3,600	tons/year	Annual quantity of diesel used in traditional ANFO (assume 6% of ANFO is FO and FO in traditional ANFO is typically 68.5% of all FO used)
			7.5	7.5	lb/gal	Density of diesel fuel (based on lb and gallon information - see 04/18/2016 email)
			912	1,656	tons/year	Annual quantity of Mixed Fuel used in ANFO emulsions (assume mixed fuel is 31.5% of all FO used)
			2.03	7.64	tons/hour	Hourly quantity of Mixed Fuel used in ANFO emulsions (based on the annual quantity and scaled using the number of holes drilled)
			78.5	78.5	%	Percent of diesel fuel in the Mixed Fuel (from James Rogers at Southwest Energy)
			21.5	21.5	%	Percent of animal fat in the Mixed Fuel (from James Rogers at Southwest Energy)

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information		Units	Information Description
			Permitted Design	Proposed Updated Design		
026-2 (AOS1) (cont'd)	Blasting (AOS1) (cont'd)	Blasting (AOS1) (cont'd)	7.34	7.34	lb/gal	Density of animal fat (based on *A Demonstration of Fat and Grease as an Industrial Boiler Fuel*)
			2,700	4,900	tons/year	Annual total quantity of diesel fuel used during blasting (sum of diesel information sources)
			720,000	1,306,667	gallons/year	Annual total quantity of diesel fuel used during blasting (calculated based on diesel fuel information sources and density)
			1,600	6,031	gallons/hour	Hourly total quantity of diesel fuel used during blasting (based on the annual quantity and scaled using the number of holes drilled)
			31,219	56,584	tons/year	Annual quantity of ammonium nitrate prill used (assume 6% of ANFO is AN and AN in traditional ANFO is typically 68.5% of all AN used)
			99.8	99.8	%	Percent of Ammonium Nitrate in the ammonium nitrate prill
			14,286	26,020	tons/year	Annual quantity of ammonium nitrate solution used (assume AN solution is 31.5% of all AN used)
			78	78	%	Percent of Ammonium Nitrate in the ammonium nitrate solution
			42,300	76,767	tons/year	Annual total quantity of ammonium nitrate used during blasting (sum of ammonium nitrate information sources)
			45,000	81,667	tons/year	Annual total quantity of ANFO used (maximum expected value based on the mining process rates)
			100	377	tons/hour	Hourly total quantity of ANFO used (based on the annual quantity and scaled using the number of holes drilled)
			94	94	%	Percent of Ammonium Nitrate in ANFO (assumed typical value)
			6	6	%	Percent of Fuel Oil in ANFO (assumed typical value)
--	Vehicle Travel on Unpaved Roads (AOS1)	Vehicle Travel on Unpaved Roads (AOS1)	207.78	122.93	tons	Mean vehicle weight on an annual basis (calculated value)
			185.18	176.21	tons	Mean vehicle weight on an hourly basis (calculated value)
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	2,513,372	7,099,653	VMT/year	Annual quantity of total miles traveled (assume 75% inside the pit)
			472.50	2,238.75	VMT/hour	Hourly quantity of total miles traveled (assume 75% inside the pit)
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	837,791	2,366,551	VMT/year	Annual quantity of total miles traveled (assume 25% outside the pit)
			157.50	746.25	VMT/hour	Hourly quantity of total miles traveled (assume 25% outside the pit)
023-3 (AOS1)	Other Vehicle Travel (AOS1)	Other Vehicle Travel (AOS1)	1,350,115	14,080,416	VMT/year	Annual quantity of total miles traveled
			486.17	2,187.73	VMT/hour	Hourly quantity of total miles traveled
023-1 (AOS1)	Dozer Operation (AOS1)	Dozer Operation (AOS1)	78,046	133,221	hours/year	Annual hours of operation (maximum expected value based on the mining process rates)
			16	22.00	hours/hour	Hourly hours of operation (quantity of dozers and operation 60 min/hr)

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information		Units	Information Description
			Permitted Design	Proposed Updated Design		
023-2 (AOS1)	Road Grader Operation (AOS1)	Road Grader Operation (AOS1)	118,587	420,480	VMT/year	Annual quantity of total miles traveled (maximum expected value based on the mining process rates)
			30	48.00	VMT/hour	Hourly quantity of total miles traveled (maximum expected value based on the mining process rates)
			6	6	mph	Mean speed (estimated value)
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	220,314,000	254,833,922	tons/year	Annual quantity of material mined (sum of unloading to crushers, leaching areas, and storage areas)
			30,515	39,352	tons/hour	Hourly quantity of material mined (sum of unloading to crushers, leaching areas, and storage areas)
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	32,850,000	44,433,881	tons/year	Annual quantity of material unloaded (maximum value based on the overall expected mining rates)
			5,865	8,000	tons/hour	Hourly quantity of material unloaded (equal to the maximum hourly capacity of the crusher)
			14.91	17.44	%	Percent of all material mined that is processed by Primary Crusher 1 (annual basis)
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	32,850,000	32,632,000	tons/year	Annual quantity of material unloaded (maximum value based on the overall expected mining rates)
			7,000	7,000	tons/hour	Hourly quantity of material unloaded (equal to the maximum hourly capacity of the crusher)
			14.91	12.81	%	Percent of all material mined that is processed by Primary Crusher 2 (annual basis)
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Unloading Ore to Leaching Areas (AOS1)	30,076,000	9,230,000	tons/year	Annual quantity of material unloaded (maximum value based on the overall expected mining rates)
			3,433	1,264	tons/hour	Hourly quantity of material unloaded (assume continuous operation with a 20% increase over the average rate)
			13.65	3.62	%	Percent of all material mined that is leach ore (annual basis)
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	124,538,000	168,538,041	tons/year	Annual quantity of material unloaded (maximum value based on the overall expected mining rates)
			14,217	23,087	tons/hour	Hourly quantity of material unloaded (assume continuous operation with a 20% increase over the average rate)
			56.53	66.14	%	Percent of all material mined that is overburden/low grade ore (annual basis)
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)						
001-5 (AOS1)	Dust Collector C51 (AOS1)	Dust Collector C51 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)
			15,000	15,000	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0135	0.0135	gr/dscf	PM Emission Limit
			0.0135	0.0135	gr/dscf	PM_{10} Emission Limit

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information		Units	Information Description
			Permitted Design	Proposed Updated Design		
001-16 (AOS1)	Dust Collector AE-001 (AOS1)	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	8,760	--	hours/year	Annual hours of operation (assume continuous operation)
			1	--	hours/hour	Hourly hours of operation (assume continuous operation)
			20,000	--	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	--	gr/dscf	PM Emission Limit
			0.0026	--	gr/dscf	PM_{10} Emission Limit
			--	66,576,000	tons/year	Annual quantity of ore transferred (assume equal to the maximum capacity of the transfer at continuous operation)
			--	7,600	tons/hour	Hourly quantity of ore transferred (assume equal to the maximum capacity of the transfer)
001-17 (AOS1)	Dust Collector AE-014 (AOS1)	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	8,760	--	hours/year	Annual hours of operation (assume continuous operation)
			1	--	hours/hour	Hourly hours of operation (assume continuous operation)
			12,000	--	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	--	gr/dscf	PM Emission Limit
			0.0026	--	gr/dscf	PM_{10} Emission Limit
			--	66,576,000	tons/year	Annual quantity of ore transferred (assume equal to the maximum capacity of the transfer at continuous operation)
			--	7,600	tons/hour	Hourly quantity of ore transferred (assume equal to the maximum capacity of the transfer)
001-18 (AOS1)	Dust Collector AE-015 (AOS1)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	8,760	--	hours/year	Annual hours of operation (assume continuous operation)
			1	--	hours/hour	Hourly hours of operation (assume continuous operation)
			12,000	--	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	--	gr/dscf	PM Emission Limit
			0.0026	--	gr/dscf	PM_{10} Emission Limit
			--	66,576,000	tons/year	Annual quantity of ore transferred (assume equal to the maximum capacity of the transfer at continuous operation)
			--	7,600	tons/hour	Hourly quantity of ore transferred (assume equal to the maximum capacity of the transfer)
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	32,850,000	53,260,800	tons/year	Annual quantity of ore transferred (assume equal to half the sulfide mining rate (for the permitted design) and 4/5 the maximum capacity of the transfer for the proposed updated design, both at continuous operation)
			7,600	7,600	tons/hour	Hourly quantity of ore transferred (assume equal to the maximum capacity of the transfer)

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information		Units	Information Description
			Permitted Design	Proposed Updated Design		
001-10 (AOS1)	--	Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	--	13,315,200	tons/year	Annual quantity of ore transferred (assume equal to 1/5 the maximum capacity of the transfer at continuous operation)
			--	7,600	tons/hour	Hourly quantity of ore transferred (assume equal to the maximum capacity of the transfer)
001-19 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	16,206,000	13,315,200	tons/year	Annual quantity of ore transferred (assume equal to the quantity not sent to the other Coarse Ore Stockpiles)
			3,965	7,600	tons/hour	Hourly quantity of ore transferred (assume equal to the maximum capacity of the transfer)
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	6.88	6.18	acres	Area of Coarse Ore Stockpiles 1/5 (AOS1)
			365	365	days/year	Annual days of operation
			24	24	hours/day	Daily hours of operation
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)						
001-12 (AOS1)	Dust Collector AE-002 (AOS1)	PC1 Dust Collector 1 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)
			12,000	14,500	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	0.0023	gr/dscf	PM Emission Limit
			0.0026	0.0023	gr/dscf	PM_{10} Emission Limit
001-13 (AOS1)	Dust Collector AE-003 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)
			15,000	16,700	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	0.0023	gr/dscf	PM Emission Limit
			0.0026	0.0023	gr/dscf	PM_{10} Emission Limit
001-14 (AOS1)	Dust Collector AE-016 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)
			12,000	16,700	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	0.0023	gr/dscf	PM Emission Limit
			0.0026	0.0023	gr/dscf	PM_{10} Emission Limit

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information		Units	Information Description
			Permitted Design	Proposed Updated Design		
001-15 (AOS1)	Dust Collector AE-017 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)
			12,000	16,700	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	0.0023	gr/dscf	PM Emission Limit
			0.0026	0.0023	gr/dscf	PM_{10} Emission Limit
001-20 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6	PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	16,644,000	70,080,000	tons/year	Annual quantity of ore transferred (assume equal to the maximum capacity of the transfer at continuous operation)
			1,900	8,000	tons/hour	Hourly quantity of ore transferred (assume equal to the maximum capacity of the transfer)
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	2.34	3.04	acres	Area of Coarse Ore Stockpile 6 (AOS1)
			365	365	days/year	Annual days of operation
			24	24	hours/day	Daily hours of operation
Sycamore Milling Operations (AOS1)						
002-7 (AOS1)	Dust Collector AE-008 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)
			50,000	22,000	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	0.0023	gr/dscf	PM Emission Limit
			0.0026	0.0023	gr/dscf	PM_{10} Emission Limit
002-8 (AOS1)	Dust Collector AE-009 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)
			12,000	22,000	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	0.0023	gr/dscf	PM Emission Limit
			0.0026	0.0023	gr/dscf	PM_{10} Emission Limit
002-9 (AOS1)	Dust Collector AE-010 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information		Units	Information Description
			Permitted Design	Proposed Updated Design		
002-9 (AOS1) (cont'd)	Dust Collector AE-010 (AOS1) (cont'd)	HPGR Discharge Dust Collector 7 (AOS1) (cont'd)	20,000	23,000	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	0.0023	gr/dscf	PM Emission Limit
			0.0026	0.0023	gr/dscf	PM_{10} Emission Limit
002-10 (AOS1)	Dust Collector AE-011 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)
			12,000	27,000	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	0.0023	gr/dscf	PM Emission Limit
			0.0026	0.0023	gr/dscf	PM_{10} Emission Limit
002-11 (AOS1)	Dust Collector AE-007 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)
			12,000	25,000	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	0.0023	gr/dscf	PM Emission Limit
			0.0026	0.0023	gr/dscf	PM_{10} Emission Limit
002-12 (AOS1)	Dust Collector AE-012 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)
			33,000	10,000	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	0.0023	gr/dscf	PM Emission Limit
			0.0026	0.0023	gr/dscf	PM_{10} Emission Limit
002-13 (AOS1)	Dust Collector AE-013 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	8,760	8,760	hours/year	Annual hours of operation (assume continuous operation)
			1	1	hours/hour	Hourly hours of operation (assume continuous operation)
			18,000	10,000	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			0.0026	0.0023	gr/dscf	PM Emission Limit
			0.0026	0.0023	gr/dscf	PM_{10} Emission Limit

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information: Permitted Design	Input Information: Proposed Updated Design	Units	Information Description
Sycamore Bulk and Molybdenum Flotation Operations (AOS1)						
044-2 (AOS1)	--	Sycamore Bulk and Molybdenum Flotation Equipment	--	517,716	tons/year	Annual quantity of concentrate processed in the Sycamore Bulk and Molybdenum Flotation Operations (assume equal to the maximum capacity of the concentrate production rates at continuous operation)
			--	59.10	tons/hour	Hourly quantity of concentrate processed in the Sycamore Bulk and Molybdenum Flotation Operations (assume equal to the maximum capacity of the concentrate production rates)
Sycamore Concentrate Handling Operations (AOS1)						
006-11 (AOS1)	--	Copper Concentrate Filters 1/2 (AOS1) to Copper Concentrate Filter Drop Storage (AOS1)	--	499,320	tons/year	Annual quantity of copper concentrate transferred (assume equal to the maximum rate of the copper concentrate handling operations at continuous operation)
			--	57	tons/hour	Hourly quantity of copper concentrate transferred (assume equal to the maximum rate of the copper concentrate handling operations)
006-12 (AOS1)	--	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader	--	499,320	tons/year	Annual quantity of copper concentrate transferred (assume equal to the maximum rate of the copper concentrate handling operations at continuous operation)
			--	57	tons/hour	Hourly quantity of copper concentrate transferred (assume equal to the maximum rate of the copper concentrate handling operations)
006-13 (AOS1)	--	Copper Concentrate Loadout Storage (AOS1) to Trucks via Front-End Loader	--	499,320	tons/year	Annual quantity of copper concentrate transferred (assume equal to the maximum rate of the copper concentrate handling operations at continuous operation)
			--	57	tons/hour	Hourly quantity of copper concentrate transferred (assume equal to the maximum rate of the copper concentrate handling operations)
027-8 (AOS1)	--	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1)	--	0.30	acres	Area of all Copper Concentrate Storage
			--	365	days/year	Annual days of operation
			--	24	hours/day	Daily hours of operation
052-2 (AOS1)	--	Molybdenum Dryer Wet Scrubber System (AOS1)	--	8,760	hours/year	Annual hours of operation (assume continuous operation)
			--	1	hours/hour	Hourly hours of operation (assume continuous operation)
			--	337	dscfm	Exhaust flow rate (assume dscfm is equal to acfm as a worst-case emission estimate)
			--	0.063	lb/hr	PM Emission Rate (assume a maximum equal to the NSPS Subpart LL emission standard)
			--	0.063	lb/hr	PM_{10} Emission Rate (assume a maximum equal to the NSPS Subpart LL emission standard)
			--	1.83	lb/hr	VOC Emission Rate
052-3 (AOS1)	--	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1)	--	18,396	tons/year	Annual quantity of molybdenum concentrate transferred (assume equal to the maximum rate of the Molybdenum Concentrate Dryer at continuous operation)
			--	2.10	tons/hour	Hourly quantity of molybdenum concentrate transferred (assume equal to the maximum rate of the Molybdenum Concentrate Dryer)
052-4 (AOS1)	--	Dried Molybdenum Concentrate Storage Bin (AOS1) to Molybdenum Concentrate Bagging System (AOS1)	--	18,396	tons/year	Annual quantity of molybdenum concentrate transferred (assume equal to the maximum rate of the Molybdenum Concentrate Bagging System at continuous operation)
			--	2.10	tons/hour	Hourly quantity of molybdenum concentrate transferred (assume equal to the maximum rate of the Molybdenum Concentrate Bagging System)

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information		Units	Information Description
			Permitted Design	Proposed Updated Design		
Sycamore Lime and Other Regent Operations (AOS1)						
007-6 (AOS1)	--	Transfer of Lime to the Sycamore Lime Silo (AOS1)	--	99,514	tons/year	Annual quantity of lime transferred (assume equal to the maximum capacity of the slaker at continuous operation)
			--	25	tons/hour	Hourly quantity of lime transferred (based on a delivery rate of 25 tons)
007-7 (AOS1)	--	Sycamore Lime Slaker (AOS1)	--	99,514	tons/year	Annual quantity of lime transferred (assume equal to the maximum capacity of the slaker at continuous operation)
			--	11.36	tons/hour	Hourly quantity of lime transferred (assume equal to the maximum capacity of the slaker)
055-1 (AOS1)	--	Transfer of Flocculant to Tailings Flocculant Bag Breaker Bin (AOS1)	--	7,227	tons/year	Annual quantity of flocculant transferred (assume equal to the maximum hourly usage rate at continuous operation)
			--	0.83	tons/hour	Hourly quantity of flocculant transferred (assume equal to the maximum flocculant usage rate)
055-2 (AOS1)	--	Transfer of Flocculant to Concentrate Flocculant Bag Breaker Bin (AOS1)	--	482	tons/year	Annual quantity of flocculant transferred (assume equal to the maximum hourly usage rate at continuous operation)
			--	0.06	tons/hour	Hourly quantity of flocculant transferred (assume equal to the maximum flocculant usage rate)
053-2 (AOS1)	--	Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	--	213	tons/year	Annual quantity of xanthate/test reagent used (equal to the additional xanthate/test reagent needed for the Sycamore Concentrator based on maximum processing rates)
			--	0.04	tons/hour	Hourly quantity of xanthate/test reagent used (equal to the additional xanthate/test reagent needed for the Sycamore Concentrator based on maximum processing rates)
055-3 (AOS1)	--	Sycamore NaHS System Scrubber (AOS1)	--	8,760	hours/year	Annual hours of operation (assume continuous operation)
			--	1	hours/hour	Hourly hours of operation (assume continuous operation)
			--	735	dscfm	Exhaust flow rate
Sycamore Prill Handling Operations (AOS1)						
050-7 (AOS1)	--	Delivery of Ammonium Nitrate Prill to Prill Bin 6 (AOS1)	--	25,365	tons/year	Annual quantity of ammonium nitrate prill transferred (equal to the additional prill needed for the Sycamore Concentrator based on maximum mining rates)
			--	25.75	tons/hour	Hourly quantity of ammonium nitrate prill transferred (assume equal to the maximum delivery rate)
050-8 (AOS1)	--	Prill Bin 6 to ANFO Trucks for Transfer to Drill Holes	--	25,365	tons/year	Annual quantity of ammonium nitrate prill transferred (equal to the additional prill needed for the Sycamore Concentrator based on maximum mining rates)
			--	50	tons/hour	Hourly quantity of ammonium nitrate prill transferred (assume equal to the ANFO truck capacities, the trucks can only be filled once per hour)
Sycamore Emergency ICE (AOS1)						
049-59 (AOS1)	--	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	--	500	hours/year	Annual hours of operation (EPA guidance states 500 hours for emergency engines)
			--	1	hours/hour	Hourly hours of operation (assume continuous operation)
			--	609	hp	Rated horsepower of the engine

Table G.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description - Design of AOS1 in Class II Air Quality Permit #77414	Process/Emission Unit Description - Proposed Updated Design of AOS1	Input Information		Units	Information Description
			Permitted Design	Proposed Updated Design		
049-60 (AOS1)	--	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	--	500	hours/year	Annual hours of operation (EPA guidance states 500 hours for emergency engines)
			--	1	hours/hour	Hourly hours of operation (assume continuous operation)
			--	762	hp	Rated horsepower of the engine
049-61 (AOS1)	--	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	--	500	hours/year	Annual hours of operation (EPA guidance states 500 hours for emergency engines)
			--	1	hours/hour	Hourly hours of operation (assume continuous operation)
			--	84.70	hp	Rated horsepower of the engine
049-62 (AOS1)	--	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	--	500	hours/year	Annual hours of operation (EPA guidance states 500 hours for emergency engines)
			--	1	hours/hour	Hourly hours of operation (assume continuous operation)
			--	84.70	hp	Rated horsepower of the engine

Table G.2 Particulate Matter Emission Factors - Potential Emission Calculations

Process Code	Process Description	Emission Factors				Process Rate Units	Particulate Matter Emission Factor Inputs [a]											Reference
		PM	PM_{10}	$PM_{2.5}$	Units		k (PM)	k (PM_{10})	k ($PM_{2.5}$)	U (mph)	M (%)	s (%)	S (mph)	f (%)	p (days)	A (ft^2)	W (tons)	
Pollution Control Devices																		
C51 (AOS1)	Dust Collector C51 (AOS1)	1.93E-06	1.93E-06	1.93E-06	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-001 (AOS1)	Dust Collector AE-001 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-014 (AOS1)	Dust Collector AE-014 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-015 (AOS1)	Dust Collector AE-015 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-002 (AOS1)	Dust Collector AE-002 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-003 (AOS1)	Dust Collector AE-003 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-016 (AOS1)	Dust Collector AE-016 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-017 (AOS1)	Dust Collector AE-017 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-008 (AOS1)	Dust Collector AE-008 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-009 (AOS1)	Dust Collector AE-009 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-010 (AOS1)	Dust Collector AE-010 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-011 (AOS1)	Dust Collector AE-011 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-007 (AOS1)	Dust Collector AE-007 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-012 (AOS1)	Dust Collector AE-012 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
AE-013 (AOS1)	Dust Collector AE-013 (AOS1)	3.71E-07	3.71E-07	3.71E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
SDC1 (AOS1)	PC1 Dust Collector 1 (AOS1)	3.29E-07	3.29E-07	3.29E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
SDC2 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	3.29E-07	3.29E-07	3.29E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
SDC3 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	3.29E-07	3.29E-07	3.29E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
SDC4 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	3.29E-07	3.29E-07	3.29E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
SDC5 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	3.29E-07	3.29E-07	3.29E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}

Table G.2 Particulate Matter Emission Factors - Potential Emission Calculations

Process Code	Process Description	Emission Factors				Process Rate Units	Particulate Matter Emission Factor Inputs [a]											Reference
		PM	PM_{10}	$PM_{2.5}$	Units		k (PM)	k (PM_{10})	k ($PM_{2.5}$)	U (mph)	M (%)	s (%)	S (mph)	f (%)	p (days)	A (ft^2)	W (tons)	
SDC6 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	3.29E-07	3.29E-07	3.29E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
SDC7 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	3.29E-07	3.29E-07	3.29E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
SDC8 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	3.29E-07	3.29E-07	3.29E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
SDC9 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	3.29E-07	3.29E-07	3.29E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
SDC10 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	3.29E-07	3.29E-07	3.29E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
SDC11 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	3.29E-07	3.29E-07	3.29E-07	lb/dscf	dscf	--	--	--	--	--	--	--	--	--	--	--	Voluntary Emission Limitations, Assume $PM_{2.5}$=PM_{10}
MDWSS (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	0.063	0.063	0.063	lb/hr	hours	--	--	--	--	--	--	--	--	--	--	--	Assume a maximum equal to the 40 CFR 60 Subpart LL Emission Standard, Assume $PM_{2.5}$=PM_{10}=PM
Drilling and Blasting Operations																		
Drilling (AOS1-C)	Drilling (AOS1) (AOS1-C)	1.30	0.78	0.14	lb/hole	holes	1	0.60	0.11	--	--	--	--	--	--	--	--	AP-42 Table 11.9-4 (10/98), Drilling Overburden and particle size fractions from AP-42 Table 11.19.2-2 and Figure 11.19-4 (08/04), Tertiary Crushing (controlled)
Drilling (AOS1)	Drilling (AOS1)	1.30	0.78	0.14	lb/hole	holes	1	0.60	0.11	--	--	--	--	--	--	--	--	AP-42 Table 11.9-4 (10/98), Drilling Overburden and particle size fractions from AP-42 Table 11.19.2-2 and Figure 11.19-4 (08/04), Tertiary Crushing (controlled)
ABlasting (AOS1-C)	Blasting (AOS1) (annual basis) (AOS1-C)	397.06	206.47	11.91	lb/blast	blasts	1	0.52	0.03	--	--	--	--	--	--	93,000	--	AP-42 Table 11.9-1 (10/98), Blasting Overburden
HBlasting (AOS1-C)	Blasting (AOS1) (hourly basis) (AOS1-C)	1,252.20	651.14	37.57	lb/blast	blasts	1	0.52	0.03	--	--	--	--	--	--	200,000	--	AP-42 Table 11.9-1 (10/98), Blasting Overburden
ABlasting (AOS1)	Blasting (AOS1) (annual basis)	3,742.33	1,946.01	112.27	lb/blast	blasts	1	0.52	0.03	--	--	--	--	--	--	414,963	--	AP-42 Table 11.9-1 (10/98), Blasting Overburden
HBlasting (AOS1)	Blasting (AOS1) (hourly basis)	4,919.42	2,558.10	147.58	lb/blast	blasts	1	0.52	0.03	--	--	--	--	--	--	497,956	--	AP-42 Table 11.9-1 (10/98), Blasting Overburden
Vehicle Operations																		
ATravel (AOS1-C)	Vehicle Travel on Unpaved Roads (annual basis) (AOS1-C)	19.83	5.45	0.55	lb/VMT	VMT	4.9	1.5	0.15	--	--	7.0	--	--	45	--	207.78	AP-42 Section 13.2.2, Expressions 1a and 2 (11/06)
HTravel (AOS1-C)	Vehicle Travel on Unpaved Roads (hourly basis) (AOS1-C)	21.48	5.90	0.59	lb/VMT	VMT	4.9	1.5	0.15	--	--	7.0	--	--	--	--	185.18	AP-42 Section 13.2.2, Expression 1a (11/06)
ATravel (AOS1)	Vehicle Travel on Unpaved Roads (annual basis) (AOS1)	15.66	4.30	0.43	lb/VMT	VMT	4.9	1.5	0.15	--	--	7.0	--	--	45	--	122.93	AP-42 Section 13.2.2, Expressions 1a and 2 (11/06)
HTravel (AOS1)	Vehicle Travel on Unpaved Roads (hourly basis) (AOS1)	21.01	5.77	0.58	lb/VMT	VMT	4.9	1.5	0.15	--	--	7.0	--	--	--	--	176.21	AP-42 Section 13.2.2, Expression 1a (11/06)
Dozer (AOS1-C)	Dozer Operation (AOS1) (AOS1-C)	8.85	1.61	0.93	lb/hr	hours	5.7	0.75	0.60	--	2.564	4.0	--	--	--	--	--	AP-42 Table 11.9-1 (10/98), Bulldozing Overburden
Dozer (AOS1)	Dozer Operation (AOS1)	8.85	1.61	0.93	lb/hr	hours	5.7	0.75	0.60	--	2.564	4.0	--	--	--	--	--	AP-42 Table 11.9-1 (10/98), Bulldozing Overburden

Table G.2 Particulate Matter Emission Factors - Potential Emission Calculations

Process Code	Process Description	Emission Factors				Process Rate Units	Particulate Matter Emission Factor Inputs [a]											Reference
		PM	PM_{10}	$PM_{2.5}$	Units		k (PM)	k (PM_{10})	k ($PM_{2.5}$)	U (mph)	M (%)	s (%)	S (mph)	f (%)	p (days)	A (ft^2)	W (tons)	
Grader (AOS1-C)	Road Grader Operation (AOS1) (AOS1-C)	3.53	1.10	0.11	lb/VMT	VMT	1	0.60	0.031	--	--	--	6.0	--	--	--	--	AP-42 Table 11.9-1 (10/98), Grading
Grader (AOS1)	Road Grader Operation (AOS1)	3.53	1.10	0.11	lb/VMT	VMT	1	0.60	0.031	--	--	--	6.0	--	--	--	--	AP-42 Table 11.9-1 (10/98), Grading
Material Transfer Operations																		
Ore1TrUnprt (AOS1-C)	Material Transfer of the Combination of All Mined Material (unprotected) (Design of AOS1 in Class II Air Quality Permit #77414)	0.0026	0.0012	0.00019	lb/ton	tons	0.74	0.35	0.053	7.10	2.564	--	--	--	--	--	--	AP-42 Section 13.2.4, Expression 1 (11/06)
Ore1TrUnprt (AOS1)	Material Transfer of the Combination of All Mined Material (unprotected) (Proposed Updated Design of AOS1)	0.0026	0.0012	0.00019	lb/ton	tons	0.74	0.35	0.053	7.10	2.564	--	--	--	--	--	--	AP-42 Section 13.2.4, Expression 1 (11/06)
Ore2TrUnprt	Material Transfer of Mill Ore (unprotected)	0.0026	0.0012	0.00019	lb/ton	tons	0.74	0.35	0.053	7.10	2.564	--	--	--	--	--	--	AP-42 Section 13.2.4, Expression 1 (11/06)
Ore2TrPrt	Material Transfer of Mill Ore (protected)	0.00029	0.00014	0.000021	lb/ton	tons	0.74	0.35	0.053	1.3	2.564	--	--	--	--	--	--	AP-42 Section 13.2.4, Expression 1 (11/06)
Ore3TrUnprt	Material Transfer of Leach Ore (unprotected)	0.0026	0.0012	0.00019	lb/ton	tons	0.74	0.35	0.053	7.10	2.564	--	--	--	--	--	--	AP-42 Section 13.2.4, Expression 1 (11/06)
Ore4TrUnprt	Material Transfer of Overburden/Low Grade Ore (unprotected)	0.0026	0.0012	0.00019	lb/ton	tons	0.74	0.35	0.053	7.10	2.564	--	--	--	--	--	--	AP-42 Section 13.2.4, Expression 1 (11/06)
CCTrPrt	Material Transfer of Copper Concentrate (protected)	0.000050	0.000024	0.0000036	lb/ton	tons	0.74	0.35	0.053	1.3	9.00	--	--	--	--	--	--	AP-42 Section 13.2.4, Expression 1 (11/06)
MC4TrPrt	Material Transfer of Sycamore Molybdenum Concentrate Post-Dryer (protected)	0.0021	0.0010	0.00015	lb/ton	tons	0.74	0.35	0.053	7.10	3.00	--	--	--	--	--	--	AP-42 Section 13.2.4, Expression 1 (11/06)
LimeLd	Lime Loading	0.61	0.21	0.032	lb/ton	tons	1	0.35	0.053	--	--	--	--	--	--	--	--	AP-42 Table 11.17-4 (02/98) for product loading enclosed truck, particle size fractions from AP-42 Section 13.2.4, Expression 1 (11/06)
FlTrUnprt	Material Transfer of Flocculant (unprotected)	0.069	0.032	0.0049	lb/ton	tons	0.74	0.35	0.053	7.10	0.25	--	--	--	--	--	--	AP-42 Section 13.2.4, Expression 1 (11/06)
PBL	Material Transfer of Prill	0.020	0.0070	0.0011	lb/ton	tons	1	0.35	0.053	--	--	--	--	--	--	--	--	AP-42 Table 8.3-2 (07/93), Bulk Loading Operations, particle size fractions from AP-42 Section 13.2.4, Expression 1 (11/06)
Lime Slaking Operations																		
SLS (AOS1)	Sycamore Lime Slaker (AOS1)	0.0012	0.0012	0.0012	lb/ton	tons	1	1	1	--	--	--	--	--	--	--	--	Manufacturer's Information from a similar slaker with a 20% Safety Factor, Assume $PM=PM_{10}=PM_{2.5}$
Wind Erosion																		
AWindCOS 1/5 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1) (annual basis)	2,778.90	1,389.45	208.42	lb/acre-yr	acre-yr	1	0.50	0.075	--	--	7.4	--	10.0	45	--	--	4th Edition of AP-42 Section 11.2.3, particle size fractions from AP-42 Section 13.2.5 (11/06)
HWindCOS 1/5 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1) (hourly basis)	0.32	0.16	0.024	lb/acre-hr	acre-yr	1	0.50	0.075	--	--	7.4	--	10.0	45	--	--	4th Edition of AP-42 Section 11.2.3, particle size fractions from AP-42 Section 13.2.5 (11/06)
AWindCOS 6 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1) (annual basis)	2,778.90	1,389.45	208.42	lb/acre-yr	acre-yr	1	0.50	0.075	--	--	7.4	--	10.0	45	--	--	4th Edition of AP-42 Section 11.2.3, particle size fractions from AP-42 Section 13.2.5 (11/06)
HWindCOS 6 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1) (hourly basis)	0.32	0.16	0.024	lb/acre-hr	acre-yr	1	0.50	0.075	--	--	7.4	--	10.0	45	--	--	4th Edition of AP-42 Section 11.2.3, particle size fractions from AP-42 Section 13.2.5 (11/06)

Table G.2 Particulate Matter Emission Factors - Potential Emission Calculations

Process Code	Process Description	Emission Factors				Process Rate Units	Particulate Matter Emission Factor Inputs [a]											Reference
		PM	PM_{10}	$PM_{2.5}$	Units		k (PM)	k (PM_{10})	k ($PM_{2.5}$)	U (mph)	M (%)	s (%)	S (mph)	f (%)	p (days)	A (ft^2)	W (tons)	
AWindSCC (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1) (annual basis)	36,050.61	18,025.30	2,703.80	lb/acre-yr	acre-yr	1	0.50	0.075	--	--	96	--	10.0	45	--	--	4th Edition of AP-42 Section 11.2.3, particle size fractions from AP-42 Section 13.2.5 (11/06)
HWindSCC (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1) (hourly basis)	4.12	2.06	0.31	lb/acre-hr	acre-yr	1	0.50	0.075	--	--	96	--	10.0	45	--	--	4th Edition of AP-42 Section 11.2.3, particle size fractions from AP-42 Section 13.2.5 (11/06)
Diesel Emergency ICE																		
Tier2-560-D	Tier 2 Diesel Non-Emergency Engines (kW > 560)	0.00033	0.00033	0.00033	lb/hp-hr	hp-hr	1	1	1	--	--	--	--	--	--	--	--	Tier 2 Emission Standards from 40 CFR 1039 Appendix I Table 2 for Engines Rated kW > 560, Assume $PM=PM_{10}=PM_{2.5}$
Tier3-450/560-D	Tier 3 Diesel Emergency Engines (450 ≤ kW ≤ 560)	0.00033	0.00033	0.00033	lb/hp-hr	hp-hr	1	1	1	--	--	--	--	--	--	--	--	Tier 3 Emission Standards from 40 CFR 1039 Appendix I Table 3 for Engines Rated 450 ≤ kW < 560, Assume $PM=PM_{10}=PM_{2.5}$
Propane Emergency ICE																		
SEG-P	Sycamore Propane Emergency Generators	0.00020	0.00020	0.00020	lb/hp-hr	hp-hr	1	1	1	--	--	--	--	--	--	--	--	AP-42 Table 3.2-3 (08/00), 4-Stroke Rich Burn, Assume $PM=PM_{10}=PM_{2.5}$, and 10,500 Btu/hp-hr

[a] k = particle size multipliers, U = mean wind speed, M = material moisture content, s = surface material silt content, S = mean vehicle speed, f = percentage of time with mean wind speed greater than 12 mph at the mean pile height, p = number of days/year with precipitation ≥ 0.01 inches, A = horizontal area of blasting surface, W = mean vehicle weight

Table G.3 Particulate Matter Control Efficiencies - Potential Emission Calculations

Control Code	Control Description	Control Efficiency (%)	Reference
UnpvdRd	Unpaved Road Watering and/or Chemical Dust Suppression Use	90%	*Control of Open Fugitive Dust Sources* (09/88), pages 5-9 through 5-14
SLimeBH	Sycamore Lime Silo Baghouse (AOS1)	99%	Minimum value from AP-42 Table B.2-3 (09/90)
SLSS	Sycamore Lime System Scrubber (AOS1)	0%	Control Efficiency Incorporated into Emission Factor
Fogging	Dry Fogging System	90%	Manufacturer's Information (Dust Solutions Incorporated)
WS/BOP	Water Spray/Wet Suppression When Necessary	0%	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
3Sided	3-Sided Enclosure	75%	South Coast Air Quality Management District Document on Fugitive Dust Mitigation Measures
DC	Dust Collector	0%	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
SC	Scrubber	0%	Control Efficiency Incorporated into the Emission Factor (i.e., emissions are calculated without the application of a control efficiency)
BOP	Best Operating Practices	0%	--

Table G.4 Annual Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (tpy)		PM_{10} Emissions (tpy)		$PM_{2.5}$ Emissions (tpy)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414																	
Mining Operations (AOS1)																	
026-3 (AOS1)	Drilling (AOS1)	Drilling (AOS1-C)	F	90,000	holes	1.30	0.78	0.14	lb/hole	BOP	0%	58.50	58.50	35.10	35.10	6.50	6.50
026-2 (AOS1)	Blasting (AOS1)	ABlasting (AOS1-C)	F	600	blasts	397.06	206.47	11.91	lb/blast	BOP	0%	119.12	119.12	61.94	61.94	3.57	3.57
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	ATravel (AOS1-C)	F	2,513,372	VMT	19.83	5.45	0.55	lb/VMT	UnpvdRd	90%	24,925.28	2,492.53	6,850.44	685.04	685.04	68.50
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	ATravel (AOS1-C)	F	837,791	VMT	19.83	5.45	0.55	lb/VMT	UnpvdRd	90%	8,308.43	830.84	2,283.48	228.35	228.35	22.83
023-3 (AOS1)	Other Vehicle Travel (AOS1)	ATravel (AOS1-C)	F	1,350,115	VMT	19.83	5.45	0.55	lb/VMT	UnpvdRd	90%	13,389.18	1,338.92	3,679.87	367.99	367.99	36.80
023-1 (AOS1)	Dozer Operation (AOS1)	Dozer (AOS1-C)	F	78,046	hours	8.85	1.61	0.93	lb/hr	BOP	0%	345.20	345.20	62.66	62.66	36.25	36.25
023-2 (AOS1)	Road Grader Operation (AOS1)	Grader (AOS1-C)	F	118,587	VMT	3.53	1.10	0.11	lb/VMT	UnpvdRd	90%	209.14	20.91	65.32	6.53	6.48	0.65
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Ore1TrUnprt (AOS1-C)	F	220,314,000	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	290.62	290.62	137.46	137.46	20.81	20.81
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Ore2TrUnprt	F	65,700,000	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	86.67	86.67	40.99	40.99	6.21	6.21
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)																
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Ore3TrUnprt	F	30,076,000	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	39.67	39.67	18.76	18.76	2.84	2.84
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Ore4TrUnprt	F	124,538,000	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	164.28	164.28	77.70	77.70	11.77	11.77
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)																	
001-5 (AOS1)	Dust Collector C51 (AOS1)	C51 (AOS1)	NF	7,884,000,000	dscf	1.93E-06	1.93E-06	1.93E-06	lb/dscf	DC	0%	7.60	7.60	7.60	7.60	7.60	7.60
001-16 (AOS1)	Dust Collector AE-001 (AOS1)	AE-001 (AOS1)	NF	10,512,000,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.95	1.95	1.95	1.95	1.95	1.95
001-17 (AOS1)	Dust Collector AE-014 (AOS1)	AE-014 (AOS1)	NF	6,307,200,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.17	1.17	1.17	1.17	1.17	1.17
001-18 (AOS1)	Dust Collector AE-015 (AOS1)	AE-015 (AOS1)	NF	6,307,200,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.17	1.17	1.17	1.17	1.17	1.17
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Ore2TrUnprt	F	32,850,000	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	43.33	43.33	20.50	20.50	3.10	3.10

Table G.4 Annual Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (tpy)		PM_{10} Emissions (tpy)		$PM_{2.5}$ Emissions (tpy)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
001-19 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Ore2TrUnprt	F	16,206,000	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	21.38	21.38	10.11	10.11	1.53	1.53
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	AWindCOS1/5 (AOS1)	F	6.88	acre-yr	2,778.90	1,389.45	208.42	lb/acre-yr	BOP	0%	9.56	9.56	4.78	4.78	0.72	0.72
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)																	
001-12 (AOS1)	Dust Collector AE-002 (AOS1)	AE-002 (AOS1)	NF	6,307,200,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.17	1.17	1.17	1.17	1.17	1.17
001-13 (AOS1)	Dust Collector AE-003 (AOS1)	AE-003 (AOS1)	NF	7,884,000,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.46	1.46	1.46	1.46	1.46	1.46
001-14 (AOS1)	Dust Collector AE-016 (AOS1)	AE-016 (AOS1)	NF	6,307,200,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.17	1.17	1.17	1.17	1.17	1.17
001-15 (AOS1)	Dust Collector AE-017 (AOS1)	AE-017 (AOS1)	NF	6,307,200,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.17	1.17	1.17	1.17	1.17	1.17
001-20 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6	Ore2TrUnprt	F	16,644,000	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	21.96	21.96	10.38	10.38	1.57	1.57
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	AWindCOS6 (AOS1)	F	2.34	acre-yr	2,778.90	1,389.45	208.42	lb/acre-yr	BOP	0%	3.25	3.25	1.63	1.63	0.24	0.24
Sycamore Milling Operations (AOS1)																	
002-7 (AOS1)	Dust Collector AE-008 (AOS1)	AE-008 (AOS1)	NF	26,280,000,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	4.88	4.88	4.88	4.88	4.88	4.88
002-8 (AOS1)	Dust Collector AE-009 (AOS1)	AE-009 (AOS1)	NF	6,307,200,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.17	1.17	1.17	1.17	1.17	1.17
002-9 (AOS1)	Dust Collector AE-010 (AOS1)	AE-010 (AOS1)	NF	10,512,000,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.95	1.95	1.95	1.95	1.95	1.95
002-10 (AOS1)	Dust Collector AE-011 (AOS1)	AE-011 (AOS1)	NF	6,307,200,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.17	1.17	1.17	1.17	1.17	1.17
002-11 (AOS1)	Dust Collector AE-007 (AOS1)	AE-007 (AOS1)	NF	6,307,200,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.17	1.17	1.17	1.17	1.17	1.17
002-12 (AOS1)	Dust Collector AE-012 (AOS1)	AE-012 (AOS1)	NF	17,344,800,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	3.22	3.22	3.22	3.22	3.22	3.22
002-13 (AOS1)	Dust Collector AE-013 (AOS1)	AE-013 (AOS1)	NF	9,460,800,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.76	1.76	1.76	1.76	1.76	1.76
Total of Non-Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:												32.20	32.20	32.20	32.20	32.20	32.20
Total of Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:												48,035.58	5,886.74	13,361.12	1,769.92	1,382.98	223.90
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:												48,067.78	5,918.94	13,393.32	1,802.12	1,415.18	256.10

Table G.4 Annual Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (tpy)		PM_{10} Emissions (tpy)		$PM_{2.5}$ Emissions (tpy)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Affected Emissions Units - Proposed Updated Design of AOS1																	
Mining Operations (AOS1)																	
026-3 (AOS1)	Drilling (AOS1)	Drilling (AOS1)	F	106,219	holes	1.30	0.78	0.14	lb/hole	BOP	0%	69.04	69.04	41.43	41.43	7.67	7.67
026-2 (AOS1)	Blasting (AOS1)	ABlasting (AOS1)	F	260	blasts	3,742.33	1,946.01	112.27	lb/blast	BOP	0%	486.50	486.50	252.98	252.98	14.60	14.60
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	ATravel (AOS1)	F	7,099,653	VMT	15.66	4.30	0.43	lb/VMT	UnpvdRd	90%	55,596.53	5,559.65	15,280.10	1,528.01	1,528.01	152.80
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	ATravel (AOS1)	F	2,366,551	VMT	15.66	4.30	0.43	lb/VMT	UnpvdRd	90%	18,532.18	1,853.22	5,093.37	509.34	509.34	50.93
023-3 (AOS1)	Other Vehicle Travel (AOS1)	ATravel (AOS1)	F	14,080,416	VMT	15.66	4.30	0.43	lb/VMT	UnpvdRd	90%	110,262.05	11,026.21	30,304.32	3,030.43	3,030.43	303.04
023-1 (AOS1)	Dozer Operation (AOS1)	Dozer (AOS1)	F	133,221	hours	8.85	1.61	0.93	lb/hr	BOP	0%	589.25	589.25	106.96	106.96	61.87	61.87
023-2 (AOS1)	Road Grader Operation (AOS1)	Grader (AOS1)	F	420,480	VMT	3.53	1.10	0.11	lb/VMT	UnpvdRd	90%	741.57	74.16	231.60	23.16	22.99	2.30
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Ore1TrUnprt (AOS1)	F	254,833,922	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	336.16	336.16	158.99	158.99	24.08	24.08
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Ore2TrUnprt	F	44,433,881	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	58.61	58.61	27.72	27.72	4.20	4.20
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Ore2TrUnprt	F	32,632,000	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	43.05	43.05	20.36	20.36	3.08	3.08
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Ore3TrUnprt	F	9,230,000	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	12.18	12.18	5.76	5.76	0.87	0.87
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Ore4TrUnprt	F	168,538,041	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	222.32	222.32	105.15	105.15	15.92	15.92
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)																	
001-5 (AOS1)	Dust Collector C51 (AOS1)	C51 (AOS1)	NF	7,884,000,000	dscf	1.93E-06	1.93E-06	1.93E-06	lb/dscf	DC	0%	7.60	7.60	7.60	7.60	7.60	7.60
001-2 (AOS1)	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	Ore2TrPrt	NF	66,576,000	tons	0.00029	0.00014	0.000021	lb/ton	Fogging	90%	9.66	0.97	4.57	0.46	0.69	0.07
001-8 (AOS1)	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	Ore2TrPrt	NF	66,576,000	tons	0.00029	0.00014	0.000021	lb/ton	Fogging	90%	9.66	0.97	4.57	0.46	0.69	0.07
001-9 (AOS1)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	Ore2TrPrt	NF	66,576,000	tons	0.00029	0.00014	0.000021	lb/ton	Fogging	90%	9.66	0.97	4.57	0.46	0.69	0.07
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Ore2TrUnprt	F	53,260,800	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	70.26	70.26	33.23	33.23	5.03	5.03

Table G.4 Annual Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (tpy)		PM_{10} Emissions (tpy)		$PM_{2.5}$ Emissions (tpy)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
001-10 (AOS1)	Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	Ore2TrUnprt	F	13,315,200	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	17.56	17.56	8.31	8.31	1.26	1.26
001-3 (AOS1)	Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Ore2TrUnprt	F	13,315,200	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	17.56	17.56	8.31	8.31	1.26	1.26
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	AWindCOS1/5 (AOS1)	F	6.18	acre-yr	2,778.90	1,389.45	208.42	lb/acre-yr	BOP	0%	8.59	8.59	4.29	4.29	0.64	0.64
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)																	
001-12 (AOS1)	PC1 Dust Collector 1 (AOS1)	SDC1 (AOS1)	NF	7,621,200,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	1.25	1.25	1.25	1.25	1.25	1.25
001-13 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	SDC2 (AOS1)	NF	8,777,520,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	1.44	1.44	1.44	1.44	1.44	1.44
001-14 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	SDC3 (AOS1)	NF	8,777,520,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	1.44	1.44	1.44	1.44	1.44	1.44
001-15 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	SDC4 (AOS1)	NF	8,777,520,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	1.44	1.44	1.44	1.44	1.44	1.44
001-20 (AOS1)	PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	Ore2TrUnprt	F	70,080,000	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	92.44	92.44	43.72	43.72	6.62	6.62
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	AWindCOS6 (AOS1)	F	3.04	acre-yr	2,778.90	1,389.45	208.42	lb/acre-yr	BOP	0%	4.22	4.22	2.11	2.11	0.32	0.32
Sycamore Milling Operations (AOS1)																	
002-7 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	SDC5 (AOS1)	NF	11,563,200,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	1.90	1.90	1.90	1.90	1.90	1.90
002-8 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	SDC6 (AOS1)	NF	11,563,200,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	1.90	1.90	1.90	1.90	1.90	1.90
002-9 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	SDC7 (AOS1)	NF	12,088,800,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	1.99	1.99	1.99	1.99	1.99	1.99
002-10 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	SDC8 (AOS1)	NF	14,191,200,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	2.33	2.33	2.33	2.33	2.33	2.33
002-11 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	SDC9 (AOS1)	NF	13,140,000,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	2.16	2.16	2.16	2.16	2.16	2.16
002-12 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	SDC10 (AOS1)	NF	5,256,000,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.86	0.86	0.86	0.86	0.86	0.86
002-13 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	SDC11 (AOS1)	NF	5,256,000,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.86	0.86	0.86	0.86	0.86	0.86
Sycamore Concentrate Handling Operations (AOS1)																	
006-11 (AOS1)	Copper Concentrate Filters 1/2 (AOS1) to Copper Concentrate Filter Drop Storage (AOS1)	CCTrPrt	F	499,320	tons	0.000050	0.000024	0.0000036	lb/ton	BOP	0%	0.01	0.01	0.006	0.006	0.0009	0.0009

Table G.4 Annual Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (tpy)		PM_{10} Emissions (tpy)		$PM_{2.5}$ Emissions (tpy)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
006-12 (AOS1)	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader	CCTrPrt	F	499,320	tons	0.000050	0.000024	0.0000036	lb/ton	BOP	0%	0.01	0.01	0.006	0.006	0.0009	0.0009
006-13 (AOS1)	Copper Concentrate Loadout Storage (AOS1) to Trucks via Front-End Loader	CCTrPrt	F	499,320	tons	0.000050	0.000024	0.0000036	lb/ton	BOP	0%	0.01	0.01	0.006	0.006	0.0009	0.0009
027-8 (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1)	AWindSCC (AOS1)	F	0.30	acre-yr	36,050.61	18,025.30	2,703.80	lb/acre-yr	3Sided	75%	5.41	1.35	2.70	0.68	0.41	0.10
052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	MDWSS (AOS1)	NF	8,760	hours	0.063	0.063	0.063	lb/hr	SC	0%	0.28	0.28	0.28	0.28	0.28	0.28
052-3 (AOS1)	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1)	MC4TrPrt	NF	18,396	tons	0.0021	0.0010	0.00015	lb/ton	BOP	0%	0.02	0.02	0.009	0.009	0.001	0.001
052-4 (AOS1)	Dried Molybdenum Concentrate Storage Bin (AOS1) to Molybdenum Concentrate Bagging System (AOS1)	MC4TrPrt	F	18,396	tons	0.0021	0.0010	0.00015	lb/ton	BOP	0%	0.02	0.02	0.009	0.009	0.001	0.001
Sycamore Lime and Other Regent Operations (AOS1)																	
007-6 (AOS1)	Transfer of Lime to the Sycamore Lime Silo (AOS1)	LimeLd	NF	99,514	tons	0.61	0.21	0.032	lb/ton	SLimeBH	99%	30.35	0.30	10.62	0.11	1.61	0.02
007-7 (AOS1)	Sycamore Lime Slaker (AOS1)	SLS (AOS1)	NF	99,514	tons	0.0012	0.0012	0.0012	lb/ton	SLSS	0%	0.06	0.06	0.06	0.06	0.06	0.06
055-1 (AOS1)	Transfer of Flocculant to Tailings Flocculant Bag Breaker Bin (AOS1)	FlTrUnprt	NF	7,227	tons	0.069	0.032	0.0049	lb/ton	BOP	0%	0.25	0.25	0.12	0.12	0.02	0.02
055-2 (AOS1)	Transfer of Flocculant to Concentrate Flocculant Bag Breaker Bin (AOS1)	FlTrUnprt	NF	482	tons	0.069	0.032	0.0049	lb/ton	BOP	0%	0.02	0.02	0.008	0.008	0.001	0.001
Sycamore Prill Handling Operations (AOS1)																	
050-7 (AOS1)	Delivery of Ammonium Nitrate Prill to Prill Bin 6 (AOS1)	PBL	NF	25,365	tons	0.020	0.0070	0.0011	lb/ton	BOP	0%	0.25	0.25	0.09	0.09	0.01	0.01
050-8 (AOS1)	Prill Bin 6 to ANFO Trucks for Transfer to Drill Holes	PBL	NF	25,365	tons	0.020	0.0070	0.0011	lb/ton	BOP	0%	0.25	0.25	0.09	0.09	0.01	0.01
Sycamore Emergency ICE (AOS1)																	
049-59 (AOS1)	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	Tier3-450/560-D	NF	304,500	hp-hr	0.00033	0.00033	0.00033	lb/hp-hr	BOP	0%	0.05	0.05	0.05	0.05	0.05	0.05
049-60 (AOS1)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	Tier2-560-D	NF	381,000	hp-hr	0.00033	0.00033	0.00033	lb/hp-hr	BOP	0%	0.06	0.06	0.06	0.06	0.06	0.06
049-61 (AOS1)	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	SEG-P	NF	42,350	hp-hr	0.00020	0.00020	0.00020	lb/hp-hr	BOP	0%	0.004	0.004	0.004	0.004	0.004	0.004
049-62 (AOS1)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	SEG-P	NF	42,350	hp-hr	0.00020	0.00020	0.00020	lb/hp-hr	BOP	0%	0.004	0.004	0.004	0.004	0.004	0.004
Total of Non-Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:												85.77	29.63	50.29	27.43	29.37	25.91

Table G.4 Annual Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (tpy)		PM_{10} Emissions (tpy)		$PM_{2.5}$ Emissions (tpy)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Total of Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:												187,165.54	20,542.38	51,731.45	5,910.96	5,238.60	656.60
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:												187,251.31	20,572.02	51,781.73	5,938.39	5,267.97	682.51
Total Change in Non-Fugitive Emissions:												**53.57**	**-2.57**	**18.09**	**-4.77**	**-2.83**	**-6.29**
Total Change in Fugitive Emissions:												**139,129.97**	**14,655.64**	**38,370.33**	**4,141.05**	**3,855.62**	**432.70**
Total Change in Non-Fugitive and Fugitive Emissions:												**139,183.54**	**14,653.08**	**38,388.41**	**4,136.28**	**3,852.79**	**426.41**
Total Change in FMBI Facility-Wide PTE (includes all non-fugitive emissions):												**53.57**	**-2.57**	**18.09**	**-4.77**	**-2.83**	**-6.29**

Table G.5 Hourly Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (lb/hr)		PM_{10} Emissions (lb/hr)		$PM_{2.5}$ Emissions (lb/hr)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414																	
Mining Operations (AOS1)																	
026-3 (AOS1)	Drilling (AOS1)	Drilling (AOS1-C)	F	200	holes	1.30	0.78	0.14	lb/hole	BOP	0%	260.00	260.00	156.00	156.00	28.89	28.89
026-2 (AOS1)	Blasting (AOS1)	HBlasting (AOS1-C)	F	1	blasts	1,252.20	651.14	37.57	lb/blast	BOP	0%	1,252.20	1,252.20	651.14	651.14	37.57	37.57
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	HTravel (AOS1-C)	F	473	VMT	21.48	5.90	0.59	lb/VMT	UnpvdRd	90%	10,149.60	1,014.96	2,789.51	278.95	278.95	27.90
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	HTravel (AOS1-C)	F	158	VMT	21.48	5.90	0.59	lb/VMT	UnpvdRd	90%	3,383.20	338.32	929.84	92.98	92.98	9.30
023-3 (AOS1)	Other Vehicle Travel (AOS1)	HTravel (AOS1-C)	F	486	VMT	21.48	5.90	0.59	lb/VMT	UnpvdRd	90%	10,443.31	1,044.33	2,870.23	287.02	287.02	28.70
023-1 (AOS1)	Dozer Operation (AOS1)	Dozer (AOS1-C)	F	16.00	hours	8.85	1.61	0.93	lb/hr	BOP	0%	141.54	141.54	25.69	25.69	14.86	14.86
023-2 (AOS1)	Road Grader Operation (AOS1)	Grader (AOS1-C)	F	30.00	VMT	3.53	1.10	0.11	lb/VMT	UnpvdRd	90%	105.82	10.58	33.05	3.30	3.28	0.33
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Ore1TrUnprt (AOS1-C)	F	30,515	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	80.51	80.51	38.08	38.08	5.77	5.77
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Ore2TrUnprt	F	12,865	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	33.94	33.94	16.05	16.05	2.43	2.43
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)																
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Ore3TrUnprt	F	3,433	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	9.06	9.06	4.28	4.28	0.65	0.65
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Ore4TrUnprt	F	14,217	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	37.51	37.51	17.74	17.74	2.69	2.69
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)																	
001-5 (AOS1)	Dust Collector C51 (AOS1)	C51 (AOS1)	NF	900,000	dscf	1.93E-06	1.93E-06	1.93E-06	lb/dscf	DC	0%	1.74	1.74	1.74	1.74	1.74	1.74
001-16 (AOS1)	Dust Collector AE-001 (AOS1)	AE-001 (AOS1)	NF	1,200,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.45	0.45	0.45	0.45	0.45	0.45
001-17 (AOS1)	Dust Collector AE-014 (AOS1)	AE-014 (AOS1)	NF	720,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.27	0.27	0.27	0.27	0.27	0.27
001-18 (AOS1)	Dust Collector AE-015 (AOS1)	AE-015 (AOS1)	NF	720,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.27	0.27	0.27	0.27	0.27	0.27
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Ore2TrUnprt	F	7,600	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	20.05	20.05	9.48	9.48	1.44	1.44

Table G.5 Hourly Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (lb/hr)		PM_{10} Emissions (lb/hr)		$PM_{2.5}$ Emissions (lb/hr)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
001-19 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Ore2TrUnprt	F	3,965	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	10.46	10.46	4.95	4.95	0.75	0.75
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	HWindCOS1/5 (AOS1)	F	6.88	acre-yr	0.32	0.16	0.024	lb/acre-hr	BOP	0%	2.18	2.18	1.09	1.09	0.16	0.16
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)																	
001-12 (AOS1)	Dust Collector AE-002 (AOS1)	AE-002 (AOS1)	NF	720,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.27	0.27	0.27	0.27	0.27	0.27
001-13 (AOS1)	Dust Collector AE-003 (AOS1)	AE-003 (AOS1)	NF	900,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.33	0.33	0.33	0.33	0.33	0.33
001-14 (AOS1)	Dust Collector AE-016 (AOS1)	AE-016 (AOS1)	NF	720,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.27	0.27	0.27	0.27	0.27	0.27
001-15 (AOS1)	Dust Collector AE-017 (AOS1)	AE-017 (AOS1)	NF	720,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.27	0.27	0.27	0.27	0.27	0.27
001-20 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6	Ore2TrUnprt	F	1,900	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	5.01	5.01	2.37	2.37	0.36	0.36
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	HWindCOS6 (AOS1)	F	2.34	acre-yr	0.32	0.16	0.024	lb/acre-hr	BOP	0%	0.74	0.74	0.37	0.37	0.06	0.06
Sycamore Milling Operations (AOS1)																	
002-7 (AOS1)	Dust Collector AE-008 (AOS1)	AE-008 (AOS1)	NF	3,000,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	1.11	1.11	1.11	1.11	1.11	1.11
002-8 (AOS1)	Dust Collector AE-009 (AOS1)	AE-009 (AOS1)	NF	720,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.27	0.27	0.27	0.27	0.27	0.27
002-9 (AOS1)	Dust Collector AE-010 (AOS1)	AE-010 (AOS1)	NF	1,200,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.45	0.45	0.45	0.45	0.45	0.45
002-10 (AOS1)	Dust Collector AE-011 (AOS1)	AE-011 (AOS1)	NF	720,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.27	0.27	0.27	0.27	0.27	0.27
002-11 (AOS1)	Dust Collector AE-007 (AOS1)	AE-007 (AOS1)	NF	720,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.27	0.27	0.27	0.27	0.27	0.27
002-12 (AOS1)	Dust Collector AE-012 (AOS1)	AE-012 (AOS1)	NF	1,980,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.74	0.74	0.74	0.74	0.74	0.74
002-13 (AOS1)	Dust Collector AE-013 (AOS1)	AE-013 (AOS1)	NF	1,080,000	dscf	3.71E-07	3.71E-07	3.71E-07	lb/dscf	DC	0%	0.40	0.40	0.40	0.40	0.40	0.40
Total of Non-Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:												7.35	7.35	7.35	7.35	7.35	7.35
Total of Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:												25,935.12	4,261.39	7,549.87	1,589.51	757.85	161.84
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:												25,942.48	4,268.74	7,557.23	1,596.87	765.20	169.19

Table G.5 Hourly Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (lb/hr)		PM_{10} Emissions (lb/hr)		$PM_{2.5}$ Emissions (lb/hr)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Affected Emissions Units - Proposed Updated Design of AOS1																	
Mining Operations (AOS1)																	
026-3 (AOS1)	Drilling (AOS1)	Drilling (AOS1)	F	490	holes	1.30	0.78	0.14	lb/hole	BOP	0%	637.31	637.31	382.39	382.39	70.81	70.81
026-2 (AOS1)	Blasting (AOS1)	HBlasting (AOS1)	F	1	blasts	4,919.42	2,558.10	147.58	lb/blast	BOP	0%	4,919.42	4,919.42	2,558.10	2,558.10	147.58	147.58
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	HTravel (AOS1)	F	2,239	VMT	21.01	5.77	0.58	lb/VMT	UnpvdRd	90%	47,027.41	4,702.74	12,924.97	1,292.50	1,292.50	129.25
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	HTravel (AOS1)	F	746	VMT	21.01	5.77	0.58	lb/VMT	UnpvdRd	90%	15,675.80	1,567.58	4,308.32	430.83	430.83	43.08
023-3 (AOS1)	Other Vehicle Travel (AOS1)	HTravel (AOS1)	F	2,188	VMT	21.01	5.77	0.58	lb/VMT	UnpvdRd	90%	45,955.59	4,595.56	12,630.39	1,263.04	1,263.04	126.30
023-1 (AOS1)	Dozer Operation (AOS1)	Dozer (AOS1)	F	22.00	hours	8.85	1.61	0.93	lb/hr	BOP	0%	194.61	194.61	35.33	35.33	20.43	20.43
023-2 (AOS1)	Road Grader Operation (AOS1)	Grader (AOS1)	F	48.00	VMT	3.53	1.10	0.11	lb/VMT	UnpvdRd	90%	169.31	16.93	52.88	5.29	5.25	0.52
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Ore1TrUnprt (AOS1)	F	39,352	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	103.82	103.82	49.10	49.10	7.44	7.44
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Ore2TrUnprt	F	8,000	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	21.11	21.11	9.98	9.98	1.51	1.51
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Ore2TrUnprt	F	7,000	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	18.47	18.47	8.73	8.73	1.32	1.32
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Ore3TrUnprt	F	1,264	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	3.34	3.34	1.58	1.58	0.24	0.24
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Ore4TrUnprt	F	23,087	tons	0.0026	0.0012	0.00019	lb/ton	BOP	0%	60.91	60.91	28.81	28.81	4.36	4.36
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)																	
001-5 (AOS1)	Dust Collector C51 (AOS1)	C51 (AOS1)	NF	900,000	dscf	1.93E-06	1.93E-06	1.93E-06	lb/dscf	DC	0%	1.74	1.74	1.74	1.74	1.74	1.74
001-2 (AOS1)	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	Ore2TrPrt	NF	7,600	tons	0.00029	0.00014	0.000021	lb/ton	Fogging	90%	2.21	0.22	1.04	0.10	0.16	0.02
001-8 (AOS1)	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	Ore2TrPrt	NF	7,600	tons	0.00029	0.00014	0.000021	lb/ton	Fogging	90%	2.21	0.22	1.04	0.10	0.16	0.02
001-9 (AOS1)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	Ore2TrPrt	NF	7,600	tons	0.00029	0.00014	0.000021	lb/ton	Fogging	90%	2.21	0.22	1.04	0.10	0.16	0.02
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Ore2TrUnprt	F	7,600	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	20.05	20.05	9.48	9.48	1.44	1.44

Table G.5 Hourly Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (lb/hr)		PM_{10} Emissions (lb/hr)		$PM_{2.5}$ Emissions (lb/hr)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
001-10 (AOS1)	Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	Ore2TrUnprt	F	7,600	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	20.05	20.05	9.48	9.48	1.44	1.44
001-3 (AOS1)	Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Ore2TrUnprt	F	7,600	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	20.05	20.05	9.48	9.48	1.44	1.44
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	HWindCOS1/5 (AOS1)	F	6.18	acre-yr	0.32	0.16	0.024	lb/acre-hr	BOP	0%	1.96	1.96	0.98	0.98	0.15	0.15
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)																	
001-12 (AOS1)	PC1 Dust Collector 1 (AOS1)	SDC1 (AOS1)	NF	870,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.29	0.29	0.29	0.29	0.29	0.29
001-13 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	SDC2 (AOS1)	NF	1,002,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.33	0.33	0.33	0.33	0.33	0.33
001-14 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	SDC3 (AOS1)	NF	1,002,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.33	0.33	0.33	0.33	0.33	0.33
001-15 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	SDC4 (AOS1)	NF	1,002,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.33	0.33	0.33	0.33	0.33	0.33
001-20 (AOS1)	PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	Ore2TrUnprt	F	8,000	tons	0.0026	0.0012	0.00019	lb/ton	WS/BOP	0%	21.11	21.11	9.98	9.98	1.51	1.51
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	HWindCOS6 (AOS1)	F	3.04	acre-yr	0.32	0.16	0.024	lb/acre-hr	BOP	0%	0.96	0.96	0.48	0.48	0.07	0.07
Sycamore Milling Operations (AOS1)																	
002-7 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	SDC5 (AOS1)	NF	1,320,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.43	0.43	0.43	0.43	0.43	0.43
002-8 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	SDC6 (AOS1)	NF	1,320,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.43	0.43	0.43	0.43	0.43	0.43
002-9 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	SDC7 (AOS1)	NF	1,380,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.45	0.45	0.45	0.45	0.45	0.45
002-10 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	SDC8 (AOS1)	NF	1,620,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.53	0.53	0.53	0.53	0.53	0.53
002-11 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	SDC9 (AOS1)	NF	1,500,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.49	0.49	0.49	0.49	0.49	0.49
002-12 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	SDC10 (AOS1)	NF	600,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.20	0.20	0.20	0.20	0.20	0.20
002-13 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	SDC11 (AOS1)	NF	600,000	dscf	3.29E-07	3.29E-07	3.29E-07	lb/dscf	DC	0%	0.20	0.20	0.20	0.20	0.20	0.20
Sycamore Concentrate Handling Operations (AOS1)																	
006-11 (AOS1)	Copper Concentrate Filters 1/2 (AOS1) to Copper Concentrate Filter Drop Storage (AOS1)	CCTrPrt	F	57.00	tons	0.000050	0.000024	0.0000036	lb/ton	BOP	0%	0.003	0.003	0.001	0.001	0.0002	0.0002

Table G.5 Hourly Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (lb/hr)		PM_{10} Emissions (lb/hr)		$PM_{2.5}$ Emissions (lb/hr)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
006-12 (AOS1)	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader	CCTrPrt	F	57.00	tons	0.000050	0.000024	0.0000036	lb/ton	BOP	0%	0.003	0.003	0.001	0.001	0.0002	0.0002
006-13 (AOS1)	Copper Concentrate Loadout Storage (AOS1) to Trucks via Front-End Loader	CCTrPrt	F	57.00	tons	0.000050	0.000024	0.0000036	lb/ton	BOP	0%	0.003	0.003	0.001	0.001	0.0002	0.0002
027-8 (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1)	HWindSCC (AOS1)	F	0.30	acre-yr	4.12	2.06	0.31	lb/acre-hr	3Sided	75%	1.23	0.31	0.62	0.15	0.09	0.02
052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	MDWSS (AOS1)	NF	1	hours	0.063	0.063	0.063	lb/hr	SC	0%	0.06	0.06	0.06	0.06	0.06	0.06
052-3 (AOS1)	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1)	MC4TrPrt	NF	2.10	tons	0.0021	0.0010	0.00015	lb/ton	BOP	0%	0.004	0.004	0.002	0.002	0.0003	0.0003
052-4 (AOS1)	Dried Molybdenum Concentrate Storage Bin (AOS1) to Molybdenum Concentrate Bagging System (AOS1)	MC4TrPrt	F	2.10	tons	0.0021	0.0010	0.00015	lb/ton	BOP	0%	0.004	0.004	0.002	0.002	0.0003	0.0003
Sycamore Lime and Other Regent Operations (AOS1)																	
007-6 (AOS1)	Transfer of Lime to the Sycamore Lime Silo (AOS1)	LimeLd	NF	25.00	tons	0.61	0.21	0.032	lb/ton	SLimeBH	99%	15.25	0.15	5.34	0.05	0.81	0.008
007-7 (AOS1)	Sycamore Lime Slaker (AOS1)	SLS (AOS1)	NF	11.36	tons	0.0012	0.0012	0.0012	lb/ton	SLSS	0%	0.01	0.01	0.01	0.01	0.01	0.01
055-1 (AOS1)	Transfer of Flocculant to Tailings Flocculant Bag Breaker Bin (AOS1)	FlTrUnprt	NF	0.83	tons	0.069	0.032	0.0049	lb/ton	BOP	0%	0.06	0.06	0.03	0.03	0.004	0.004
055-2 (AOS1)	Transfer of Flocculant to Concentrate Flocculant Bag Breaker Bin (AOS1)	FlTrUnprt	NF	0.06	tons	0.069	0.032	0.0049	lb/ton	BOP	0%	0.004	0.004	0.002	0.002	0.0003	0.0003
Sycamore Prill Handling Operations (AOS1)																	
050-7 (AOS1)	Delivery of Ammonium Nitrate Prill to Prill Bin 6 (AOS1)	PBL	NF	25.75	tons	0.020	0.0070	0.0011	lb/ton	BOP	0%	0.52	0.52	0.18	0.18	0.03	0.03
050-8 (AOS1)	Prill Bin 6 to ANFO Trucks for Transfer to Drill Holes	PBL	NF	50.00	tons	0.020	0.0070	0.0011	lb/ton	BOP	0%	1.00	1.00	0.35	0.35	0.05	0.05
Sycamore Emergency ICE (AOS1)																	
049-59 (AOS1)	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	Tier3-450/560-D	NF	609	hp-hr	0.00033	0.00033	0.00033	lb/hp-hr	BOP	0%	0.20	0.20	0.20	0.20	0.20	0.20
049-60 (AOS1)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	Tier2-560-D	NF	762	hp-hr	0.00033	0.00033	0.00033	lb/hp-hr	BOP	0%	0.25	0.25	0.25	0.25	0.25	0.25
049-61 (AOS1)	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	SEG-P	NF	84.70	hp-hr	0.00020	0.00020	0.00020	lb/hp-hr	BOP	0%	0.02	0.02	0.02	0.02	0.02	0.02
049-62 (AOS1)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	SEG-P	NF	84.70	hp-hr	0.00020	0.00020	0.00020	lb/hp-hr	BOP	0%	0.02	0.02	0.02	0.02	0.02	0.02
Total of Non-Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:												29.76	8.71	15.34	7.24	7.68	6.45

Table G.5 Hourly Particulate Matter Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (lb/hr)		PM_{10} Emissions (lb/hr)		$PM_{2.5}$ Emissions (lb/hr)	
						PM	PM_{10}	$PM_{2.5}$				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Total of Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:												114,872.53	16,926.31	33,031.11	6,105.73	3,251.45	558.93
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:												114,902.29	16,935.01	33,046.45	6,112.97	3,259.13	565.38
Total Change in Non-Fugitive Emissions:												**22.41**	**1.35**	**7.99**	**-0.11**	**0.33**	**-0.90**
Total Change in Fugitive Emissions:												**88,937.41**	**12,664.92**	**25,481.23**	**4,516.22**	**2,493.60**	**397.09**
Total Change in Non-Fugitive and Fugitive Emissions:												**88,959.82**	**12,666.27**	**25,489.22**	**4,516.11**	**2,493.93**	**396.19**

Table G.6 Gaseous Emission Factors - Potential Emission Calculations

Process Code	Process Description	Emission Factor										Process Rate Units	Reference
		CO	NO_X	SO_2	VOC	H_2SO_4	H_2S	CO_2	CH_4	N_2O	Units		
Pollution Control Devices													
MDWSS (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	0	0	0	1.83	0	0	0	0	0	lb/hr	hours	Test results from a similar scrubber system scaled to FMBI operations and an added 20% safety factor
H2S (AOS1)	Sycamore NaHS System Scrubber (AOS1)	0	0	0	0	0	0.038	0	0	0	lb/hr	hours	Manufacturer Expected Concentration of 10 ppm
Drilling and Blasting Operations													
ABlasting (AOS1-C)	Blasting (AOS1) (annual basis) (AOS1-C)	3,048.30	135.00	0.92	0	0	0	28,550	1.11	0.22	lb/blast	blasts	*Factors Affecting ANFO Fumes Production* from NIOSH (2001), *NO_X Emissions from Blasting Operations in Open-Cut Coal Mining* from Atmospheric Environment 42 (2008), Complete Sulfur Conversion Using a Sulfur Contents of 15 ppm for Diesel and 500 ppm for Animal Fat (worst case assumption based on a 03/2003 EPA document that says biofuels reduce SO_2 emissions compared to No. 2 diesel), 40 CFR 98, Tables C-1 and C-2, 137,000 Btu/gal diesel, 7.5 lb/gal diesel, 0.125 MMBtu/gal animal fat, and 7.34 lb/gal animal fat
HBlasting (AOS1-C)	Blasting (AOS1) (hourly basis) (AOS1-C)	4,064.40	180.00	1.23	0	0	0	38,066	1.49	0.29	lb/blast	blasts	
ABlasting (AOS1)	Blasting (AOS1) (annual basis)	12,766.38	565.38	3.86	0	0	0	119,571	4.67	0.92	lb/blast	blasts	*Factors Affecting ANFO Fumes Production* from NIOSH (2001), *NO_X Emissions from Blasting Operations in Open-Cut Coal Mining* from Atmospheric Environment 42 (2008), Complete Sulfur Conversion Using a Sulfur Contents of 15 ppm for Diesel and 500 ppm for Animal Fat (worst case assumption based on a 03/2003 EPA document that says biofuels reduce SO_2 emissions compared to No. 2 diesel), 40 CFR 98, Tables C-1 and C-2, 137,000 Btu/gal diesel, 7.5 lb/gal diesel, 0.125 MMBtu/gal animal fat, and 7.34 lb/gal animal fat
HBlasting (AOS1)	Blasting (AOS1) (hourly basis)	15,319.65	678.46	4.64	0	0	0	143,485	5.60	1.11	lb/blast	blasts	
Bulk and Molybdenum Flotation Operations													
MFE	Sycamore Bulk and Molybdenum Flotation Equipment	0	0	0	0.0046	0	0.0084	0	0	0	lb/ton	tons	Testing at the Freeport-McMoRan Henderson Mill in 2009, Freeport-McMoRan Technology Center study titled *Hydrogen Sulfide and Carbon Dioxide Emissions from Flotation Cell Operations Under Targeted Conditions* conducted by Hazen Research Inc. (02/2013), conservative estimate using pH = 9.5 (molybdenum flotation usually operates at a pH = 11+)
Diesel Emergency ICE													
Tier2-560-D	Tier 2 Diesel Non-Emergency Engines (kW > 560)	0.0058	0.0099	0.000011	0.00066	0	0	1.14	0.000046	0.0000093	lb/hp-hr	hp-hr	Tier 2 Emission Standards from 40 CFR 1039 Appendix I Table 2 for Engines Rated kW > 560, Complete Sulfur Conversion Using a Diesel Sulfur Content of 15 ppm, 40 CFR 98 Tables C-1 and C-2, 7,000 Btu/hp-hr, and 19,300 Btu/lb diesel
Tier3-450/560-D	Tier 3 Diesel Emergency Engines (450 ≤ kW ≤ 560)	0.0058	0.0061	0.000011	0.00044	0	0	1.14	0.000046	0.0000093	lb/hp-hr	hp-hr	Tier 3 Emission Standards from 40 CFR 1039 Appendix I Table 3 for Engines Rated 450 ≤ kW < 560, Complete Sulfur Conversion Using a Diesel Sulfur Content of 15 ppm, 40 CFR 98 Tables C-1 and C-2, 7,000 Btu/hp-hr, and 19,300 Btu/lb diesel
Propane Emergency ICE													
SEG-P	Sycamore Propane Emergency Generators	0.20	0.013	0.00012	0.0030	0	0	1.46	0.000069	0.000014	lb/hp-hr	hp-hr	Certification Values for EPA Engine Family PCEXB05.9ARC, Complete Sulfur Conversion Using a Propane Sulfur Content of 10 gr/100 scf, 40 CFR 98 Tables C-1 and C-2, 2,520 Btu/scf, and 10,500 Btu/hp-hr
Storage Tanks and Parts Cleaning													
SXMS	Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	0	0	0	12.34	0	0	0	0	0	lb/ton	tons	*AERO Xanthate Handbook* (1972) and assume a 3-day holding period

Table G.7 Annual Gaseous Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	Emission Factors									EF Units	Emissions (tpy)								
						CO	NO_X	SO_2	VOC	H_2SO_4	H_2S	CO_2	CH_4	N_2O		CO	NO_X	SO_2	VOC	H_2SO_4	H_2S	CO_2	CH_4	N_2O
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414																								
Mining Operations (AOS1)																								
026-2 (AOS1)	Blasting (AOS1)	ABlasting (AOS1-C)	F	600	blasts	3,048.30	135.00	0.92	0	0	0	28,550	1.11	0.22	lb/blast	914.49	40.50	0.28	0	0	0	8,564.96	0.33	0.07
Total of Non-Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:																*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total of Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:																*914.49*	*40.50*	*0.28*	*0*	*0*	*0*	*8,564.96*	*0.33*	*0.07*
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:																*914.49*	*40.50*	*0.28*	*0*	*0*	*0*	*8,564.96*	*0.33*	*0.07*
Affected Emissions Units - Proposed Updated Design of AOS1																								
Mining Operations (AOS1)																								
026-2 (AOS1)	Blasting (AOS1)	ABlasting (AOS1)	F	260	blasts	12,766.4	565.38	3.86	0	0	0	119,571	4.67	0.92	lb/blast	1,659.63	73.50	0.50	0	0	0	15,544.19	0.61	0.12
Sycamore Bulk and Molybdenum Flotation Operations (AOS1)																								
044-2 (AOS1)	Sycamore Bulk and Molybdenum Flotation Equipment	MFE	F	517,716	tons	0	0	0	0.0046	0	0.0084	0	0	0	lb/ton	0	0	0	1.18	0	2.18	0	0	0
Sycamore Concentrate Handling Operations (AOS1)																								
052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	MDWSS (AOS1)	NF	8,760	hours	0	0	0	1.83	0	0	0	0	0	lb/hr	0	0	0	8.02	0	0	0	0	0
Sycamore Lime and Other Regent Operations (AOS1)																								
053-2 (AOS1)	Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	SXMS	NF	213	tons	0	0	0	12.34	0	0	0	0	0	lb/ton	0	0	0	1.31	0	0	0	0	0
055-3 (AOS1)	Sycamore NaHS System Scrubber (AOS1)	H2S (AOS1)	NF	8,760	hours	0	0	0	0	0	0.038	0	0	0	lb/hr	0	0	0	0	0	0.17	0	0	0
Sycamore Emergency ICE (AOS1)																								
049-59 (AOS1)	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	Tier3-450/560-D	NF	304,500	hp-hr	0.0058	0.0061	0.000011	0.00044	0	0	1.14	0.000046	0.000009	lb/hp-hr	0.88	0.93	0.002	0.07	0	0	173.77	0.007	0.001
049-60 (AOS1)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	Tier2-560-D	NF	381,000	hp-hr	0.0058	0.0099	0.000011	0.00066	0	0	1.14	0.000046	0.000009	lb/hp-hr	1.10	1.88	0.002	0.13	0	0	217.43	0.009	0.002
049-61 (AOS1)	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	SEG-P	NF	42,350	hp-hr	0.20	0.013	0.00012	0.0030	0	0	1.46	0.000069	0.000014	lb/hp-hr	4.19	0.29	0.003	0.06	0	0	30.82	0.001	0.0003
049-62 (AOS1)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	SEG-P	NF	42,350	hp-hr	0.20	0.013	0.00012	0.0030	0	0	1.46	0.000069	0.000014	lb/hp-hr	4.19	0.29	0.003	0.06	0	0	30.82	0.001	0.0003
Total of Non-Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:																*10.35*	*3.38*	*0.01*	*9.65*	*0*	*0.17*	*452.84*	*0.02*	*0.00*
Total of Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:																*1,659.63*	*73.50*	*0.50*	*1.18*	*0*	*2.18*	*15,544.19*	*0.61*	*0.12*
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:																*1,669.98*	*76.88*	*0.51*	*10.83*	*0*	*2.35*	*15,997.03*	*0.63*	*0.12*
Total Change in Non-Fugitive Emissions:																**10.35**	**3.38**	**0.01**	**9.65**	**0**	**0.17**	**452.84**	**0.02**	**0.004**
Total Change in Fugitive Emissions:																**745.14**	**33.00**	**0.23**	**1.18**	**0**	**2.18**	**6,979.23**	**0.27**	**0.05**
Total Change in Non-Fugitive and Fugitive Emissions:																**755.49**	**36.38**	**0.23**	**10.83**	**0**	**2.35**	**7,432.07**	**0.29**	**0.06**
Total Change in FMBI Facility-Wide PTE (includes all non-fugitive emissions):																**10.35**	**3.38**	**0.01**	**9.65**	**0**	**0.17**	**452.84**	**0.02**	**0.004**

Table G.8 Hourly Gaseous Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	Emission Factors									EF Units	Emissions (lb/hour)								
						CO	NO_X	SO_2	VOC	H_2SO_4	H_2S	CO_2	CH_4	N_2O		CO	NO_X	SO_2	VOC	H_2SO_4	H_2S	CO_2	CH_4	N_2O
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414																								
Mining Operations (AOS1)																								
026-2 (AOS1)	Blasting (AOS1)	HBlasting (AOS1-C)	F	1	blasts	4,064.40	180.00	1.23	0	0	0	38,066.5	1.49	0.29	lb/blast	4,064.40	180.00	1.23	0	0	0	38,066.47	1.49	0.29
Total of Non-Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:																*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total of Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:																*4,064.40*	*180.00*	*1.23*	*0*	*0*	*0*	*38,066.47*	*1.49*	*0.29*
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:																*4,064.40*	*180.00*	*1.23*	*0*	*0*	*0*	*38,066.47*	*1.49*	*0.29*
Affected Emissions Units - Proposed Updated Design of AOS1																								
Mining Operations (AOS1)																								
026-2 (AOS1)	Blasting (AOS1)	HBlasting (AOS1)	F	1	blasts	15,319.7	678.46	4.64	0	0	0	143,485	5.60	1.11	lb/blast	15,319.65	678.46	4.64	0	0	0	143,484.81	5.60	1.11
Sycamore Bulk and Molybdenum Flotation Operations (AOS1)																								
044-2 (AOS1)	Sycamore Bulk and Molybdenum Flotation Equipment	MFE	F	59.10	tons	0	0	0	0.0046	0	0.0084	0	0	0	lb/ton	0	0	0	0.27	0	0.50	0	0	0
Sycamore Concentrate Handling Operations (AOS1)																								
052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	MDWSS (AOS1)	NF	1	hours	0	0	0	1.83	0	0	0	0	0	lb/hr	0	0	0	1.83	0	0	0	0	0
Sycamore Lime and Other Regent Operations (AOS1)																								
053-2 (AOS1)	Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	SXMS	NF	0.04	tons	0	0	0	12.34	0	0	0	0	0	lb/ton	0	0	0	0.49	0	0	0	0	0
055-3 (AOS1)	Sycamore NaHS System Scrubber (AOS1)	H2S (AOS1)	NF	1	hours	0	0	0	0	0	0.038	0	0	0	lb/hr	0	0	0	0	0	0.038	0	0	0
Sycamore Emergency ICE (AOS1)																								
049-59 (AOS1)	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	Tier3-450/560-D	NF	609	hp-hr	0.0058	0.0061	0.000011	0.00044	0	0	1.14	0.000046	0.000009	lb/hp-hr	3.50	3.74	0.007	0.27	0	0	695.10	0.03	0.006
049-60 (AOS1)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	Tier2-560-D	NF	762	hp-hr	0.0058	0.0099	0.000011	0.00066	0	0	1.14	0.000046	0.000009	lb/hp-hr	4.38	7.52	0.008	0.50	0	0	869.73	0.04	0.007
049-61 (AOS1)	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	SEG-P	NF	84.70	hp-hr	0.20	0.013	0.00012	0.0030	0	0	1.46	0.000069	0.000014	lb/hp-hr	16.77	1.14	0.01	0.25	0	0	123.27	0.006	0.001
049-62 (AOS1)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	SEG-P	NF	84.70	hp-hr	0.20	0.013	0.00012	0.0030	0	0	1.46	0.000069	0.000014	lb/hp-hr	16.77	1.14	0.01	0.25	0	0	123.27	0.006	0.001
Total of Non-Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:																41.42	13.54	0.04	3.59	0	0.04	1,811.36	0.08	0.02
Total of Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:																15,319.65	678.46	4.64	0.27	0	0.50	143,484.81	5.60	1.11
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:																15,361.07	692.00	4.67	3.86	0	0.54	145,296.17	5.68	1.12
Total Change in Non-Fugitive Emissions:																**41.42**	**13.54**	**0.04**	**3.59**	**0**	**0.04**	**1,811.36**	**0.08**	**0.02**
Total Change in Fugitive Emissions:																**11,255.26**	**498.46**	**3.41**	**0.27**	**0**	**0.50**	**105,418.34**	**4.11**	**0.81**
Total Change in Non-Fugitive and Fugitive Emissions:																**11,296.68**	**512.00**	**3.44**	**3.86**	**0**	**0.54**	**107,229.70**	**4.19**	**0.83**

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
Pollution Control Devices						
C51 (AOS1)	Dust Collector C51 (AOS1)	Antimony	1.76E-12	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	2.89E-11	lb/dscf		
		Beryllium	2.03E-12	lb/dscf		
		Cadmium	1.49E-12	lb/dscf		
		Chromium	5.80E-11	lb/dscf		
		Cobalt	2.49E-11	lb/dscf		
		Lead	2.38E-11	lb/dscf		
		Manganese	4.03E-10	lb/dscf		
		Mercury	8.49E-13	lb/dscf		
		Nickel	3.40E-11	lb/dscf		
		Selenium	5.36E-12	lb/dscf		
		Total HAPs	5.85E-10	lb/dscf		
AE-001 (AOS1)	Dust Collector AE-001 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-014 (AOS1)	Dust Collector AE-014 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-015 (AOS1)	Dust Collector AE-015 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-002 (AOS1)	Dust Collector AE-002 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
AE-002 (AOS1) (cont'd)	Dust Collector AE-002 (AOS1) (cont'd)	Cadmium	2.86E-13	lb/dscf	dscf	PM10 emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM10 emissions)
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-003 (AOS1)	Dust Collector AE-003 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-016 (AOS1)	Dust Collector AE-016 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-017 (AOS1)	Dust Collector AE-017 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-008 (AOS1)	Dust Collector AE-008 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
AE-008 (AOS1) (cont'd)	Dust Collector AE-008 (AOS1) (cont'd)	Manganese	7.77E-11	lb/dscf	dscf	PM10 emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM10 emissions)
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-009 (AOS1)	Dust Collector AE-009 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-010 (AOS1)	Dust Collector AE-010 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-011 (AOS1)	Dust Collector AE-011 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-007 (AOS1)	Dust Collector AE-007 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
AE-007 (AOS1) (cont'd)	Dust Collector AE-007 (AOS1) (cont'd)	Nickel	6.55E-12	lb/dscf	dscf	PM10 emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM10 emissions)
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-012 (AOS1)	Dust Collector AE-012 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
AE-013 (AOS1)	Dust Collector AE-013 (AOS1)	Antimony	3.38E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	5.56E-12	lb/dscf		
		Beryllium	3.90E-13	lb/dscf		
		Cadmium	2.86E-13	lb/dscf		
		Chromium	1.12E-11	lb/dscf		
		Cobalt	4.80E-12	lb/dscf		
		Lead	4.59E-12	lb/dscf		
		Manganese	7.77E-11	lb/dscf		
		Mercury	1.63E-13	lb/dscf		
		Nickel	6.55E-12	lb/dscf		
		Selenium	1.03E-12	lb/dscf		
		Total HAPs	1.13E-10	lb/dscf		
SDC1 (AOS1)	PC1 Dust Collector 1 (AOS1)	Antimony	2.99E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	4.92E-12	lb/dscf		
		Beryllium	3.45E-13	lb/dscf		
		Cadmium	2.53E-13	lb/dscf		
		Chromium	9.88E-12	lb/dscf		
		Cobalt	4.24E-12	lb/dscf		
		Lead	4.06E-12	lb/dscf		
		Manganese	6.87E-11	lb/dscf		
		Mercury	1.45E-13	lb/dscf		
		Nickel	5.80E-12	lb/dscf		
		Selenium	9.13E-13	lb/dscf		
		Total HAPs	9.96E-11	lb/dscf		
SDC2 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	Antimony	2.99E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	4.92E-12	lb/dscf		
		Beryllium	3.45E-13	lb/dscf		
		Cadmium	2.53E-13	lb/dscf		
		Chromium	9.88E-12	lb/dscf		
		Cobalt	4.24E-12	lb/dscf		
		Lead	4.06E-12	lb/dscf		
		Manganese	6.87E-11	lb/dscf		
		Mercury	1.45E-13	lb/dscf		
		Nickel	5.80E-12	lb/dscf		
		Selenium	9.13E-13	lb/dscf		
		Total HAPs	9.96E-11	lb/dscf		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
SDC3 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	Antimony	2.99E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	4.92E-12	lb/dscf		
		Beryllium	3.45E-13	lb/dscf		
		Cadmium	2.53E-13	lb/dscf		
		Chromium	9.88E-12	lb/dscf		
		Cobalt	4.24E-12	lb/dscf		
		Lead	4.06E-12	lb/dscf		
		Manganese	6.87E-11	lb/dscf		
		Mercury	1.45E-13	lb/dscf		
		Nickel	5.80E-12	lb/dscf		
		Selenium	9.13E-13	lb/dscf		
		Total HAPs	9.96E-11	lb/dscf		
SDC4 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	Antimony	2.99E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	4.92E-12	lb/dscf		
		Beryllium	3.45E-13	lb/dscf		
		Cadmium	2.53E-13	lb/dscf		
		Chromium	9.88E-12	lb/dscf		
		Cobalt	4.24E-12	lb/dscf		
		Lead	4.06E-12	lb/dscf		
		Manganese	6.87E-11	lb/dscf		
		Mercury	1.45E-13	lb/dscf		
		Nickel	5.80E-12	lb/dscf		
		Selenium	9.13E-13	lb/dscf		
		Total HAPs	9.96E-11	lb/dscf		
SDC5 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	Antimony	2.99E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	4.92E-12	lb/dscf		
		Beryllium	3.45E-13	lb/dscf		
		Cadmium	2.53E-13	lb/dscf		
		Chromium	9.88E-12	lb/dscf		
		Cobalt	4.24E-12	lb/dscf		
		Lead	4.06E-12	lb/dscf		
		Manganese	6.87E-11	lb/dscf		
		Mercury	1.45E-13	lb/dscf		
		Nickel	5.80E-12	lb/dscf		
		Selenium	9.13E-13	lb/dscf		
		Total HAPs	9.96E-11	lb/dscf		
SDC6 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	Antimony	2.99E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	4.92E-12	lb/dscf		
		Beryllium	3.45E-13	lb/dscf		
		Cadmium	2.53E-13	lb/dscf		
		Chromium	9.88E-12	lb/dscf		
		Cobalt	4.24E-12	lb/dscf		
		Lead	4.06E-12	lb/dscf		
		Manganese	6.87E-11	lb/dscf		
		Mercury	1.45E-13	lb/dscf		
		Nickel	5.80E-12	lb/dscf		
		Selenium	9.13E-13	lb/dscf		
		Total HAPs	9.96E-11	lb/dscf		
SDC7 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	Antimony	2.99E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	4.92E-12	lb/dscf		
		Beryllium	3.45E-13	lb/dscf		
		Cadmium	2.53E-13	lb/dscf		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
SDC7 (AOS1) (cont'd)	HPGR Discharge Dust Collector 7 (AOS1) (cont'd)	Chromium	9.88E-12	lb/dscf	dscf	PM10 emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM10 emissions)
		Cobalt	4.24E-12	lb/dscf		
		Lead	4.06E-12	lb/dscf		
		Manganese	6.87E-11	lb/dscf		
		Mercury	1.45E-13	lb/dscf		
		Nickel	5.80E-12	lb/dscf		
		Selenium	9.13E-13	lb/dscf		
		Total HAPs	9.96E-11	lb/dscf		
SDC8 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	Antimony	2.99E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	4.92E-12	lb/dscf		
		Beryllium	3.45E-13	lb/dscf		
		Cadmium	2.53E-13	lb/dscf		
		Chromium	9.88E-12	lb/dscf		
		Cobalt	4.24E-12	lb/dscf		
		Lead	4.06E-12	lb/dscf		
		Manganese	6.87E-11	lb/dscf		
		Mercury	1.45E-13	lb/dscf		
		Nickel	5.80E-12	lb/dscf		
		Selenium	9.13E-13	lb/dscf		
		Total HAPs	9.96E-11	lb/dscf		
SDC9 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	Antimony	2.99E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	4.92E-12	lb/dscf		
		Beryllium	3.45E-13	lb/dscf		
		Cadmium	2.53E-13	lb/dscf		
		Chromium	9.88E-12	lb/dscf		
		Cobalt	4.24E-12	lb/dscf		
		Lead	4.06E-12	lb/dscf		
		Manganese	6.87E-11	lb/dscf		
		Mercury	1.45E-13	lb/dscf		
		Nickel	5.80E-12	lb/dscf		
		Selenium	9.13E-13	lb/dscf		
		Total HAPs	9.96E-11	lb/dscf		
SDC10 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	Antimony	2.99E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	4.92E-12	lb/dscf		
		Beryllium	3.45E-13	lb/dscf		
		Cadmium	2.53E-13	lb/dscf		
		Chromium	9.88E-12	lb/dscf		
		Cobalt	4.24E-12	lb/dscf		
		Lead	4.06E-12	lb/dscf		
		Manganese	6.87E-11	lb/dscf		
		Mercury	1.45E-13	lb/dscf		
		Nickel	5.80E-12	lb/dscf		
		Selenium	9.13E-13	lb/dscf		
		Total HAPs	9.96E-11	lb/dscf		
SDC11 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	Antimony	2.99E-13	lb/dscf	dscf	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	4.92E-12	lb/dscf		
		Beryllium	3.45E-13	lb/dscf		
		Cadmium	2.53E-13	lb/dscf		
		Chromium	9.88E-12	lb/dscf		
		Cobalt	4.24E-12	lb/dscf		
		Lead	4.06E-12	lb/dscf		
		Manganese	6.87E-11	lb/dscf		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
SDC11 (AOS1) (cont'd)	HPGR Product Transfer Dust Collector 11 (AOS1) (cont'd)	Mercury	1.45E-13	lb/dscf	dscf	PM10 emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM10 emissions)
		Nickel	5.80E-12	lb/dscf		
		Selenium	9.13E-13	lb/dscf		
		Total HAPs	9.96E-11	lb/dscf		
MDWSS (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	Antimony	3.04E-05	lb/hr	hours	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions), diesel vapor mass fractions
		Arsenic	9.89E-06	lb/hr		
		Beryllium	6.31E-07	lb/hr		
		Cadmium	2.36E-06	lb/hr		
		Chromium	1.31E-06	lb/hr		
		Cobalt	6.25E-06	lb/hr		
		Lead	9.67E-06	lb/hr		
		Manganese	2.79E-06	lb/hr		
		Mercury	4.22E-07	lb/hr		
		Nickel	5.99E-06	lb/hr		
		Selenium	1.61E-05	lb/hr		
		Benzene	3.48E-03	lb/hr		
		Ethylbenzene	5.86E-03	lb/hr		
		Hexane	7.32E-04	lb/hr		
		Toluene	4.19E-02	lb/hr		
		m-Xylene	1.09E-01	lb/hr		
		Total HAPs	1.61E-01	lb/hr		
Drilling and Blasting Operations						
Drilling (AOS1-C)	Drilling (AOS1) (AOS1-C)	Antimony	3.12E-06	lb/hole	holes	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.01E-05	lb/hole		
		Beryllium	1.07E-06	lb/hole		
		Cadmium	3.86E-07	lb/hole		
		Chromium	2.31E-05	lb/hole		
		Cobalt	1.11E-05	lb/hole		
		Lead	1.65E-05	lb/hole		
		Manganese	1.84E-04	lb/hole		
		Mercury	1.82E-07	lb/hole		
		Nickel	1.54E-05	lb/hole		
		Selenium	1.63E-06	lb/hole		
		Total HAPs	2.66E-04	lb/hole		
Drilling (AOS1)	Drilling (AOS1)	Antimony	3.62E-06	lb/hole	holes	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.12E-05	lb/hole		
		Beryllium	9.45E-07	lb/hole		
		Cadmium	4.24E-07	lb/hole		
		Chromium	2.55E-05	lb/hole		
		Cobalt	1.17E-05	lb/hole		
		Lead	1.77E-05	lb/hole		
		Manganese	1.90E-04	lb/hole		
		Mercury	1.97E-07	lb/hole		
		Nickel	1.67E-05	lb/hole		
		Selenium	1.80E-06	lb/hole		
		Total HAPs	2.80E-04	lb/hole		
ABlasting (AOS1-C)	Blasting (AOS1) (annual basis) (AOS1-C)	POM	4.25E-03	lb/blast	blasts	AP-42 Tables 1.3-8 and 1.3-10 (05/10), 137,000 Btu/gallon, 0.125 MMBtu/gal animal fat, and 7.34 lb/gal animal fat (assume diesel combustion emissions are an upper limit for animal fat combustion emissions), PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Formaldehyde	7.86E-02	lb/blast		
		Antimony	8.26E-04	lb/blast		
		Arsenic	3.38E-03	lb/blast		
		Beryllium	8.09E-04	lb/blast		
		Cadmium	6.29E-04	lb/blast		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
ABlasting (AOS1-C) (cont'd)	Blasting (AOS1) (annual basis) (AOS1-C) (cont'd)	Chromium	6.64E-03	lb/blast	blasts	AP-42 Tables 1.3-8 and 1.3-10 (05/10), 137,000 Btu/gallon, 0.125 MMBtu/gal animal fat, and 7.34 lb/gal animal fat (assume diesel combustion emissions are an upper limit for animal fat combustion emissions), PM10 emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM10 emissions)
		Cobalt	2.94E-03	lb/blast		
		Lead	5.95E-03	lb/blast		
		Manganese	4.97E-02	lb/blast		
		Mercury	5.75E-04	lb/blast		
		Nickel	4.60E-03	lb/blast		
		Selenium	3.06E-03	lb/blast		
		Total HAPs	1.62E-01	lb/blast		
HBlasting (AOS1-C)	Blasting (AOS1) (hourly basis) (AOS1-C)	POM	5.67E-03	lb/blast	blasts	AP-42 Tables 1.3-8 and 1.3-10 (05/10), 137,000 Btu/gallon, 0.125 MMBtu/gal animal fat, and 7.34 lb/gal animal fat (assume diesel combustion emissions are an upper limit for animal fat combustion emissions), PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Formaldehyde	1.05E-01	lb/blast		
		Antimony	2.61E-03	lb/blast		
		Arsenic	9.38E-03	lb/blast		
		Beryllium	1.59E-03	lb/blast		
		Cadmium	1.02E-03	lb/blast		
		Chromium	2.00E-02	lb/blast		
		Cobalt	9.29E-03	lb/blast		
		Lead	1.59E-02	lb/blast		
		Manganese	1.55E-01	lb/blast		
		Mercury	8.54E-04	lb/blast		
		Nickel	1.36E-02	lb/blast		
		Selenium	4.87E-03	lb/blast		
		Total HAPs	3.44E-01	lb/blast		
ABlasting (AOS1)	Blasting (AOS1) (annual basis)	POM	1.78E-02	lb/blast	blasts	AP-42 Tables 1.3-8 and 1.3-10 (05/10), 137,000 Btu/gallon, 0.125 MMBtu/gal animal fat, and 7.34 lb/gal animal fat (assume diesel combustion emissions are an upper limit for animal fat combustion emissions), PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Formaldehyde	3.29E-01	lb/blast		
		Antimony	9.03E-03	lb/blast		
		Arsenic	3.08E-02	lb/blast		
		Beryllium	4.56E-03	lb/blast		
		Cadmium	3.26E-03	lb/blast		
		Chromium	6.57E-02	lb/blast		
		Cobalt	2.92E-02	lb/blast		
		Lead	5.07E-02	lb/blast		
		Manganese	4.78E-01	lb/blast		
		Mercury	2.70E-03	lb/blast		
		Nickel	4.39E-02	lb/blast		
		Selenium	1.55E-02	lb/blast		
		Total HAPs	1.08E+00	lb/blast		
HBlasting (AOS1)	Blasting (AOS1) (hourly basis)	POM	2.14E-02	lb/blast	blasts	AP-42 Tables 1.3-8 and 1.3-10 (05/10), 137,000 Btu/gallon, 0.125 MMBtu/gal animal fat, and 7.34 lb/gal animal fat (assume diesel combustion emissions are an upper limit for animal fat combustion emissions), PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Formaldehyde	3.95E-01	lb/blast		
		Antimony	1.19E-02	lb/blast		
		Arsenic	4.02E-02	lb/blast		
		Beryllium	5.74E-03	lb/blast		
		Cadmium	4.04E-03	lb/blast		
		Chromium	8.61E-02	lb/blast		
		Cobalt	3.84E-02	lb/blast		
		Lead	6.58E-02	lb/blast		
		Manganese	6.28E-01	lb/blast		
		Mercury	3.29E-03	lb/blast		
		Nickel	5.74E-02	lb/blast		
		Selenium	1.91E-02	lb/blast		
		Total HAPs	1.38E+00	lb/blast		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
Vehicle Operations						
ATravel (AOS1-C)	Vehicle Travel on Unpaved Roads (annual basis) (AOS1-C)	Antimony	2.18E-05	lb/VMT	VMT	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	7.07E-05	lb/VMT		
		Beryllium	7.46E-06	lb/VMT		
		Cadmium	2.70E-06	lb/VMT		
		Chromium	1.61E-04	lb/VMT		
		Cobalt	7.77E-05	lb/VMT		
		Lead	1.15E-04	lb/VMT		
		Manganese	1.28E-03	lb/VMT		
		Mercury	1.27E-06	lb/VMT		
		Nickel	1.08E-04	lb/VMT		
		Selenium	1.14E-05	lb/VMT		
		Total HAPs	1.86E-03	lb/VMT		
HTravel (AOS1-C)	Vehicle Travel on Unpaved Roads (hourly basis) (AOS1-C)	Antimony	2.36E-05	lb/VMT	VMT	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	7.66E-05	lb/VMT		
		Beryllium	8.08E-06	lb/VMT		
		Cadmium	2.92E-06	lb/VMT		
		Chromium	1.75E-04	lb/VMT		
		Cobalt	8.42E-05	lb/VMT		
		Lead	1.25E-04	lb/VMT		
		Manganese	1.39E-03	lb/VMT		
		Mercury	1.38E-06	lb/VMT		
		Nickel	1.16E-04	lb/VMT		
		Selenium	1.23E-05	lb/VMT		
		Total HAPs	2.02E-03	lb/VMT		
ATravel (AOS1)	Vehicle Travel on Unpaved Roads (annual basis) (AOS1)	Antimony	2.00E-05	lb/VMT	VMT	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	6.17E-05	lb/VMT		
		Beryllium	5.21E-06	lb/VMT		
		Cadmium	2.34E-06	lb/VMT		
		Chromium	1.40E-04	lb/VMT		
		Cobalt	6.47E-05	lb/VMT		
		Lead	9.74E-05	lb/VMT		
		Manganese	1.05E-03	lb/VMT		
		Mercury	1.09E-06	lb/VMT		
		Nickel	9.21E-05	lb/VMT		
		Selenium	9.94E-06	lb/VMT		
		Total HAPs	1.54E-03	lb/VMT		
HTravel (AOS1)	Vehicle Travel on Unpaved Roads (hourly basis) (AOS1)	Antimony	2.68E-05	lb/VMT	VMT	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	8.27E-05	lb/VMT		
		Beryllium	6.99E-06	lb/VMT		
		Cadmium	3.14E-06	lb/VMT		
		Chromium	1.88E-04	lb/VMT		
		Cobalt	8.67E-05	lb/VMT		
		Lead	1.31E-04	lb/VMT		
		Manganese	1.41E-03	lb/VMT		
		Mercury	1.46E-06	lb/VMT		
		Nickel	1.24E-04	lb/VMT		
		Selenium	1.33E-05	lb/VMT		
		Total HAPs	2.07E-03	lb/VMT		
Dozer (AOS1-C)	Dozer Operation (AOS1) (AOS1-C)	Antimony	6.43E-06	lb/hr	hours	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	2.08E-05	lb/hr		
		Beryllium	2.20E-06	lb/hr		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
Dozer (AOS1-C) (cont'd)	Dozer Operation (AOS1) (AOS1-C) (cont'd)	Cadmium	7.95E-07	lb/hr	hours	PM10 emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM10 emissions)
		Chromium	4.75E-05	lb/hr		
		Cobalt	2.29E-05	lb/hr		
		Lead	3.40E-05	lb/hr		
		Manganese	3.78E-04	lb/hr		
		Mercury	3.74E-07	lb/hr		
		Nickel	3.17E-05	lb/hr		
		Selenium	3.35E-06	lb/hr		
		Total HAPs	5.49E-04	lb/hr		
Dozer (AOS1)	Dozer Operation (AOS1)	Antimony	7.45E-06	lb/hr	hours	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	2.30E-05	lb/hr		
		Beryllium	1.94E-06	lb/hr		
		Cadmium	8.73E-07	lb/hr		
		Chromium	5.24E-05	lb/hr		
		Cobalt	2.41E-05	lb/hr		
		Lead	3.63E-05	lb/hr		
		Manganese	3.91E-04	lb/hr		
		Mercury	4.05E-07	lb/hr		
		Nickel	3.44E-05	lb/hr		
		Selenium	3.71E-06	lb/hr		
		Total HAPs	5.76E-04	lb/hr		
Grader (AOS1-C)	Road Grader Operation (AOS1) (AOS1-C)	Antimony	4.41E-06	lb/VMT	VMT	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.43E-05	lb/VMT		
		Beryllium	1.51E-06	lb/VMT		
		Cadmium	5.46E-07	lb/VMT		
		Chromium	3.26E-05	lb/VMT		
		Cobalt	1.57E-05	lb/VMT		
		Lead	2.33E-05	lb/VMT		
		Manganese	2.60E-04	lb/VMT		
		Mercury	2.57E-07	lb/VMT		
		Nickel	2.17E-05	lb/VMT		
		Selenium	2.30E-06	lb/VMT		
		Total HAPs	3.76E-04	lb/VMT		
Grader (AOS1)	Road Grader Operation (AOS1)	Antimony	5.11E-06	lb/VMT	VMT	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.58E-05	lb/VMT		
		Beryllium	1.33E-06	lb/VMT		
		Cadmium	5.99E-07	lb/VMT		
		Chromium	3.59E-05	lb/VMT		
		Cobalt	1.65E-05	lb/VMT		
		Lead	2.49E-05	lb/VMT		
		Manganese	2.68E-04	lb/VMT		
		Mercury	2.78E-07	lb/VMT		
		Nickel	2.36E-05	lb/VMT		
		Selenium	2.54E-06	lb/VMT		
		Total HAPs	3.95E-04	lb/VMT		
Material Transfer Operations						
Ore1TrUnprt (AOS1-C)	Material Transfer of the Combination of All Mined Material (unprotected) (Design of AOS1 in Class II Air Quality Permit #77414)	Antimony	4.99E-09	lb/ton	tons	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.62E-08	lb/ton		
		Beryllium	1.71E-09	lb/ton		
		Cadmium	6.18E-10	lb/ton		
		Chromium	3.69E-08	lb/ton		
		Cobalt	1.78E-08	lb/ton		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
Ore1TrUnprt (AOS1-C) (cont'd)	Material Transfer of the Combination of All Mined Material (unprotected) (Design of AOS1 in Class II Air Quality Permit #77414) (cont'd)	Lead	2.64E-08	lb/ton	tons	PM10 emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM10 emissions)
		Manganese	2.94E-07	lb/ton		
		Mercury	2.91E-10	lb/ton		
		Nickel	2.46E-08	lb/ton		
		Selenium	2.60E-09	lb/ton		
		Total HAPs	4.26E-07	lb/ton		
Ore1TrUnprt (AOS1)	Material Transfer of the Combination of All Mined Material (unprotected) (Proposed Updated Design of AOS1)	Antimony	5.79E-09	lb/ton	tons	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.79E-08	lb/ton		
		Beryllium	1.51E-09	lb/ton		
		Cadmium	6.78E-10	lb/ton		
		Chromium	4.07E-08	lb/ton		
		Cobalt	1.87E-08	lb/ton		
		Lead	2.82E-08	lb/ton		
		Manganese	3.04E-07	lb/ton		
		Mercury	3.15E-10	lb/ton		
		Nickel	2.67E-08	lb/ton		
		Selenium	2.88E-09	lb/ton		
		Total HAPs	4.47E-07	lb/ton		
Ore2TrUnprt	Material Transfer of Mill Ore (unprotected)	Antimony	1.14E-09	lb/ton	tons	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.87E-08	lb/ton		
		Beryllium	1.31E-09	lb/ton		
		Cadmium	9.61E-10	lb/ton		
		Chromium	3.75E-08	lb/ton		
		Cobalt	1.61E-08	lb/ton		
		Lead	1.54E-08	lb/ton		
		Manganese	2.61E-07	lb/ton		
		Mercury	5.49E-10	lb/ton		
		Nickel	2.20E-08	lb/ton		
		Selenium	3.47E-09	lb/ton		
		Total HAPs	3.78E-07	lb/ton		
Ore2TrPrt	Material Transfer of Mill Ore (protected)	Antimony	1.25E-10	lb/ton	tons	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	2.06E-09	lb/ton		
		Beryllium	1.44E-10	lb/ton		
		Cadmium	1.06E-10	lb/ton		
		Chromium	4.13E-09	lb/ton		
		Cobalt	1.77E-09	lb/ton		
		Lead	1.70E-09	lb/ton		
		Manganese	2.87E-08	lb/ton		
		Mercury	6.04E-11	lb/ton		
		Nickel	2.42E-09	lb/ton		
		Selenium	3.82E-10	lb/ton		
		Total HAPs	4.16E-08	lb/ton		
Ore3TrUnprt	Material Transfer of Leach Ore (unprotected)	Antimony	0.00E+00	lb/ton	tons	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.50E-09	lb/ton		
		Beryllium	3.44E-09	lb/ton		
		Cadmium	0.00E+00	lb/ton		
		Chromium	5.99E-09	lb/ton		
		Cobalt	1.07E-08	lb/ton		
		Lead	1.60E-08	lb/ton		
		Manganese	2.28E-07	lb/ton		
		Mercury	0.00E+00	lb/ton		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
Ore3TrUnprt (cont'd)	Material Transfer of Leach Ore (unprotected) (cont'd)	Nickel	8.73E-09	lb/ton	tons	PM10 emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM10 emissions)
		Selenium	0.00E+00	lb/ton		
		Total HAPs	2.74E-07	lb/ton		
Ore4TrUnprt	Material Transfer of Overburden/Low Grade Ore (unprotected)	Antimony	8.24E-09	lb/ton	tons	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.84E-08	lb/ton		
		Beryllium	1.50E-09	lb/ton		
		Cadmium	5.86E-10	lb/ton		
		Chromium	4.41E-08	lb/ton		
		Cobalt	2.04E-08	lb/ton		
		Lead	3.48E-08	lb/ton		
		Manganese	3.28E-07	lb/ton		
		Mercury	2.25E-10	lb/ton		
		Nickel	2.98E-08	lb/ton		
		Selenium	2.77E-09	lb/ton		
		Total HAPs	4.88E-07	lb/ton		
CCTrPrt	Material Transfer of Copper Concentrate (protected)	Antimony	1.14E-08	lb/ton	tons	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.23E-08	lb/ton		
		Beryllium	2.37E-10	lb/ton		
		Cadmium	8.88E-10	lb/ton		
		Chromium	4.93E-10	lb/ton		
		Cobalt	2.35E-09	lb/ton		
		Lead	1.73E-08	lb/ton		
		Manganese	1.05E-09	lb/ton		
		Mercury	1.58E-10	lb/ton		
		Nickel	2.25E-09	lb/ton		
		Selenium	3.91E-09	lb/ton		
		Total HAPs	5.24E-08	lb/ton		
MC4TrPrt	Material Transfer of Sycamore Molybdenum Concentrate Post-Dryer (protected)	Antimony	4.83E-07	lb/ton	tons	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.57E-07	lb/ton		
		Beryllium	1.00E-08	lb/ton		
		Cadmium	3.76E-08	lb/ton		
		Chromium	2.09E-08	lb/ton		
		Cobalt	9.93E-08	lb/ton		
		Lead	1.54E-07	lb/ton		
		Manganese	4.42E-08	lb/ton		
		Mercury	6.70E-09	lb/ton		
		Nickel	9.51E-08	lb/ton		
		Selenium	2.55E-07	lb/ton		
		Total HAPs	1.36E-06	lb/ton		
Wind Erosion						
AWindCOS 1/5 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1) (annual basis)	Antimony	1.26E-03	lb/acre-yr	acre-yr	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	2.08E-02	lb/acre-yr		
		Beryllium	1.46E-03	lb/acre-yr		
		Cadmium	1.07E-03	lb/acre-yr		
		Chromium	4.18E-02	lb/acre-yr		
		Cobalt	1.79E-02	lb/acre-yr		
		Lead	1.72E-02	lb/acre-yr		
		Manganese	2.91E-01	lb/acre-yr		
		Mercury	6.11E-04	lb/acre-yr		
		Nickel	2.45E-02	lb/acre-yr		
		Selenium	3.86E-03	lb/acre-yr		
		Total HAPs	4.21E-01	lb/acre-yr		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
HWindCOS 1/5 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1) (hourly basis)	Antimony	1.44E-07	lb/acre-hr	acre-yr	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	2.38E-06	lb/acre-hr		
		Beryllium	1.67E-07	lb/acre-hr		
		Cadmium	1.22E-07	lb/acre-hr		
		Chromium	4.77E-06	lb/acre-hr		
		Cobalt	2.05E-06	lb/acre-hr		
		Lead	1.96E-06	lb/acre-hr		
		Manganese	3.32E-05	lb/acre-hr		
		Mercury	6.98E-08	lb/acre-hr		
		Nickel	2.80E-06	lb/acre-hr		
		Selenium	4.41E-07	lb/acre-hr		
		Total HAPs	4.81E-05	lb/acre-hr		
AWindCOS 6 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1) (annual basis)	Antimony	1.26E-03	lb/acre-yr	acre-yr	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	2.08E-02	lb/acre-yr		
		Beryllium	1.46E-03	lb/acre-yr		
		Cadmium	1.07E-03	lb/acre-yr		
		Chromium	4.18E-02	lb/acre-yr		
		Cobalt	1.79E-02	lb/acre-yr		
		Lead	1.72E-02	lb/acre-yr		
		Manganese	2.91E-01	lb/acre-yr		
		Mercury	6.11E-04	lb/acre-yr		
		Nickel	2.45E-02	lb/acre-yr		
		Selenium	3.86E-03	lb/acre-yr		
		Total HAPs	4.21E-01	lb/acre-yr		
HWindCOS 6 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1) (hourly basis)	Antimony	1.44E-07	lb/acre-hr	acre-yr	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	2.38E-06	lb/acre-hr		
		Beryllium	1.67E-07	lb/acre-hr		
		Cadmium	1.22E-07	lb/acre-hr		
		Chromium	4.77E-06	lb/acre-hr		
		Cobalt	2.05E-06	lb/acre-hr		
		Lead	1.96E-06	lb/acre-hr		
		Manganese	3.32E-05	lb/acre-hr		
		Mercury	6.98E-08	lb/acre-hr		
		Nickel	2.80E-06	lb/acre-hr		
		Selenium	4.41E-07	lb/acre-hr		
		Total HAPs	4.81E-05	lb/acre-hr		
AWindSCC (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1) (annual basis)	Antimony	8.70E+00	lb/acre-yr	acre-yr	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	9.40E+00	lb/acre-yr		
		Beryllium	1.80E-01	lb/acre-yr		
		Cadmium	6.76E-01	lb/acre-yr		
		Chromium	3.75E-01	lb/acre-yr		
		Cobalt	1.79E+00	lb/acre-yr		
		Lead	1.32E+01	lb/acre-yr		
		Manganese	7.96E-01	lb/acre-yr		
		Mercury	1.21E-01	lb/acre-yr		
		Nickel	1.71E+00	lb/acre-yr		
		Selenium	2.97E+00	lb/acre-yr		
		Total HAPs	3.99E+01	lb/acre-yr		
HWindSCC (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1) (hourly basis)	Antimony	9.93E-04	lb/acre-hr	acre-yr	PM_{10} emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM_{10} emissions)
		Arsenic	1.07E-03	lb/acre-hr		
		Beryllium	2.06E-05	lb/acre-hr		
		Cadmium	7.72E-05	lb/acre-hr		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
HWindSCC (AOS1) (cont'd)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1) (hourly basis) (cont'd)	Chromium	4.29E-05	lb/acre-hr	acre-yr	PM10 emission factor multiplied by the concentration of the HAPs (assume the concentration of the HAP in the process material is equal to the concentration of the HAP in the PM10 emissions)
		Cobalt	2.04E-04	lb/acre-hr		
		Lead	1.50E-03	lb/acre-hr		
		Manganese	9.09E-05	lb/acre-hr		
		Mercury	1.38E-05	lb/acre-hr		
		Nickel	1.95E-04	lb/acre-hr		
		Selenium	3.40E-04	lb/acre-hr		
		Total HAPs	4.55E-03	lb/acre-hr		
Bulk and Molybdenum Flotation Operations						
MFE	Sycamore Bulk and Molybdenum Flotation Equipment	Benzene	8.67E-06	lb/ton	tons	Testing at the Freeport-McMoRan Henderson Mill in 2009 and diesel vapor mass fractions
		Ethylbenzene	1.46E-05	lb/ton		
		Hexane	1.83E-06	lb/ton		
		Toluene	1.04E-04	lb/ton		
		m-Xylene	2.72E-04	lb/ton		
		Total HAPs	4.02E-04	lb/ton		
Diesel Emergency ICE						
Tier2-560-D	Tier 2 Diesel Non-Emergency Engines (kW > 560)	Benzene	5.43E-06	lb/hp-hr	hp-hr	AP-42 Tables 3.4-3 and 3.4-4 (10/96), and a diesel brake-specific fuel consumption of 7,000 Btu/hp-hr
		Toluene	1.97E-06	lb/hp-hr		
		Xylenes	1.35E-06	lb/hp-hr		
		Formaldehyde	5.52E-07	lb/hp-hr		
		Acetaldehyde	1.76E-07	lb/hp-hr		
		Acrolein	5.52E-08	lb/hp-hr		
		Naphthalene	9.10E-07	lb/hp-hr		
		Acenaphthylene	6.46E-08	lb/hp-hr		
		Acenaphthene	3.28E-08	lb/hp-hr		
		Fluorene	8.96E-08	lb/hp-hr		
		Phenanthrene	2.86E-07	lb/hp-hr		
		Anthracene	8.61E-09	lb/hp-hr		
		Fluoranthene	2.82E-08	lb/hp-hr		
		Pyrene	2.60E-08	lb/hp-hr		
		Benz(a)anthracene	4.35E-09	lb/hp-hr		
		Chrysene	1.07E-08	lb/hp-hr		
		Benzo(b)fluoranthene	7.77E-09	lb/hp-hr		
		Benzo(k)fluoranthene	1.53E-09	lb/hp-hr		
		Benzo(a)pyrene	1.80E-09	lb/hp-hr		
		Indeno(1,2,3-cd)pyrene	2.90E-09	lb/hp-hr		
		Dibenz(a,h)anthracene	2.42E-09	lb/hp-hr		
		Benzo(g,h,i)perylene	3.89E-09	lb/hp-hr		
		Total HAPs	1.10E-05	lb/hp-hr		
Tier3-450/560-D	Tier 3 Diesel Emergency Engines (450 ≤ kW ≤ 560)	Benzene	5.43E-06	lb/hp-hr	hp-hr	AP-42 Tables 3.4-3 and 3.4-4 (10/96), and a diesel brake-specific fuel consumption of 7,000 Btu/hp-hr
		Toluene	1.97E-06	lb/hp-hr		
		Xylenes	1.35E-06	lb/hp-hr		
		Formaldehyde	5.52E-07	lb/hp-hr		
		Acetaldehyde	1.76E-07	lb/hp-hr		
		Acrolein	5.52E-08	lb/hp-hr		
		Naphthalene	9.10E-07	lb/hp-hr		
		Acenaphthylene	6.46E-08	lb/hp-hr		
		Acenaphthene	3.28E-08	lb/hp-hr		
		Fluorene	8.96E-08	lb/hp-hr		
		Phenanthrene	2.86E-07	lb/hp-hr		
		Anthracene	8.61E-09	lb/hp-hr		
		Fluoranthene	2.82E-08	lb/hp-hr		

Table G.9 HAP Emission Factors - Potential Emission Calculations

Process Code	Process Description	HAP Information			Emission Rate Units	Reference
		Name	EF	EF Units		
Tier3-450/560-D (cont'd)	Tier 3 Diesel Emergency Engines (450 ≤ kW ≤ 560) (cont'd)	Pyrene	2.60E-08	lb/hp-hr	hp-hr	AP-42 Tables 3.4-3 and 3.4-4 (10/96), and a diesel brake-specific fuel consumption of 7,000 Btu/hp-hr
		Benz(a)anthracene	4.35E-09	lb/hp-hr		
		Chrysene	1.07E-08	lb/hp-hr		
		Benzo(b)fluoranthene	7.77E-09	lb/hp-hr		
		Benzo(k)fluoranthene	1.53E-09	lb/hp-hr		
		Benzo(a)pyrene	1.80E-09	lb/hp-hr		
		Indeno(1,2,3-cd)pyrene	2.90E-09	lb/hp-hr		
		Dibenz(a,h)anthracene	2.42E-09	lb/hp-hr		
		Benzo(g,h,i)perylene	3.89E-09	lb/hp-hr		
		Total HAPs	1.10E-05	lb/hp-hr		
Propane Emergency ICE						
SEG-P	Sycamore Propane Emergency Generators	1,1,2,2-Tetrachloroethane	2.66E-07	lb/hp-hr	hp-hr	AP-42 Table 3.2-3 (08/00), 4-Stroke Rich Burn, and 10,500 Btu/hp-hr
		1,1,2-Trichloroethane	1.61E-07	lb/hp-hr		
		1,1-Dichloroethane	1.19E-07	lb/hp-hr		
		1,2-Dichloroethane	1.19E-07	lb/hp-hr		
		1,2-Dichloropropane	1.37E-07	lb/hp-hr		
		1,3-Butadiene	6.96E-06	lb/hp-hr		
		1,3-Dichloropropene	1.33E-07	lb/hp-hr		
		Acetaldehyde	2.93E-05	lb/hp-hr		
		Acrolein	2.76E-05	lb/hp-hr		
		Benzene	1.66E-05	lb/hp-hr		
		Carbon Tetrachloride	1.86E-07	lb/hp-hr		
		Chlorobenzene	1.35E-07	lb/hp-hr		
		Chloroform	1.44E-07	lb/hp-hr		
		Ethylbenzene	2.60E-07	lb/hp-hr		
		Ethylene Dibromide	2.24E-07	lb/hp-hr		
		Formaldehyde	2.15E-04	lb/hp-hr		
		Methanol	3.21E-05	lb/hp-hr		
		Methylene Chloride	4.33E-07	lb/hp-hr		
		Naphthalene	1.02E-06	lb/hp-hr		
		Polycyclic Aromatic Hydrocarbons	1.48E-06	lb/hp-hr		
		Styrene	1.25E-07	lb/hp-hr		
		Toluene	5.86E-06	lb/hp-hr		
		Vinyl Chloride	7.54E-08	lb/hp-hr		
		Xylene	2.05E-06	lb/hp-hr		
		Total HAPs	3.41E-04	lb/hp-hr		
Storage Tanks and Parts Cleaning						
SXMS	Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	Carbon Disulfide	1.23E+01	lb/ton	tons	*AERO Xanthate Handbook* (1972) and assume a 3-day holding period
		Total HAPs	1.23E+01	lb/ton		

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414									
Mining Operations (AOS1)									
026-3 (AOS1)	Drilling (AOS1)	Drilling (AOS1-C)	F	90,000	holes	Antimony	3.12E-06	lb/hole	1.40E-04
						Arsenic	1.01E-05	lb/hole	4.55E-04
						Beryllium	1.07E-06	lb/hole	4.80E-05
						Cadmium	3.86E-07	lb/hole	1.74E-05
						Chromium	2.31E-05	lb/hole	1.04E-03
						Cobalt	1.11E-05	lb/hole	5.01E-04
						Lead	1.65E-05	lb/hole	7.44E-04
						Manganese	1.84E-04	lb/hole	8.27E-03
						Mercury	1.82E-07	lb/hole	8.18E-06
						Nickel	1.54E-05	lb/hole	6.93E-04
						Selenium	1.63E-06	lb/hole	7.31E-05
026-2 (AOS1)	Blasting (AOS1)	ABlasting (AOS1-C)	F	600	blasts	POM	4.25E-03	lb/blast	1.28E-03
						Formaldehyde	7.86E-02	lb/blast	2.36E-02
						Antimony	8.26E-04	lb/blast	2.48E-04
						Arsenic	3.38E-03	lb/blast	1.01E-03
						Beryllium	8.09E-04	lb/blast	2.43E-04
						Cadmium	6.29E-04	lb/blast	1.89E-04
						Chromium	6.64E-03	lb/blast	1.99E-03
						Cobalt	2.94E-03	lb/blast	8.83E-04
						Lead	5.95E-03	lb/blast	1.79E-03
						Manganese	4.97E-02	lb/blast	1.49E-02
						Mercury	5.75E-04	lb/blast	1.72E-04
						Nickel	4.60E-03	lb/blast	1.38E-03
						Selenium	3.06E-03	lb/blast	9.19E-04
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	ATravel (AOS1-C)	F	2,513,372	VMT	Antimony	2.18E-05	lb/VMT	2.74E-03
						Arsenic	7.07E-05	lb/VMT	8.88E-03
						Beryllium	7.46E-06	lb/VMT	9.37E-04
						Cadmium	2.70E-06	lb/VMT	3.39E-04
						Chromium	1.61E-04	lb/VMT	2.03E-02
						Cobalt	7.77E-05	lb/VMT	9.77E-03
						Lead	1.15E-04	lb/VMT	1.45E-02
						Manganese	1.28E-03	lb/VMT	1.61E-01
						Mercury	1.27E-06	lb/VMT	1.60E-04
						Nickel	1.08E-04	lb/VMT	1.35E-02
						Selenium	1.14E-05	lb/VMT	1.43E-03
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	ATravel (AOS1-C)	F	837,791	VMT	Antimony	2.18E-05	lb/VMT	9.14E-04
						Arsenic	7.07E-05	lb/VMT	2.96E-03
						Beryllium	7.46E-06	lb/VMT	3.12E-04
						Cadmium	2.70E-06	lb/VMT	1.13E-04
						Chromium	1.61E-04	lb/VMT	6.76E-03
						Cobalt	7.77E-05	lb/VMT	3.26E-03
						Lead	1.15E-04	lb/VMT	4.84E-03
						Manganese	1.28E-03	lb/VMT	5.38E-02
						Mercury	1.27E-06	lb/VMT	5.32E-05
						Nickel	1.08E-04	lb/VMT	4.51E-03
						Selenium	1.14E-05	lb/VMT	4.76E-04
023-3 (AOS1)	Other Vehicle Travel (AOS1)	ATravel (AOS1-C)	F	1,350,115	VMT	Antimony	2.18E-05	lb/VMT	1.47E-03
						Arsenic	7.07E-05	lb/VMT	4.77E-03
						Beryllium	7.46E-06	lb/VMT	5.03E-04
						Cadmium	2.70E-06	lb/VMT	1.82E-04
						Chromium	1.61E-04	lb/VMT	1.09E-02
						Cobalt	7.77E-05	lb/VMT	5.25E-03

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
023-3 (AOS1) (cont'd)	Other Vehicle Travel (AOS1) (cont'd)	ATravel (AOS1-C) (cont'd)	F (cont'd)	1,350,115	VMT (cont'd)	Lead	1.15E-04	lb/VMT	7.80E-03
						Manganese	1.28E-03	lb/VMT	8.67E-02
						Mercury	1.27E-06	lb/VMT	8.57E-05
						Nickel	1.08E-04	lb/VMT	7.26E-03
						Selenium	1.14E-05	lb/VMT	7.67E-04
023-1 (AOS1)	Dozer Operation (AOS1)	Dozer (AOS1-C)	F	78,046	hours	Antimony	6.43E-06	lb/hr	2.51E-04
						Arsenic	2.08E-05	lb/hr	8.13E-04
						Beryllium	2.20E-06	lb/hr	8.57E-05
						Cadmium	7.95E-07	lb/hr	3.10E-05
						Chromium	4.75E-05	lb/hr	1.85E-03
						Cobalt	2.29E-05	lb/hr	8.94E-04
						Lead	3.40E-05	lb/hr	1.33E-03
						Manganese	3.78E-04	lb/hr	1.48E-02
						Mercury	3.74E-07	lb/hr	1.46E-05
						Nickel	3.17E-05	lb/hr	1.24E-03
						Selenium	3.35E-06	lb/hr	1.31E-04
023-2 (AOS1)	Road Grader Operation (AOS1)	Grader (AOS1-C)	F	118,587	VMT	Antimony	4.41E-06	lb/VMT	2.61E-05
						Arsenic	1.43E-05	lb/VMT	8.47E-05
						Beryllium	1.51E-06	lb/VMT	8.94E-06
						Cadmium	5.46E-07	lb/VMT	3.24E-06
						Chromium	3.26E-05	lb/VMT	1.93E-04
						Cobalt	1.57E-05	lb/VMT	9.31E-05
						Lead	2.33E-05	lb/VMT	1.38E-04
						Manganese	2.60E-04	lb/VMT	1.54E-03
						Mercury	2.57E-07	lb/VMT	1.52E-06
						Nickel	2.17E-05	lb/VMT	1.29E-04
						Selenium	2.30E-06	lb/VMT	1.36E-05
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Ore1TrUnprt (AOS1-C)	F	220,314,000	tons	Antimony	4.99E-09	lb/ton	5.50E-04
						Arsenic	1.62E-08	lb/ton	1.78E-03
						Beryllium	1.71E-09	lb/ton	1.88E-04
						Cadmium	6.18E-10	lb/ton	6.81E-05
						Chromium	3.69E-08	lb/ton	4.07E-03
						Cobalt	1.78E-08	lb/ton	1.96E-03
						Lead	2.64E-08	lb/ton	2.91E-03
						Manganese	2.94E-07	lb/ton	3.24E-02
						Mercury	2.91E-10	lb/ton	3.20E-05
						Nickel	2.46E-08	lb/ton	2.71E-03
						Selenium	2.60E-09	lb/ton	2.86E-04
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Ore2TrUnprt	F	32,850,000	tons	Antimony	1.14E-09	lb/ton	1.87E-05
						Arsenic	1.87E-08	lb/ton	3.07E-04
						Beryllium	1.31E-09	lb/ton	2.15E-05
						Cadmium	9.61E-10	lb/ton	1.58E-05
						Chromium	3.75E-08	lb/ton	6.16E-04
						Cobalt	1.61E-08	lb/ton	2.65E-04
						Lead	1.54E-08	lb/ton	2.53E-04
						Manganese	2.61E-07	lb/ton	4.29E-03
						Mercury	5.49E-10	lb/ton	9.02E-06
						Nickel	2.20E-08	lb/ton	3.62E-04
						Selenium	3.47E-09	lb/ton	5.70E-05
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Ore2TrUnprt	F	32,850,000	tons	Antimony	1.14E-09	lb/ton	1.87E-05
						Arsenic	1.87E-08	lb/ton	3.07E-04
						Beryllium	1.31E-09	lb/ton	2.15E-05
						Cadmium	9.61E-10	lb/ton	1.58E-05
						Chromium	3.75E-08	lb/ton	6.16E-04

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
001-7 (AOS1) (cont'd)	Unloading Ore to Primary Crusher 2 (AOS1) (cont'd)	Ore2TrUnprt (cont'd)	F (cont'd)	32,850,000	tons (cont'd)	Cobalt	1.61E-08	lb/ton	2.65E-04
						Lead	1.54E-08	lb/ton	2.53E-04
						Manganese	2.61E-07	lb/ton	4.29E-03
						Mercury	5.49E-10	lb/ton	9.02E-06
						Nickel	2.20E-08	lb/ton	3.62E-04
						Selenium	3.47E-09	lb/ton	5.70E-05
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Ore3TrUnprt	F	30,076,000	tons	Antimony	0.00E+00	lb/ton	0.00E+00
						Arsenic	1.50E-09	lb/ton	2.25E-05
						Beryllium	3.44E-09	lb/ton	5.18E-05
						Cadmium	0.00E+00	lb/ton	0.00E+00
						Chromium	5.99E-09	lb/ton	9.01E-05
						Cobalt	1.07E-08	lb/ton	1.61E-04
						Lead	1.60E-08	lb/ton	2.40E-04
						Manganese	2.28E-07	lb/ton	3.43E-03
						Mercury	0.00E+00	lb/ton	0.00E+00
						Nickel	8.73E-09	lb/ton	1.31E-04
						Selenium	0.00E+00	lb/ton	0.00E+00
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Ore4TrUnprt	F	124,538,000	tons	Antimony	8.24E-09	lb/ton	5.13E-04
						Arsenic	1.84E-08	lb/ton	1.15E-03
						Beryllium	1.50E-09	lb/ton	9.32E-05
						Cadmium	5.86E-10	lb/ton	3.65E-05
						Chromium	4.41E-08	lb/ton	2.74E-03
						Cobalt	2.04E-08	lb/ton	1.27E-03
						Lead	3.48E-08	lb/ton	2.17E-03
						Manganese	3.28E-07	lb/ton	2.04E-02
						Mercury	2.25E-10	lb/ton	1.40E-05
						Nickel	2.98E-08	lb/ton	1.86E-03
						Selenium	2.77E-09	lb/ton	1.72E-04
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)									
001-5 (AOS1)	Dust Collector C51 (AOS1)	C51 (AOS1)	NF	7,884,000,000	dscf	Antimony	1.76E-12	lb/dscf	6.92E-06
						Arsenic	2.89E-11	lb/dscf	1.14E-04
						Beryllium	2.03E-12	lb/dscf	7.98E-06
						Cadmium	1.49E-12	lb/dscf	5.85E-06
						Chromium	5.80E-11	lb/dscf	2.29E-04
						Cobalt	2.49E-11	lb/dscf	9.81E-05
						Lead	2.38E-11	lb/dscf	9.39E-05
						Manganese	4.03E-10	lb/dscf	1.59E-03
						Mercury	8.49E-13	lb/dscf	3.35E-06
						Nickel	3.40E-11	lb/dscf	1.34E-04
						Selenium	5.36E-12	lb/dscf	2.11E-05
001-16 (AOS1)	Dust Collector AE-001 (AOS1)	AE-001 (AOS1)	NF	10,512,000,000	dscf	Antimony	3.38E-13	lb/dscf	1.78E-06
						Arsenic	5.56E-12	lb/dscf	2.92E-05
						Beryllium	3.90E-13	lb/dscf	2.05E-06
						Cadmium	2.86E-13	lb/dscf	1.50E-06
						Chromium	1.12E-11	lb/dscf	5.87E-05
						Cobalt	4.80E-12	lb/dscf	2.52E-05
						Lead	4.59E-12	lb/dscf	2.41E-05
						Manganese	7.77E-11	lb/dscf	4.08E-04
						Mercury	1.63E-13	lb/dscf	8.59E-07
						Nickel	6.55E-12	lb/dscf	3.44E-05
						Selenium	1.03E-12	lb/dscf	5.43E-06
001-17 (AOS1)	Dust Collector AE-014 (AOS1)	AE-014 (AOS1)	NF	6,307,200,000	dscf	Antimony	3.38E-13	lb/dscf	1.07E-06
						Arsenic	5.56E-12	lb/dscf	1.75E-05
						Beryllium	3.90E-13	lb/dscf	1.23E-06

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
001-17 (AOS1) (cont'd)	Dust Collector AE-014 (AOS1) (cont'd)	AE-014 (AOS1) (cont'd)	NF (cont'd)	6,307,200,000	dscf (cont'd)	Cadmium	2.86E-13	lb/dscf	9.02E-07
						Chromium	1.12E-11	lb/dscf	3.52E-05
						Cobalt	4.80E-12	lb/dscf	1.51E-05
						Lead	4.59E-12	lb/dscf	1.45E-05
						Manganese	7.77E-11	lb/dscf	2.45E-04
						Mercury	1.63E-13	lb/dscf	5.15E-07
						Nickel	6.55E-12	lb/dscf	2.07E-05
						Selenium	1.03E-12	lb/dscf	3.26E-06
001-18 (AOS1)	Dust Collector AE-015 (AOS1)	AE-015 (AOS1)	NF	6,307,200,000	dscf	Antimony	3.38E-13	lb/dscf	1.07E-06
						Arsenic	5.56E-12	lb/dscf	1.75E-05
						Beryllium	3.90E-13	lb/dscf	1.23E-06
						Cadmium	2.86E-13	lb/dscf	9.02E-07
						Chromium	1.12E-11	lb/dscf	3.52E-05
						Cobalt	4.80E-12	lb/dscf	1.51E-05
						Lead	4.59E-12	lb/dscf	1.45E-05
						Manganese	7.77E-11	lb/dscf	2.45E-04
						Mercury	1.63E-13	lb/dscf	5.15E-07
						Nickel	6.55E-12	lb/dscf	2.07E-05
						Selenium	1.03E-12	lb/dscf	3.26E-06
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Ore2TrUnprt	F	32,850,000	tons	Antimony	1.14E-09	lb/ton	1.87E-05
						Arsenic	1.87E-08	lb/ton	3.07E-04
						Beryllium	1.31E-09	lb/ton	2.15E-05
						Cadmium	9.61E-10	lb/ton	1.58E-05
						Chromium	3.75E-08	lb/ton	6.16E-04
						Cobalt	1.61E-08	lb/ton	2.65E-04
						Lead	1.54E-08	lb/ton	2.53E-04
						Manganese	2.61E-07	lb/ton	4.29E-03
						Mercury	5.49E-10	lb/ton	9.02E-06
						Nickel	2.20E-08	lb/ton	3.62E-04
						Selenium	3.47E-09	lb/ton	5.70E-05
001-19 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Ore2TrUnprt	F	16,206,000	tons	Antimony	1.14E-09	lb/ton	9.20E-06
						Arsenic	1.87E-08	lb/ton	1.51E-04
						Beryllium	1.31E-09	lb/ton	1.06E-05
						Cadmium	9.61E-10	lb/ton	7.79E-06
						Chromium	3.75E-08	lb/ton	3.04E-04
						Cobalt	1.61E-08	lb/ton	1.31E-04
						Lead	1.54E-08	lb/ton	1.25E-04
						Manganese	2.61E-07	lb/ton	2.12E-03
						Mercury	5.49E-10	lb/ton	4.45E-06
						Nickel	2.20E-08	lb/ton	1.78E-04
						Selenium	3.47E-09	lb/ton	2.81E-05
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	AWindCOS 1/5 (AOS1)	F	6.88	acre-yr	Antimony	1.26E-03	lb/acre-yr	4.35E-06
						Arsenic	2.08E-02	lb/acre-yr	7.16E-05
						Beryllium	1.46E-03	lb/acre-yr	5.02E-06
						Cadmium	1.07E-03	lb/acre-yr	3.68E-06
						Chromium	4.18E-02	lb/acre-yr	1.44E-04
						Cobalt	1.79E-02	lb/acre-yr	6.17E-05
						Lead	1.72E-02	lb/acre-yr	5.90E-05
						Manganese	2.91E-01	lb/acre-yr	1.00E-03
						Mercury	6.11E-04	lb/acre-yr	2.10E-06
						Nickel	2.45E-02	lb/acre-yr	8.43E-05
						Selenium	3.86E-03	lb/acre-yr	1.33E-05

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)									
001-12 (AOS1)	Dust Collector AE-002 (AOS1)	AE-002 (AOS1)	NF	6,307,200,000	dscf	Antimony	3.38E-13	lb/dscf	1.07E-06
						Arsenic	5.56E-12	lb/dscf	1.75E-05
						Beryllium	3.90E-13	lb/dscf	1.23E-06
						Cadmium	2.86E-13	lb/dscf	9.02E-07
						Chromium	1.12E-11	lb/dscf	3.52E-05
						Cobalt	4.80E-12	lb/dscf	1.51E-05
						Lead	4.59E-12	lb/dscf	1.45E-05
						Manganese	7.77E-11	lb/dscf	2.45E-04
						Mercury	1.63E-13	lb/dscf	5.15E-07
						Nickel	6.55E-12	lb/dscf	2.07E-05
						Selenium	1.03E-12	lb/dscf	3.26E-06
001-13 (AOS1)	Dust Collector AE-003 (AOS1)	AE-003 (AOS1)	NF	7,884,000,000	dscf	Antimony	3.38E-13	lb/dscf	1.33E-06
						Arsenic	5.56E-12	lb/dscf	2.19E-05
						Beryllium	3.90E-13	lb/dscf	1.54E-06
						Cadmium	2.86E-13	lb/dscf	1.13E-06
						Chromium	1.12E-11	lb/dscf	4.40E-05
						Cobalt	4.80E-12	lb/dscf	1.89E-05
						Lead	4.59E-12	lb/dscf	1.81E-05
						Manganese	7.77E-11	lb/dscf	3.06E-04
						Mercury	1.63E-13	lb/dscf	6.44E-07
						Nickel	6.55E-12	lb/dscf	2.58E-05
						Selenium	1.03E-12	lb/dscf	4.07E-06
001-14 (AOS1)	Dust Collector AE-016 (AOS1)	AE-016 (AOS1)	NF	6,307,200,000	dscf	Antimony	3.38E-13	lb/dscf	1.07E-06
						Arsenic	5.56E-12	lb/dscf	1.75E-05
						Beryllium	3.90E-13	lb/dscf	1.23E-06
						Cadmium	2.86E-13	lb/dscf	9.02E-07
						Chromium	1.12E-11	lb/dscf	3.52E-05
						Cobalt	4.80E-12	lb/dscf	1.51E-05
						Lead	4.59E-12	lb/dscf	1.45E-05
						Manganese	7.77E-11	lb/dscf	2.45E-04
						Mercury	1.63E-13	lb/dscf	5.15E-07
						Nickel	6.55E-12	lb/dscf	2.07E-05
						Selenium	1.03E-12	lb/dscf	3.26E-06
001-15 (AOS1)	Dust Collector AE-017 (AOS1)	AE-017 (AOS1)	NF	6,307,200,000	dscf	Antimony	3.38E-13	lb/dscf	1.07E-06
						Arsenic	5.56E-12	lb/dscf	1.75E-05
						Beryllium	3.90E-13	lb/dscf	1.23E-06
						Cadmium	2.86E-13	lb/dscf	9.02E-07
						Chromium	1.12E-11	lb/dscf	3.52E-05
						Cobalt	4.80E-12	lb/dscf	1.51E-05
						Lead	4.59E-12	lb/dscf	1.45E-05
						Manganese	7.77E-11	lb/dscf	2.45E-04
						Mercury	1.63E-13	lb/dscf	5.15E-07
						Nickel	6.55E-12	lb/dscf	2.07E-05
						Selenium	1.03E-12	lb/dscf	3.26E-06
001-20 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6	Ore2TrUnprt	F	16,644,000	tons	Antimony	1.14E-09	lb/ton	9.45E-06
						Arsenic	1.87E-08	lb/ton	1.56E-04
						Beryllium	1.31E-09	lb/ton	1.09E-05
						Cadmium	9.61E-10	lb/ton	8.00E-06
						Chromium	3.75E-08	lb/ton	3.12E-04
						Cobalt	1.61E-08	lb/ton	1.34E-04
						Lead	1.54E-08	lb/ton	1.28E-04
						Manganese	2.61E-07	lb/ton	2.17E-03
						Mercury	5.49E-10	lb/ton	4.57E-06

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
001-20 (AOS1) (cont'd)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6 (cont'd)	Ore2TrUnprt (cont'd)	F (cont'd)	16,644,000	tons (cont'd)	Nickel	2.20E-08	lb/ton	1.83E-04
						Selenium	3.47E-09	lb/ton	2.89E-05
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	AWindCOS 6 (AOS1)	F	2.34	acre-yr	Antimony	1.26E-03	lb/acre-yr	1.48E-06
						Arsenic	2.08E-02	lb/acre-yr	2.44E-05
						Beryllium	1.46E-03	lb/acre-yr	1.71E-06
						Cadmium	1.07E-03	lb/acre-yr	1.25E-06
						Chromium	4.18E-02	lb/acre-yr	4.89E-05
						Cobalt	1.79E-02	lb/acre-yr	2.10E-05
						Lead	1.72E-02	lb/acre-yr	2.01E-05
						Manganese	2.91E-01	lb/acre-yr	3.40E-04
						Mercury	6.11E-04	lb/acre-yr	7.15E-07
						Nickel	2.45E-02	lb/acre-yr	2.87E-05
						Selenium	3.86E-03	lb/acre-yr	4.52E-06
Sycamore Milling Operations (AOS1)									
002-7 (AOS1)	Dust Collector AE-008 (AOS1)	AE-008 (AOS1)	NF	26,280,000,000	dscf	Antimony	3.38E-13	lb/dscf	4.44E-06
						Arsenic	5.56E-12	lb/dscf	7.31E-05
						Beryllium	3.90E-13	lb/dscf	5.12E-06
						Cadmium	2.86E-13	lb/dscf	3.76E-06
						Chromium	1.12E-11	lb/dscf	1.47E-04
						Cobalt	4.80E-12	lb/dscf	6.30E-05
						Lead	4.59E-12	lb/dscf	6.03E-05
						Manganese	7.77E-11	lb/dscf	1.02E-03
						Mercury	1.63E-13	lb/dscf	2.15E-06
						Nickel	6.55E-12	lb/dscf	8.61E-05
						Selenium	1.03E-12	lb/dscf	1.36E-05
002-8 (AOS1)	Dust Collector AE-009 (AOS1)	AE-009 (AOS1)	NF	6,307,200,000	dscf	Antimony	3.38E-13	lb/dscf	1.07E-06
						Arsenic	5.56E-12	lb/dscf	1.75E-05
						Beryllium	3.90E-13	lb/dscf	1.23E-06
						Cadmium	2.86E-13	lb/dscf	9.02E-07
						Chromium	1.12E-11	lb/dscf	3.52E-05
						Cobalt	4.80E-12	lb/dscf	1.51E-05
						Lead	4.59E-12	lb/dscf	1.45E-05
						Manganese	7.77E-11	lb/dscf	2.45E-04
						Mercury	1.63E-13	lb/dscf	5.15E-07
						Nickel	6.55E-12	lb/dscf	2.07E-05
						Selenium	1.03E-12	lb/dscf	3.26E-06
002-9 (AOS1)	Dust Collector AE-010 (AOS1)	AE-010 (AOS1)	NF	10,512,000,000	dscf	Antimony	3.38E-13	lb/dscf	1.78E-06
						Arsenic	5.56E-12	lb/dscf	2.92E-05
						Beryllium	3.90E-13	lb/dscf	2.05E-06
						Cadmium	2.86E-13	lb/dscf	1.50E-06
						Chromium	1.12E-11	lb/dscf	5.87E-05
						Cobalt	4.80E-12	lb/dscf	2.52E-05
						Lead	4.59E-12	lb/dscf	2.41E-05
						Manganese	7.77E-11	lb/dscf	4.08E-04
						Mercury	1.63E-13	lb/dscf	8.59E-07
						Nickel	6.55E-12	lb/dscf	3.44E-05
						Selenium	1.03E-12	lb/dscf	5.43E-06
002-10 (AOS1)	Dust Collector AE-011 (AOS1)	AE-011 (AOS1)	NF	6,307,200,000	dscf	Antimony	3.38E-13	lb/dscf	1.07E-06
						Arsenic	5.56E-12	lb/dscf	1.75E-05
						Beryllium	3.90E-13	lb/dscf	1.23E-06
						Cadmium	2.86E-13	lb/dscf	9.02E-07
						Chromium	1.12E-11	lb/dscf	3.52E-05
						Cobalt	4.80E-12	lb/dscf	1.51E-05
						Lead	4.59E-12	lb/dscf	1.45E-05

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
002-10 (AOS1) (cont'd)	Dust Collector AE-011 (AOS1) (cont'd)	AE-011 (AOS1) (cont'd)	NF (cont'd)	6,307,200,000	dscf (cont'd)	Manganese	7.77E-11	lb/dscf	2.45E-04
						Mercury	1.63E-13	lb/dscf	5.15E-07
						Nickel	6.55E-12	lb/dscf	2.07E-05
						Selenium	1.03E-12	lb/dscf	3.26E-06
002-11 (AOS1)	Dust Collector AE-007 (AOS1)	AE-007 (AOS1)	NF	6,307,200,000	dscf	Antimony	3.38E-13	lb/dscf	1.07E-06
						Arsenic	5.56E-12	lb/dscf	1.75E-05
						Beryllium	3.90E-13	lb/dscf	1.23E-06
						Cadmium	2.86E-13	lb/dscf	9.02E-07
						Chromium	1.12E-11	lb/dscf	3.52E-05
						Cobalt	4.80E-12	lb/dscf	1.51E-05
						Lead	4.59E-12	lb/dscf	1.45E-05
						Manganese	7.77E-11	lb/dscf	2.45E-04
						Mercury	1.63E-13	lb/dscf	5.15E-07
						Nickel	6.55E-12	lb/dscf	2.07E-05
						Selenium	1.03E-12	lb/dscf	3.26E-06
002-12 (AOS1)	Dust Collector AE-012 (AOS1)	AE-012 (AOS1)	NF	17,344,800,000	dscf	Antimony	3.38E-13	lb/dscf	2.93E-06
						Arsenic	5.56E-12	lb/dscf	4.83E-05
						Beryllium	3.90E-13	lb/dscf	3.38E-06
						Cadmium	2.86E-13	lb/dscf	2.48E-06
						Chromium	1.12E-11	lb/dscf	9.69E-05
						Cobalt	4.80E-12	lb/dscf	4.16E-05
						Lead	4.59E-12	lb/dscf	3.98E-05
						Manganese	7.77E-11	lb/dscf	6.74E-04
						Mercury	1.63E-13	lb/dscf	1.42E-06
						Nickel	6.55E-12	lb/dscf	5.68E-05
						Selenium	1.03E-12	lb/dscf	8.95E-06
002-13 (AOS1)	Dust Collector AE-013 (AOS1)	AE-013 (AOS1)	NF	9,460,800,000	dscf	Antimony	3.38E-13	lb/dscf	1.60E-06
						Arsenic	5.56E-12	lb/dscf	2.63E-05
						Beryllium	3.90E-13	lb/dscf	1.84E-06
						Cadmium	2.86E-13	lb/dscf	1.35E-06
						Chromium	1.12E-11	lb/dscf	5.29E-05
						Cobalt	4.80E-12	lb/dscf	2.27E-05
						Lead	4.59E-12	lb/dscf	2.17E-05
						Manganese	7.77E-11	lb/dscf	3.68E-04
						Mercury	1.63E-13	lb/dscf	7.73E-07
						Nickel	6.55E-12	lb/dscf	3.10E-05
						Selenium	1.03E-12	lb/dscf	4.88E-06
Total of Non-Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:									9.76E-03
Total of Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:									6.30E-01
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:									6.40E-01
Affected Emissions Units - Proposed Updated Design of AOS1									
Mining Operations (AOS1)									
026-3 (AOS1)	Drilling (AOS1)	Drilling (AOS1)	F	106,219	holes	Antimony	3.62E-06	lb/hole	1.92E-04
						Arsenic	1.12E-05	lb/hole	5.94E-04
						Beryllium	9.45E-07	lb/hole	5.02E-05
						Cadmium	4.24E-07	lb/hole	2.25E-05
						Chromium	2.55E-05	lb/hole	1.35E-03
						Cobalt	1.17E-05	lb/hole	6.22E-04
						Lead	1.77E-05	lb/hole	9.37E-04
						Manganese	1.90E-04	lb/hole	1.01E-02
						Mercury	1.97E-07	lb/hole	1.04E-05
						Nickel	1.67E-05	lb/hole	8.87E-04
						Selenium	1.80E-06	lb/hole	9.56E-05

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
026-2 (AOS1)	Blasting (AOS1)	ABlasting (AOS1)	F	260	blasts	POM	1.78E-02	lb/blast	2.32E-03
						Formaldehyde	3.29E-01	lb/blast	4.28E-02
						Antimony	9.03E-03	lb/blast	1.17E-03
						Arsenic	3.08E-02	lb/blast	4.01E-03
						Beryllium	4.56E-03	lb/blast	5.93E-04
						Cadmium	3.26E-03	lb/blast	4.24E-04
						Chromium	6.57E-02	lb/blast	8.54E-03
						Cobalt	2.92E-02	lb/blast	3.80E-03
						Lead	5.07E-02	lb/blast	6.59E-03
						Manganese	4.78E-01	lb/blast	6.22E-02
						Mercury	2.70E-03	lb/blast	3.50E-04
						Nickel	4.39E-02	lb/blast	5.70E-03
						Selenium	1.55E-02	lb/blast	2.02E-03
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	ATravel (AOS1)	F	7,099,653	VMT	Antimony	2.00E-05	lb/VMT	7.09E-03
						Arsenic	6.17E-05	lb/VMT	2.19E-02
						Beryllium	5.21E-06	lb/VMT	1.85E-03
						Cadmium	2.34E-06	lb/VMT	8.31E-04
						Chromium	1.40E-04	lb/VMT	4.99E-02
						Cobalt	6.47E-05	lb/VMT	2.30E-02
						Lead	9.74E-05	lb/VMT	3.46E-02
						Manganese	1.05E-03	lb/VMT	3.72E-01
						Mercury	1.09E-06	lb/VMT	3.85E-04
						Nickel	9.21E-05	lb/VMT	3.27E-02
						Selenium	9.94E-06	lb/VMT	3.53E-03
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	ATravel (AOS1)	F	2,366,551	VMT	Antimony	2.00E-05	lb/VMT	2.36E-03
						Arsenic	6.17E-05	lb/VMT	7.30E-03
						Beryllium	5.21E-06	lb/VMT	6.17E-04
						Cadmium	2.34E-06	lb/VMT	2.77E-04
						Chromium	1.40E-04	lb/VMT	1.66E-02
						Cobalt	6.47E-05	lb/VMT	7.65E-03
						Lead	9.74E-05	lb/VMT	1.15E-02
						Manganese	1.05E-03	lb/VMT	1.24E-01
						Mercury	1.09E-06	lb/VMT	1.28E-04
						Nickel	9.21E-05	lb/VMT	1.09E-02
						Selenium	9.94E-06	lb/VMT	1.18E-03
023-3 (AOS1)	Other Vehicle Travel (AOS1)	ATravel (AOS1)	F	14,080,416	VMT	Antimony	2.00E-05	lb/VMT	1.41E-02
						Arsenic	6.17E-05	lb/VMT	4.34E-02
						Beryllium	5.21E-06	lb/VMT	3.67E-03
						Cadmium	2.34E-06	lb/VMT	1.65E-03
						Chromium	1.40E-04	lb/VMT	9.89E-02
						Cobalt	6.47E-05	lb/VMT	4.55E-02
						Lead	9.74E-05	lb/VMT	6.86E-02
						Manganese	1.05E-03	lb/VMT	7.38E-01
						Mercury	1.09E-06	lb/VMT	7.64E-04
						Nickel	9.21E-05	lb/VMT	6.49E-02
						Selenium	9.94E-06	lb/VMT	7.00E-03
023-1 (AOS1)	Dozer Operation (AOS1)	Dozer (AOS1)	F	133,221	hours	Antimony	7.45E-06	lb/hr	4.96E-04
						Arsenic	2.30E-05	lb/hr	1.53E-03
						Beryllium	1.94E-06	lb/hr	1.30E-04
						Cadmium	8.73E-07	lb/hr	5.82E-05
						Chromium	5.24E-05	lb/hr	3.49E-03
						Cobalt	2.41E-05	lb/hr	1.61E-03
						Lead	3.63E-05	lb/hr	2.42E-03
						Manganese	3.91E-04	lb/hr	2.60E-02

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
023-1 (AOS1) (cont'd)	Dozer Operation (AOS1) (cont'd)	Dozer (AOS1) (cont'd)	F (cont'd)	133,221	hours (cont'd)	Mercury	4.05E-07	lb/hr	2.70E-05
						Nickel	3.44E-05	lb/hr	2.29E-03
						Selenium	3.71E-06	lb/hr	2.47E-04
023-2 (AOS1)	Road Grader Operation (AOS1)	Grader (AOS1)	F	420,480	VMT	Antimony	5.11E-06	lb/VMT	1.07E-04
						Arsenic	1.58E-05	lb/VMT	3.32E-04
						Beryllium	1.33E-06	lb/VMT	2.81E-05
						Cadmium	5.99E-07	lb/VMT	1.26E-05
						Chromium	3.59E-05	lb/VMT	7.56E-04
						Cobalt	1.65E-05	lb/VMT	3.48E-04
						Lead	2.49E-05	lb/VMT	5.24E-04
						Manganese	2.68E-04	lb/VMT	5.64E-03
						Mercury	2.78E-07	lb/VMT	5.84E-06
						Nickel	2.36E-05	lb/VMT	4.96E-04
						Selenium	2.54E-06	lb/VMT	5.35E-05
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Ore1TrUnpr t (AOS1)	F	254,833,922	tons	Antimony	5.79E-09	lb/ton	7.38E-04
						Arsenic	1.79E-08	lb/ton	2.28E-03
						Beryllium	1.51E-09	lb/ton	1.93E-04
						Cadmium	6.78E-10	lb/ton	8.64E-05
						Chromium	4.07E-08	lb/ton	5.19E-03
						Cobalt	1.87E-08	lb/ton	2.39E-03
						Lead	2.82E-08	lb/ton	3.60E-03
						Manganese	3.04E-07	lb/ton	3.87E-02
						Mercury	3.15E-10	lb/ton	4.01E-05
						Nickel	2.67E-08	lb/ton	3.40E-03
						Selenium	2.88E-09	lb/ton	3.67E-04
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Ore2TrUnpr t	F	44,433,881	tons	Antimony	1.14E-09	lb/ton	2.52E-05
						Arsenic	1.87E-08	lb/ton	4.15E-04
						Beryllium	1.31E-09	lb/ton	2.91E-05
						Cadmium	9.61E-10	lb/ton	2.13E-05
						Chromium	3.75E-08	lb/ton	8.34E-04
						Cobalt	1.61E-08	lb/ton	3.58E-04
						Lead	1.54E-08	lb/ton	3.42E-04
						Manganese	2.61E-07	lb/ton	5.80E-03
						Mercury	5.49E-10	lb/ton	1.22E-05
						Nickel	2.20E-08	lb/ton	4.89E-04
						Selenium	3.47E-09	lb/ton	7.71E-05
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Ore2TrUnpr t	F	32,632,000	tons	Antimony	1.14E-09	lb/ton	1.85E-05
						Arsenic	1.87E-08	lb/ton	3.05E-04
						Beryllium	1.31E-09	lb/ton	2.14E-05
						Cadmium	9.61E-10	lb/ton	1.57E-05
						Chromium	3.75E-08	lb/ton	6.12E-04
						Cobalt	1.61E-08	lb/ton	2.63E-04
						Lead	1.54E-08	lb/ton	2.51E-04
						Manganese	2.61E-07	lb/ton	4.26E-03
						Mercury	5.49E-10	lb/ton	8.96E-06
						Nickel	2.20E-08	lb/ton	3.59E-04
						Selenium	3.47E-09	lb/ton	5.66E-05
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Ore3TrUnpr t	F	9,230,000	tons	Antimony	0.00E+00	lb/ton	0.00E+00
						Arsenic	1.50E-09	lb/ton	6.91E-06
						Beryllium	3.44E-09	lb/ton	1.59E-05
						Cadmium	0.00E+00	lb/ton	0.00E+00
						Chromium	5.99E-09	lb/ton	2.76E-05
						Cobalt	1.07E-08	lb/ton	4.95E-05
						Lead	1.60E-08	lb/ton	7.37E-05

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
045-3 (AOS1) (cont'd)	Unloading Ore to Leaching Areas (AOS1) (cont'd)	Ore3TrUnprt (cont'd)	F (cont'd)	9,230,000	tons (cont'd)	Manganese	2.28E-07	lb/ton	1.05E-03
						Mercury	0.00E+00	lb/ton	0.00E+00
						Nickel	8.73E-09	lb/ton	4.03E-05
						Selenium	0.00E+00	lb/ton	0.00E+00
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Ore4TrUnprt	F	168,538,041	tons	Antimony	8.24E-09	lb/ton	6.94E-04
						Arsenic	1.84E-08	lb/ton	1.55E-03
						Beryllium	1.50E-09	lb/ton	1.26E-04
						Cadmium	5.86E-10	lb/ton	4.94E-05
						Chromium	4.41E-08	lb/ton	3.71E-03
						Cobalt	2.04E-08	lb/ton	1.72E-03
						Lead	3.48E-08	lb/ton	2.93E-03
						Manganese	3.28E-07	lb/ton	2.76E-02
						Mercury	2.25E-10	lb/ton	1.89E-05
						Nickel	2.98E-08	lb/ton	2.51E-03
						Selenium	2.77E-09	lb/ton	2.33E-04
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)									
001-5 (AOS1)	Dust Collector C51 (AOS1)	C51 (AOS1)	NF	7,884,000,000	dscf	Antimony	1.76E-12	lb/dscf	6.92E-06
						Arsenic	2.89E-11	lb/dscf	1.14E-04
						Beryllium	2.03E-12	lb/dscf	7.98E-06
						Cadmium	1.49E-12	lb/dscf	5.85E-06
						Chromium	5.80E-11	lb/dscf	2.29E-04
						Cobalt	2.49E-11	lb/dscf	9.81E-05
						Lead	2.38E-11	lb/dscf	9.39E-05
						Manganese	4.03E-10	lb/dscf	1.59E-03
						Mercury	8.49E-13	lb/dscf	3.35E-06
						Nickel	3.40E-11	lb/dscf	1.34E-04
						Selenium	5.36E-12	lb/dscf	2.11E-05
001-2 (AOS1)	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	Ore2TrPrt	NF	66,576,000	tons	Antimony	1.25E-10	lb/ton	4.16E-07
						Arsenic	2.06E-09	lb/ton	6.85E-06
						Beryllium	1.44E-10	lb/ton	4.80E-07
						Cadmium	1.06E-10	lb/ton	3.52E-07
						Chromium	4.13E-09	lb/ton	1.37E-05
						Cobalt	1.77E-09	lb/ton	5.90E-06
						Lead	1.70E-09	lb/ton	5.64E-06
						Manganese	2.87E-08	lb/ton	9.56E-05
						Mercury	6.04E-11	lb/ton	2.01E-07
						Nickel	2.42E-09	lb/ton	8.06E-06
						Selenium	3.82E-10	lb/ton	1.27E-06
001-8 (AOS1)	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	Ore2TrPrt	NF	66,576,000	tons	Antimony	1.25E-10	lb/ton	4.16E-07
						Arsenic	2.06E-09	lb/ton	6.85E-06
						Beryllium	1.44E-10	lb/ton	4.80E-07
						Cadmium	1.06E-10	lb/ton	3.52E-07
						Chromium	4.13E-09	lb/ton	1.37E-05
						Cobalt	1.77E-09	lb/ton	5.90E-06
						Lead	1.70E-09	lb/ton	5.64E-06
						Manganese	2.87E-08	lb/ton	9.56E-05
						Mercury	6.04E-11	lb/ton	2.01E-07
						Nickel	2.42E-09	lb/ton	8.06E-06
						Selenium	3.82E-10	lb/ton	1.27E-06
001-9 (AOS1)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	Ore2TrPrt	NF	66,576,000	tons	Antimony	1.25E-10	lb/ton	4.16E-07
						Arsenic	2.06E-09	lb/ton	6.85E-06
						Beryllium	1.44E-10	lb/ton	4.80E-07
						Cadmium	1.06E-10	lb/ton	3.52E-07
						Chromium	4.13E-09	lb/ton	1.37E-05

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
001-9 (AOS1) (cont'd)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1) (cont'd)	Ore2TrPrt (cont'd)	NF (cont'd)	66,576,000	tons (cont'd)	Cobalt	1.77E-09	lb/ton	5.90E-06
						Lead	1.70E-09	lb/ton	5.64E-06
						Manganese	2.87E-08	lb/ton	9.56E-05
						Mercury	6.04E-11	lb/ton	2.01E-07
						Nickel	2.42E-09	lb/ton	8.06E-06
						Selenium	3.82E-10	lb/ton	1.27E-06
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Ore2TrUnprt	F	53,260,800	tons	Antimony	1.14E-09	lb/ton	3.02E-05
						Arsenic	1.87E-08	lb/ton	4.98E-04
						Beryllium	1.31E-09	lb/ton	3.49E-05
						Cadmium	9.61E-10	lb/ton	2.56E-05
						Chromium	3.75E-08	lb/ton	1.00E-03
						Cobalt	1.61E-08	lb/ton	4.29E-04
						Lead	1.54E-08	lb/ton	4.10E-04
						Manganese	2.61E-07	lb/ton	6.95E-03
						Mercury	5.49E-10	lb/ton	1.46E-05
						Nickel	2.20E-08	lb/ton	5.86E-04
						Selenium	3.47E-09	lb/ton	9.24E-05
001-10 (AOS1)	Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	Ore2TrUnprt	F	13,315,200	tons	Antimony	1.14E-09	lb/ton	7.56E-06
						Arsenic	1.87E-08	lb/ton	1.24E-04
						Beryllium	1.31E-09	lb/ton	8.72E-06
						Cadmium	9.61E-10	lb/ton	6.40E-06
						Chromium	3.75E-08	lb/ton	2.50E-04
						Cobalt	1.61E-08	lb/ton	1.07E-04
						Lead	1.54E-08	lb/ton	1.03E-04
						Manganese	2.61E-07	lb/ton	1.74E-03
						Mercury	5.49E-10	lb/ton	3.66E-06
						Nickel	2.20E-08	lb/ton	1.47E-04
						Selenium	3.47E-09	lb/ton	2.31E-05
001-3 (AOS1)	Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Ore2TrUnprt	F	13,315,200	tons	Antimony	1.14E-09	lb/ton	7.56E-06
						Arsenic	1.87E-08	lb/ton	1.24E-04
						Beryllium	1.31E-09	lb/ton	8.72E-06
						Cadmium	9.61E-10	lb/ton	6.40E-06
						Chromium	3.75E-08	lb/ton	2.50E-04
						Cobalt	1.61E-08	lb/ton	1.07E-04
						Lead	1.54E-08	lb/ton	1.03E-04
						Manganese	2.61E-07	lb/ton	1.74E-03
						Mercury	5.49E-10	lb/ton	3.66E-06
						Nickel	2.20E-08	lb/ton	1.47E-04
						Selenium	3.47E-09	lb/ton	2.31E-05
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	AWindCOS 1/5 (AOS1)	F	6.18	acre-yr	Antimony	1.26E-03	lb/acre-yr	3.91E-06
						Arsenic	2.08E-02	lb/acre-yr	6.43E-05
						Beryllium	1.46E-03	lb/acre-yr	4.51E-06
						Cadmium	1.07E-03	lb/acre-yr	3.31E-06
						Chromium	4.18E-02	lb/acre-yr	1.29E-04
						Cobalt	1.79E-02	lb/acre-yr	5.54E-05
						Lead	1.72E-02	lb/acre-yr	5.30E-05
						Manganese	2.91E-01	lb/acre-yr	8.98E-04
						Mercury	6.11E-04	lb/acre-yr	1.89E-06
						Nickel	2.45E-02	lb/acre-yr	7.57E-05
						Selenium	3.86E-03	lb/acre-yr	1.19E-05
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)									
001-12 (AOS1)	PC1 Dust Collector 1 (AOS1)	SDC1 (AOS1)	NF	7,621,200,000	dscf	Antimony	2.99E-13	lb/dscf	1.14E-06
						Arsenic	4.92E-12	lb/dscf	1.88E-05
						Beryllium	3.45E-13	lb/dscf	1.31E-06

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
001-12 (AOS1) (cont'd)	PC1 Dust Collector 1 (AOS1) (cont'd)	SDC1 (AOS1) (cont'd)	NF (cont'd)	7,621,200,000	dscf (cont'd)	Cadmium	2.53E-13	lb/dscf	9.64E-07
						Chromium	9.88E-12	lb/dscf	3.77E-05
						Cobalt	4.24E-12	lb/dscf	1.62E-05
						Lead	4.06E-12	lb/dscf	1.55E-05
						Manganese	6.87E-11	lb/dscf	2.62E-04
						Mercury	1.45E-13	lb/dscf	5.51E-07
						Nickel	5.80E-12	lb/dscf	2.21E-05
						Selenium	9.13E-13	lb/dscf	3.48E-06
001-13 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	SDC2 (AOS1)	NF	8,777,520,000	dscf	Antimony	2.99E-13	lb/dscf	1.31E-06
						Arsenic	4.92E-12	lb/dscf	2.16E-05
						Beryllium	3.45E-13	lb/dscf	1.51E-06
						Cadmium	2.53E-13	lb/dscf	1.11E-06
						Chromium	9.88E-12	lb/dscf	4.34E-05
						Cobalt	4.24E-12	lb/dscf	1.86E-05
						Lead	4.06E-12	lb/dscf	1.78E-05
						Manganese	6.87E-11	lb/dscf	3.02E-04
						Mercury	1.45E-13	lb/dscf	6.34E-07
						Nickel	5.80E-12	lb/dscf	2.54E-05
						Selenium	9.13E-13	lb/dscf	4.01E-06
001-14 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	SDC3 (AOS1)	NF	8,777,520,000	dscf	Antimony	2.99E-13	lb/dscf	1.31E-06
						Arsenic	4.92E-12	lb/dscf	2.16E-05
						Beryllium	3.45E-13	lb/dscf	1.51E-06
						Cadmium	2.53E-13	lb/dscf	1.11E-06
						Chromium	9.88E-12	lb/dscf	4.34E-05
						Cobalt	4.24E-12	lb/dscf	1.86E-05
						Lead	4.06E-12	lb/dscf	1.78E-05
						Manganese	6.87E-11	lb/dscf	3.02E-04
						Mercury	1.45E-13	lb/dscf	6.34E-07
						Nickel	5.80E-12	lb/dscf	2.54E-05
						Selenium	9.13E-13	lb/dscf	4.01E-06
001-15 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	SDC4 (AOS1)	NF	8,777,520,000	dscf	Antimony	2.99E-13	lb/dscf	1.31E-06
						Arsenic	4.92E-12	lb/dscf	2.16E-05
						Beryllium	3.45E-13	lb/dscf	1.51E-06
						Cadmium	2.53E-13	lb/dscf	1.11E-06
						Chromium	9.88E-12	lb/dscf	4.34E-05
						Cobalt	4.24E-12	lb/dscf	1.86E-05
						Lead	4.06E-12	lb/dscf	1.78E-05
						Manganese	6.87E-11	lb/dscf	3.02E-04
						Mercury	1.45E-13	lb/dscf	6.34E-07
						Nickel	5.80E-12	lb/dscf	2.54E-05
						Selenium	9.13E-13	lb/dscf	4.01E-06
001-20 (AOS1)	PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	Ore2TrUnprt	F	70,080,000	tons	Antimony	1.14E-09	lb/ton	3.98E-05
						Arsenic	1.87E-08	lb/ton	6.55E-04
						Beryllium	1.31E-09	lb/ton	4.59E-05
						Cadmium	9.61E-10	lb/ton	3.37E-05
						Chromium	3.75E-08	lb/ton	1.32E-03
						Cobalt	1.61E-08	lb/ton	5.64E-04
						Lead	1.54E-08	lb/ton	5.40E-04
						Manganese	2.61E-07	lb/ton	9.15E-03
						Mercury	5.49E-10	lb/ton	1.92E-05
						Nickel	2.20E-08	lb/ton	7.71E-04
						Selenium	3.47E-09	lb/ton	1.22E-04
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	AWindCOS6 (AOS1)	F	3.04	acre-yr	Antimony	1.26E-03	lb/acre-yr	1.92E-06
						Arsenic	2.08E-02	lb/acre-yr	3.16E-05

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
027-7 (AOS1) (cont'd)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1) (cont'd)	AWindCOS 6 (AOS1) (cont'd)	F (cont'd)	3.04	acre-yr (cont'd)	Beryllium	1.46E-03	lb/acre-yr	2.22E-06
						Cadmium	1.07E-03	lb/acre-yr	1.63E-06
						Chromium	4.18E-02	lb/acre-yr	6.35E-05
						Cobalt	1.79E-02	lb/acre-yr	2.73E-05
						Lead	1.72E-02	lb/acre-yr	2.61E-05
						Manganese	2.91E-01	lb/acre-yr	4.42E-04
						Mercury	6.11E-04	lb/acre-yr	9.29E-07
						Nickel	2.45E-02	lb/acre-yr	3.73E-05
						Selenium	3.86E-03	lb/acre-yr	5.87E-06
Sycamore Milling Operations (AOS1)									
002-7 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	SDC5 (AOS1)	NF	11,563,200,000	dscf	Antimony	2.99E-13	lb/dscf	1.73E-06
						Arsenic	4.92E-12	lb/dscf	2.85E-05
						Beryllium	3.45E-13	lb/dscf	1.99E-06
						Cadmium	2.53E-13	lb/dscf	1.46E-06
						Chromium	9.88E-12	lb/dscf	5.71E-05
						Cobalt	4.24E-12	lb/dscf	2.45E-05
						Lead	4.06E-12	lb/dscf	2.35E-05
						Manganese	6.87E-11	lb/dscf	3.97E-04
						Mercury	1.45E-13	lb/dscf	8.36E-07
						Nickel	5.80E-12	lb/dscf	3.35E-05
						Selenium	9.13E-13	lb/dscf	5.28E-06
002-8 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	SDC6 (AOS1)	NF	11,563,200,000	dscf	Antimony	2.99E-13	lb/dscf	1.73E-06
						Arsenic	4.92E-12	lb/dscf	2.85E-05
						Beryllium	3.45E-13	lb/dscf	1.99E-06
						Cadmium	2.53E-13	lb/dscf	1.46E-06
						Chromium	9.88E-12	lb/dscf	5.71E-05
						Cobalt	4.24E-12	lb/dscf	2.45E-05
						Lead	4.06E-12	lb/dscf	2.35E-05
						Manganese	6.87E-11	lb/dscf	3.97E-04
						Mercury	1.45E-13	lb/dscf	8.36E-07
						Nickel	5.80E-12	lb/dscf	3.35E-05
						Selenium	9.13E-13	lb/dscf	5.28E-06
002-9 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	SDC7 (AOS1)	NF	12,088,800,000	dscf	Antimony	2.99E-13	lb/dscf	1.81E-06
						Arsenic	4.92E-12	lb/dscf	2.98E-05
						Beryllium	3.45E-13	lb/dscf	2.09E-06
						Cadmium	2.53E-13	lb/dscf	1.53E-06
						Chromium	9.88E-12	lb/dscf	5.97E-05
						Cobalt	4.24E-12	lb/dscf	2.56E-05
						Lead	4.06E-12	lb/dscf	2.45E-05
						Manganese	6.87E-11	lb/dscf	4.15E-04
						Mercury	1.45E-13	lb/dscf	8.74E-07
						Nickel	5.80E-12	lb/dscf	3.50E-05
						Selenium	9.13E-13	lb/dscf	5.52E-06
002-10 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	SDC8 (AOS1)	NF	14,191,200,000	dscf	Antimony	2.99E-13	lb/dscf	2.12E-06
						Arsenic	4.92E-12	lb/dscf	3.49E-05
						Beryllium	3.45E-13	lb/dscf	2.45E-06
						Cadmium	2.53E-13	lb/dscf	1.80E-06
						Chromium	9.88E-12	lb/dscf	7.01E-05
						Cobalt	4.24E-12	lb/dscf	3.01E-05
						Lead	4.06E-12	lb/dscf	2.88E-05
						Manganese	6.87E-11	lb/dscf	4.88E-04
						Mercury	1.45E-13	lb/dscf	1.03E-06
						Nickel	5.80E-12	lb/dscf	4.11E-05
						Selenium	9.13E-13	lb/dscf	6.48E-06

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
002-11 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	SDC9 (AOS1)	NF	13,140,000,000	dscf	Antimony	2.99E-13	lb/dscf	1.96E-06
						Arsenic	4.92E-12	lb/dscf	3.23E-05
						Beryllium	3.45E-13	lb/dscf	2.27E-06
						Cadmium	2.53E-13	lb/dscf	1.66E-06
						Chromium	9.88E-12	lb/dscf	6.49E-05
						Cobalt	4.24E-12	lb/dscf	2.79E-05
						Lead	4.06E-12	lb/dscf	2.67E-05
						Manganese	6.87E-11	lb/dscf	4.52E-04
						Mercury	1.45E-13	lb/dscf	9.50E-07
						Nickel	5.80E-12	lb/dscf	3.81E-05
						Selenium	9.13E-13	lb/dscf	6.00E-06
002-12 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	SDC10 (AOS1)	NF	5,256,000,000	dscf	Antimony	2.99E-13	lb/dscf	7.86E-07
						Arsenic	4.92E-12	lb/dscf	1.29E-05
						Beryllium	3.45E-13	lb/dscf	9.07E-07
						Cadmium	2.53E-13	lb/dscf	6.65E-07
						Chromium	9.88E-12	lb/dscf	2.60E-05
						Cobalt	4.24E-12	lb/dscf	1.11E-05
						Lead	4.06E-12	lb/dscf	1.07E-05
						Manganese	6.87E-11	lb/dscf	1.81E-04
						Mercury	1.45E-13	lb/dscf	3.80E-07
						Nickel	5.80E-12	lb/dscf	1.52E-05
						Selenium	9.13E-13	lb/dscf	2.40E-06
002-13 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	SDC11 (AOS1)	NF	5,256,000,000	dscf	Antimony	2.99E-13	lb/dscf	7.86E-07
						Arsenic	4.92E-12	lb/dscf	1.29E-05
						Beryllium	3.45E-13	lb/dscf	9.07E-07
						Cadmium	2.53E-13	lb/dscf	6.65E-07
						Chromium	9.88E-12	lb/dscf	2.60E-05
						Cobalt	4.24E-12	lb/dscf	1.11E-05
						Lead	4.06E-12	lb/dscf	1.07E-05
						Manganese	6.87E-11	lb/dscf	1.81E-04
						Mercury	1.45E-13	lb/dscf	3.80E-07
						Nickel	5.80E-12	lb/dscf	1.52E-05
						Selenium	9.13E-13	lb/dscf	2.40E-06
Sycamore Bulk and Molybdenum Flotation Operations (AOS1)									
044-2 (AOS1)	Sycamore Bulk and Molybdenum Flotation Equipment	MFE	F	517,716	tons	Benzene	8.67E-06	lb/ton	2.24E-03
						Ethylbenzene	1.46E-05	lb/ton	3.78E-03
						Hexane	1.83E-06	lb/ton	4.72E-04
						Toluene	1.04E-04	lb/ton	2.70E-02
						m-Xylene	2.72E-04	lb/ton	7.05E-02
Sycamore Concentrate Handling Operations (AOS1)									
006-11 (AOS1)	Copper Concentrate Filters 1/2 (AOS1) to Copper Concentrate Filter Drop Storage (AOS1)	CCTrPrt	F	499,320	tons	Antimony	1.14E-08	lb/ton	2.85E-06
						Arsenic	1.23E-08	lb/ton	3.08E-06
						Beryllium	2.37E-10	lb/ton	5.91E-08
						Cadmium	8.88E-10	lb/ton	2.22E-07
						Chromium	4.93E-10	lb/ton	1.23E-07
						Cobalt	2.35E-09	lb/ton	5.86E-07
						Lead	1.73E-08	lb/ton	4.31E-06
						Manganese	1.05E-09	lb/ton	2.61E-07
						Mercury	1.58E-10	lb/ton	3.95E-08
						Nickel	2.25E-09	lb/ton	5.61E-07
						Selenium	3.91E-09	lb/ton	9.75E-07
006-12 (AOS1)	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader	CCTrPrt	F	499,320	tons	Antimony	1.14E-08	lb/ton	2.85E-06
						Arsenic	1.23E-08	lb/ton	3.08E-06
						Beryllium	2.37E-10	lb/ton	5.91E-08

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
006-12 (AOS1) (cont'd)	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader (cont'd)	CCTrPrt (cont'd)	F (cont'd)	499,320	tons (cont'd)	Cadmium	8.88E-10	lb/ton	2.22E-07
						Chromium	4.93E-10	lb/ton	1.23E-07
						Cobalt	2.35E-09	lb/ton	5.86E-07
						Lead	1.73E-08	lb/ton	4.31E-06
						Manganese	1.05E-09	lb/ton	2.61E-07
						Mercury	1.58E-10	lb/ton	3.95E-08
						Nickel	2.25E-09	lb/ton	5.61E-07
						Selenium	3.91E-09	lb/ton	9.75E-07
006-13 (AOS1)	Copper Concentrate Loadout Storage (AOS1) to Trucks via Front-End Loader	CCTrPrt	F	499,320	tons	Antimony	1.14E-08	lb/ton	2.85E-06
						Arsenic	1.23E-08	lb/ton	3.08E-06
						Beryllium	2.37E-10	lb/ton	5.91E-08
						Cadmium	8.88E-10	lb/ton	2.22E-07
						Chromium	4.93E-10	lb/ton	1.23E-07
						Cobalt	2.35E-09	lb/ton	5.86E-07
						Lead	1.73E-08	lb/ton	4.31E-06
						Manganese	1.05E-09	lb/ton	2.61E-07
						Mercury	1.58E-10	lb/ton	3.95E-08
						Nickel	2.25E-09	lb/ton	5.61E-07
						Selenium	3.91E-09	lb/ton	9.75E-07
027-8 (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1)	AWindSCC (AOS1)	F	0.30	acre-yr	Antimony	8.70E+00	lb/acre-yr	3.26E-04
						Arsenic	9.40E+00	lb/acre-yr	3.53E-04
						Beryllium	1.80E-01	lb/acre-yr	6.76E-06
						Cadmium	6.76E-01	lb/acre-yr	2.53E-05
						Chromium	3.75E-01	lb/acre-yr	1.41E-05
						Cobalt	1.79E+00	lb/acre-yr	6.70E-05
						Lead	1.32E+01	lb/acre-yr	4.93E-04
						Manganese	7.96E-01	lb/acre-yr	2.99E-05
						Mercury	1.21E-01	lb/acre-yr	4.52E-06
						Nickel	1.71E+00	lb/acre-yr	6.42E-05
						Selenium	2.97E+00	lb/acre-yr	1.12E-04
052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	MDWSS (AOS1)	NF	8,760	hours	Antimony	3.04E-05	lb/hr	1.33E-04
						Arsenic	9.89E-06	lb/hr	4.33E-05
						Beryllium	6.31E-07	lb/hr	2.76E-06
						Cadmium	2.36E-06	lb/hr	1.04E-05
						Chromium	1.31E-06	lb/hr	5.75E-06
						Cobalt	6.25E-06	lb/hr	2.74E-05
						Lead	9.67E-06	lb/hr	4.23E-05
						Manganese	2.79E-06	lb/hr	1.22E-05
						Mercury	4.22E-07	lb/hr	1.85E-06
						Nickel	5.99E-06	lb/hr	2.62E-05
						Selenium	1.61E-05	lb/hr	7.04E-05
						Benzene	3.48E-03	lb/hr	1.52E-02
						Ethylbenzene	5.86E-03	lb/hr	2.56E-02
						Hexane	7.32E-04	lb/hr	3.21E-03
						Toluene	4.19E-02	lb/hr	1.84E-01
						m-Xylene	1.09E-01	lb/hr	4.79E-01
052-3 (AOS1)	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1)	MC4TrPrt	NF	18,396	tons	Antimony	4.83E-07	lb/ton	4.44E-06
						Arsenic	1.57E-07	lb/ton	1.45E-06
						Beryllium	1.00E-08	lb/ton	9.21E-08
						Cadmium	3.76E-08	lb/ton	3.45E-07
						Chromium	2.09E-08	lb/ton	1.92E-07
						Cobalt	9.93E-08	lb/ton	9.14E-07
						Lead	1.54E-07	lb/ton	1.41E-06
						Manganese	4.42E-08	lb/ton	4.07E-07

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
052-3 (AOS1) (cont'd)	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1) (cont'd)	MC4TrPrt (cont'd)	NF (cont'd)	18,396	tons (cont'd)	Mercury	6.70E-09	lb/ton	6.16E-08
						Nickel	9.51E-08	lb/ton	8.75E-07
						Selenium	2.55E-07	lb/ton	2.35E-06
052-4 (AOS1)	Dried Molybdenum Concentrate Storage Bin (AOS1) to Molybdenum Concentrate Bagging System (AOS1)	MC4TrPrt	F	18,396	tons	Antimony	4.83E-07	lb/ton	4.44E-06
						Arsenic	1.57E-07	lb/ton	1.45E-06
						Beryllium	1.00E-08	lb/ton	9.21E-08
						Cadmium	3.76E-08	lb/ton	3.45E-07
						Chromium	2.09E-08	lb/ton	1.92E-07
						Cobalt	9.93E-08	lb/ton	9.14E-07
						Lead	1.54E-07	lb/ton	1.41E-06
						Manganese	4.42E-08	lb/ton	4.07E-07
						Mercury	6.70E-09	lb/ton	6.16E-08
						Nickel	9.51E-08	lb/ton	8.75E-07
						Selenium	2.55E-07	lb/ton	2.35E-06
Sycamore Lime and Other Regent Operations (AOS1)									
053-2 (AOS1)	Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	SXMS	NF	213	tons	Carbon Disulfide	1.23E+01	lb/ton	1.31E+00
Sycamore Emergency ICE (AOS1)									
049-59 (AOS1)	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	Tier3-450/560-D	NF	304,500	hp-hr	Benzene	5.43E-06	lb/hp-hr	8.27E-04
						Toluene	1.97E-06	lb/hp-hr	2.99E-04
						Xylenes	1.35E-06	lb/hp-hr	2.06E-04
						Formaldehyde	5.52E-07	lb/hp-hr	8.41E-05
						Acetaldehyde	1.76E-07	lb/hp-hr	2.69E-05
						Acrolein	5.52E-08	lb/hp-hr	8.40E-06
						Naphthalene	9.10E-07	lb/hp-hr	1.39E-04
						Acenaphthylene	6.46E-08	lb/hp-hr	9.84E-06
						Acenaphthene	3.28E-08	lb/hp-hr	4.99E-06
						Fluorene	8.96E-08	lb/hp-hr	1.36E-05
						Phenanthrene	2.86E-07	lb/hp-hr	4.35E-05
						Anthracene	8.61E-09	lb/hp-hr	1.31E-06
						Fluoranthene	2.82E-08	lb/hp-hr	4.29E-06
						Pyrene	2.60E-08	lb/hp-hr	3.95E-06
						Benz(a)anthracene	4.35E-09	lb/hp-hr	6.63E-07
						Chrysene	1.07E-08	lb/hp-hr	1.63E-06
						Benzo(b)fluoranthene	7.77E-09	lb/hp-hr	1.18E-06
						Benzo(k)fluoranthene	1.53E-09	lb/hp-hr	2.32E-07
						Benzo(a)pyrene	1.80E-09	lb/hp-hr	2.74E-07
						Indeno(1,2,3-cd)pyrene	2.90E-09	lb/hp-hr	4.41E-07
						Dibenz(a,h)anthracene	2.42E-09	lb/hp-hr	3.69E-07
						Benzo(g,h,i)perylene	3.89E-09	lb/hp-hr	5.93E-07
049-60 (AOS1)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	Tier2-560-D	NF	381,000	hp-hr	Benzene	5.43E-06	lb/hp-hr	1.03E-03
						Toluene	1.97E-06	lb/hp-hr	3.75E-04
						Xylenes	1.35E-06	lb/hp-hr	2.57E-04
						Formaldehyde	5.52E-07	lb/hp-hr	1.05E-04
						Acetaldehyde	1.76E-07	lb/hp-hr	3.36E-05
						Acrolein	5.52E-08	lb/hp-hr	1.05E-05
						Naphthalene	9.10E-07	lb/hp-hr	1.73E-04
						Acenaphthylene	6.46E-08	lb/hp-hr	1.23E-05
						Acenaphthene	3.28E-08	lb/hp-hr	6.24E-06
						Fluorene	8.96E-08	lb/hp-hr	1.71E-05
						Phenanthrene	2.86E-07	lb/hp-hr	5.44E-05
						Anthracene	8.61E-09	lb/hp-hr	1.64E-06
						Fluoranthene	2.82E-08	lb/hp-hr	5.37E-06

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
049-60 (AOS1) (cont'd)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine) (cont'd)	Tier2-560-D (cont'd)	NF (cont'd)	381,000	hp-hr (cont'd)	Pyrene	2.60E-08	lb/hp-hr	4.95E-06
						Benz(a)anthracene	4.35E-09	lb/hp-hr	8.29E-07
						Chrysene	1.07E-08	lb/hp-hr	2.04E-06
						Benzo(b)fluoranthene	7.77E-09	lb/hp-hr	1.48E-06
						Benzo(k)fluoranthene	1.53E-09	lb/hp-hr	2.91E-07
						Benzo(a)pyrene	1.80E-09	lb/hp-hr	3.43E-07
						Indeno(1,2,3-cd)pyrene	2.90E-09	lb/hp-hr	5.52E-07
						Dibenz(a,h)anthracene	2.42E-09	lb/hp-hr	4.61E-07
						Benzo(g,h,i)perylene	3.89E-09	lb/hp-hr	7.41E-07
049-61 (AOS1)	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	SEG-P	NF	42,350	hp-hr	1,1,2,2-Tetrachloroethane	2.66E-07	lb/hp-hr	5.63E-06
						1,1,2-Trichloroethane	1.61E-07	lb/hp-hr	3.40E-06
						1,1-Dichloroethane	1.19E-07	lb/hp-hr	2.51E-06
						1,2-Dichloroethane	1.19E-07	lb/hp-hr	2.51E-06
						1,2-Dichloropropane	1.37E-07	lb/hp-hr	2.89E-06
						1,3-Butadiene	6.96E-06	lb/hp-hr	1.47E-04
						1,3-Dichloropropene	1.33E-07	lb/hp-hr	2.82E-06
						Acetaldehyde	2.93E-05	lb/hp-hr	6.20E-04
						Acrolein	2.76E-05	lb/hp-hr	5.85E-04
						Benzene	1.66E-05	lb/hp-hr	3.51E-04
						Carbon Tetrachloride	1.86E-07	lb/hp-hr	3.94E-06
						Chlorobenzene	1.35E-07	lb/hp-hr	2.87E-06
						Chloroform	1.44E-07	lb/hp-hr	3.05E-06
						Ethylbenzene	2.60E-07	lb/hp-hr	5.51E-06
						Ethylene Dibromide	2.24E-07	lb/hp-hr	4.74E-06
						Formaldehyde	2.15E-04	lb/hp-hr	4.56E-03
						Methanol	3.21E-05	lb/hp-hr	6.80E-04
						Methylene Chloride	4.33E-07	lb/hp-hr	9.16E-06
						Naphthalene	1.02E-06	lb/hp-hr	2.16E-05
						Polycyclic Aromatic Hydrocarbons	1.48E-06	lb/hp-hr	3.13E-05
						Styrene	1.25E-07	lb/hp-hr	2.65E-06
						Toluene	5.86E-06	lb/hp-hr	1.24E-04
						Vinyl Chloride	7.54E-08	lb/hp-hr	1.60E-06
						Xylene	2.05E-06	lb/hp-hr	4.34E-05
049-62 (AOS1)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	SEG-P	NF	42,350	hp-hr	1,1,2,2-Tetrachloroethane	2.66E-07	lb/hp-hr	5.63E-06
						1,1,2-Trichloroethane	1.61E-07	lb/hp-hr	3.40E-06
						1,1-Dichloroethane	1.19E-07	lb/hp-hr	2.51E-06
						1,2-Dichloroethane	1.19E-07	lb/hp-hr	2.51E-06
						1,2-Dichloropropane	1.37E-07	lb/hp-hr	2.89E-06
						1,3-Butadiene	6.96E-06	lb/hp-hr	1.47E-04
						1,3-Dichloropropene	1.33E-07	lb/hp-hr	2.82E-06
						Acetaldehyde	2.93E-05	lb/hp-hr	6.20E-04
						Acrolein	2.76E-05	lb/hp-hr	5.85E-04
						Benzene	1.66E-05	lb/hp-hr	3.51E-04
						Carbon Tetrachloride	1.86E-07	lb/hp-hr	3.94E-06
						Chlorobenzene	1.35E-07	lb/hp-hr	2.87E-06
						Chloroform	1.44E-07	lb/hp-hr	3.05E-06
						Ethylbenzene	2.60E-07	lb/hp-hr	5.51E-06
						Ethylene Dibromide	2.24E-07	lb/hp-hr	4.74E-06
						Formaldehyde	2.15E-04	lb/hp-hr	4.56E-03
						Methanol	3.21E-05	lb/hp-hr	6.80E-04
						Methylene Chloride	4.33E-07	lb/hp-hr	9.16E-06
						Naphthalene	1.02E-06	lb/hp-hr	2.16E-05
						Polycyclic Aromatic Hydrocarbons	1.48E-06	lb/hp-hr	3.13E-05
						Styrene	1.25E-07	lb/hp-hr	2.65E-06

Table G.10 Annual HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	HAP Information			Emissions (tpy)
						Name	EF	EF Units	
049-62 (AOS1) (cont'd)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine) (cont'd)	SEG-P (cont'd)	NF (cont'd)	42,350	hp-hr (cont'd)	Toluene	5.86E-06	lb/hp-hr	1.24E-04
						Vinyl Chloride	7.54E-08	lb/hp-hr	1.60E-06
						Xylene	2.05E-06	lb/hp-hr	4.34E-05
Total of Non-Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:									2.05E+00
Total of Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:									2.27E+00
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:									4.32E+00
Total Change in Non-Fugitive Emissions:									**2.04E+00**
Total Change in Fugitive Emissions:									**1.64E+00**
Total Change in Non-Fugitive and Fugitive Emissions:									**3.68E+00**
Total Change in FMBI Facility-Wide PTE (includes all non-fugitive and fugitive emissions):									**3.68E+00**

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
Affected Emissions Units - Design of AOS1 in Class II Air Quality Permit #77414									
Mining Operations (AOS1)									
026-3 (AOS1)	Drilling (AOS1)	Drilling (AOS1-C)	F	200	holes	Antimony	3.12E-06	lb/hole	6.24E-04
						Arsenic	1.01E-05	lb/hole	2.02E-03
						Beryllium	1.07E-06	lb/hole	2.13E-04
						Cadmium	3.86E-07	lb/hole	7.73E-05
						Chromium	2.31E-05	lb/hole	4.62E-03
						Cobalt	1.11E-05	lb/hole	2.22E-03
						Lead	1.65E-05	lb/hole	3.30E-03
						Manganese	1.84E-04	lb/hole	3.68E-02
						Mercury	1.82E-07	lb/hole	3.63E-05
						Nickel	1.54E-05	lb/hole	3.08E-03
						Selenium	1.63E-06	lb/hole	3.25E-04
026-2 (AOS1)	Blasting (AOS1)	HBlasting (AOS1-C)	F	1	blasts	POM	5.67E-03	lb/blast	5.67E-03
						Formaldehyde	1.05E-01	lb/blast	1.05E-01
						Antimony	2.61E-03	lb/blast	2.61E-03
						Arsenic	9.38E-03	lb/blast	9.38E-03
						Beryllium	1.59E-03	lb/blast	1.59E-03
						Cadmium	1.02E-03	lb/blast	1.02E-03
						Chromium	2.00E-02	lb/blast	2.00E-02
						Cobalt	9.29E-03	lb/blast	9.29E-03
						Lead	1.59E-02	lb/blast	1.59E-02
						Manganese	1.55E-01	lb/blast	1.55E-01
						Mercury	8.54E-04	lb/blast	8.54E-04
						Nickel	1.36E-02	lb/blast	1.36E-02
						Selenium	4.87E-03	lb/blast	4.87E-03
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	HTravel (AOS1-C)	F	473	VMT	Antimony	2.36E-05	lb/VMT	1.12E-03
						Arsenic	7.66E-05	lb/VMT	3.62E-03
						Beryllium	8.08E-06	lb/VMT	3.82E-04
						Cadmium	2.92E-06	lb/VMT	1.38E-04
						Chromium	1.75E-04	lb/VMT	8.25E-03
						Cobalt	8.42E-05	lb/VMT	3.98E-03
						Lead	1.25E-04	lb/VMT	5.91E-03
						Manganese	1.39E-03	lb/VMT	6.57E-02
						Mercury	1.38E-06	lb/VMT	6.50E-05
						Nickel	1.16E-04	lb/VMT	5.50E-03
						Selenium	1.23E-05	lb/VMT	5.81E-04
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	HTravel (AOS1-C)	F	158	VMT	Antimony	2.36E-05	lb/VMT	3.72E-04
						Arsenic	7.66E-05	lb/VMT	1.21E-03
						Beryllium	8.08E-06	lb/VMT	1.27E-04
						Cadmium	2.92E-06	lb/VMT	4.61E-05
						Chromium	1.75E-04	lb/VMT	2.75E-03
						Cobalt	8.42E-05	lb/VMT	1.33E-03
						Lead	1.25E-04	lb/VMT	1.97E-03
						Manganese	1.39E-03	lb/VMT	2.19E-02
						Mercury	1.38E-06	lb/VMT	2.17E-05
						Nickel	1.16E-04	lb/VMT	1.83E-03
						Selenium	1.23E-05	lb/VMT	1.94E-04
023-3 (AOS1)	Other Vehicle Travel (AOS1)	HTravel (AOS1-C)	F	486	VMT	Antimony	2.36E-05	lb/VMT	1.15E-03
						Arsenic	7.66E-05	lb/VMT	3.72E-03
						Beryllium	8.08E-06	lb/VMT	3.93E-04
						Cadmium	2.92E-06	lb/VMT	1.42E-04
						Chromium	1.75E-04	lb/VMT	8.49E-03
						Cobalt	8.42E-05	lb/VMT	4.09E-03

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information Name	EF	EF Units	Emissions (lb/hr)
023-3 (AOS1) (cont'd)	Other Vehicle Travel (AOS1) (cont'd)	HTravel (AOS1-C) (cont'd)	F (cont'd)	486	VMT (cont'd)	Lead	1.25E-04	lb/VMT	6.08E-03
						Manganese	1.39E-03	lb/VMT	6.76E-02
						Mercury	1.38E-06	lb/VMT	6.69E-05
						Nickel	1.16E-04	lb/VMT	5.66E-03
						Selenium	1.23E-05	lb/VMT	5.98E-04
023-1 (AOS1)	Dozer Operation (AOS1)	Dozer (AOS1-C)	F	16.00	hours	Antimony	6.43E-06	lb/hr	1.03E-04
						Arsenic	2.08E-05	lb/hr	3.33E-04
						Beryllium	2.20E-06	lb/hr	3.52E-05
						Cadmium	7.95E-07	lb/hr	1.27E-05
						Chromium	4.75E-05	lb/hr	7.60E-04
						Cobalt	2.29E-05	lb/hr	3.66E-04
						Lead	3.40E-05	lb/hr	5.44E-04
						Manganese	3.78E-04	lb/hr	6.06E-03
						Mercury	3.74E-07	lb/hr	5.99E-06
						Nickel	3.17E-05	lb/hr	5.07E-04
						Selenium	3.35E-06	lb/hr	5.35E-05
023-2 (AOS1)	Road Grader Operation (AOS1)	Grader (AOS1-C)	F	30.00	VMT	Antimony	4.41E-06	lb/VMT	1.32E-05
						Arsenic	1.43E-05	lb/VMT	4.29E-05
						Beryllium	1.51E-06	lb/VMT	4.52E-06
						Cadmium	5.46E-07	lb/VMT	1.64E-06
						Chromium	3.26E-05	lb/VMT	9.78E-05
						Cobalt	1.57E-05	lb/VMT	4.71E-05
						Lead	2.33E-05	lb/VMT	7.00E-05
						Manganese	2.60E-04	lb/VMT	7.79E-04
						Mercury	2.57E-07	lb/VMT	7.70E-07
						Nickel	2.17E-05	lb/VMT	6.52E-05
						Selenium	2.30E-06	lb/VMT	6.89E-06
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Ore1TrUnprt (AOS1-C)	F	30,515	tons	Antimony	4.99E-09	lb/ton	1.52E-04
						Arsenic	1.62E-08	lb/ton	4.94E-04
						Beryllium	1.71E-09	lb/ton	5.21E-05
						Cadmium	6.18E-10	lb/ton	1.89E-05
						Chromium	3.69E-08	lb/ton	1.13E-03
						Cobalt	1.78E-08	lb/ton	5.43E-04
						Lead	2.64E-08	lb/ton	8.07E-04
						Manganese	2.94E-07	lb/ton	8.97E-03
						Mercury	2.91E-10	lb/ton	8.87E-06
						Nickel	2.46E-08	lb/ton	7.51E-04
						Selenium	2.60E-09	lb/ton	7.94E-05
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Ore2TrUnprt	F	5,865	tons	Antimony	1.14E-09	lb/ton	6.66E-06
						Arsenic	1.87E-08	lb/ton	1.10E-04
						Beryllium	1.31E-09	lb/ton	7.68E-06
						Cadmium	9.61E-10	lb/ton	5.64E-06
						Chromium	3.75E-08	lb/ton	2.20E-04
						Cobalt	1.61E-08	lb/ton	9.45E-05
						Lead	1.54E-08	lb/ton	9.04E-05
						Manganese	2.61E-07	lb/ton	1.53E-03
						Mercury	5.49E-10	lb/ton	3.22E-06
						Nickel	2.20E-08	lb/ton	1.29E-04
						Selenium	3.47E-09	lb/ton	2.03E-05
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Ore2TrUnprt	F	7,000	tons	Antimony	1.14E-09	lb/ton	7.95E-06
						Arsenic	1.87E-08	lb/ton	1.31E-04
						Beryllium	1.31E-09	lb/ton	9.17E-06
						Cadmium	9.61E-10	lb/ton	6.73E-06
						Chromium	3.75E-08	lb/ton	2.63E-04

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
001-7 (AOS1) (cont'd)	Unloading Ore to Primary Crusher 2 (AOS1) (cont'd)	Ore2TrUnprt (cont'd)	F (cont'd)	7,000	tons (cont'd)	Cobalt	1.61E-08	lb/ton	1.13E-04
						Lead	1.54E-08	lb/ton	1.08E-04
						Manganese	2.61E-07	lb/ton	1.83E-03
						Mercury	5.49E-10	lb/ton	3.84E-06
						Nickel	2.20E-08	lb/ton	1.54E-04
						Selenium	3.47E-09	lb/ton	2.43E-05
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Ore3TrUnprt	F	3,433	tons	Antimony	0.00E+00	lb/ton	0.00E+00
						Arsenic	1.50E-09	lb/ton	5.14E-06
						Beryllium	3.44E-09	lb/ton	1.18E-05
						Cadmium	0.00E+00	lb/ton	0.00E+00
						Chromium	5.99E-09	lb/ton	2.06E-05
						Cobalt	1.07E-08	lb/ton	3.68E-05
						Lead	1.60E-08	lb/ton	5.48E-05
						Manganese	2.28E-07	lb/ton	7.82E-04
						Mercury	0.00E+00	lb/ton	0.00E+00
						Nickel	8.73E-09	lb/ton	3.00E-05
						Selenium	0.00E+00	lb/ton	0.00E+00
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Ore4TrUnprt	F	14,217	tons	Antimony	8.24E-09	lb/ton	1.17E-04
						Arsenic	1.84E-08	lb/ton	2.62E-04
						Beryllium	1.50E-09	lb/ton	2.13E-05
						Cadmium	5.86E-10	lb/ton	8.34E-06
						Chromium	4.41E-08	lb/ton	6.27E-04
						Cobalt	2.04E-08	lb/ton	2.90E-04
						Lead	3.48E-08	lb/ton	4.94E-04
						Manganese	3.28E-07	lb/ton	4.66E-03
						Mercury	2.25E-10	lb/ton	3.19E-06
						Nickel	2.98E-08	lb/ton	4.24E-04
						Selenium	2.77E-09	lb/ton	3.94E-05
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)									
001-5 (AOS1)	Dust Collector C51 (AOS1)	C51 (AOS1)	NF	900,000	dscf	Antimony	1.76E-12	lb/dscf	1.58E-06
						Arsenic	2.89E-11	lb/dscf	2.60E-05
						Beryllium	2.03E-12	lb/dscf	1.82E-06
						Cadmium	1.49E-12	lb/dscf	1.34E-06
						Chromium	5.80E-11	lb/dscf	5.22E-05
						Cobalt	2.49E-11	lb/dscf	2.24E-05
						Lead	2.38E-11	lb/dscf	2.14E-05
						Manganese	4.03E-10	lb/dscf	3.63E-04
						Mercury	8.49E-13	lb/dscf	7.64E-07
						Nickel	3.40E-11	lb/dscf	3.06E-05
						Selenium	5.36E-12	lb/dscf	4.83E-06
001-16 (AOS1)	Dust Collector AE-001 (AOS1)	AE-001 (AOS1)	NF	1,200,000	dscf	Antimony	3.38E-13	lb/dscf	4.06E-07
						Arsenic	5.56E-12	lb/dscf	6.68E-06
						Beryllium	3.90E-13	lb/dscf	4.68E-07
						Cadmium	2.86E-13	lb/dscf	3.43E-07
						Chromium	1.12E-11	lb/dscf	1.34E-05
						Cobalt	4.80E-12	lb/dscf	5.75E-06
						Lead	4.59E-12	lb/dscf	5.50E-06
						Manganese	7.77E-11	lb/dscf	9.32E-05
						Mercury	1.63E-13	lb/dscf	1.96E-07
						Nickel	6.55E-12	lb/dscf	7.86E-06
						Selenium	1.03E-12	lb/dscf	1.24E-06
001-17 (AOS1)	Dust Collector AE-014 (AOS1)	AE-014 (AOS1)	NF	720,000	dscf	Antimony	3.38E-13	lb/dscf	2.43E-07
						Arsenic	5.56E-12	lb/dscf	4.01E-06
						Beryllium	3.90E-13	lb/dscf	2.81E-07

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
001-17 (AOS1) (cont'd)	Dust Collector AE-014 (AOS1) (cont'd)	AE-014 (AOS1) (cont'd)	NF (cont'd)	720,000	dscf (cont'd)	Cadmium	2.86E-13	lb/dscf	2.06E-07
						Chromium	1.12E-11	lb/dscf	8.04E-06
						Cobalt	4.80E-12	lb/dscf	3.45E-06
						Lead	4.59E-12	lb/dscf	3.30E-06
						Manganese	7.77E-11	lb/dscf	5.59E-05
						Mercury	1.63E-13	lb/dscf	1.18E-07
						Nickel	6.55E-12	lb/dscf	4.72E-06
						Selenium	1.03E-12	lb/dscf	7.43E-07
001-18 (AOS1)	Dust Collector AE-015 (AOS1)	AE-015 (AOS1)	NF	720,000	dscf	Antimony	3.38E-13	lb/dscf	2.43E-07
						Arsenic	5.56E-12	lb/dscf	4.01E-06
						Beryllium	3.90E-13	lb/dscf	2.81E-07
						Cadmium	2.86E-13	lb/dscf	2.06E-07
						Chromium	1.12E-11	lb/dscf	8.04E-06
						Cobalt	4.80E-12	lb/dscf	3.45E-06
						Lead	4.59E-12	lb/dscf	3.30E-06
						Manganese	7.77E-11	lb/dscf	5.59E-05
						Mercury	1.63E-13	lb/dscf	1.18E-07
						Nickel	6.55E-12	lb/dscf	4.72E-06
						Selenium	1.03E-12	lb/dscf	7.43E-07
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Ore2TrUnprt	F	7,600	tons	Antimony	1.14E-09	lb/ton	8.63E-06
						Arsenic	1.87E-08	lb/ton	1.42E-04
						Beryllium	1.31E-09	lb/ton	9.96E-06
						Cadmium	9.61E-10	lb/ton	7.30E-06
						Chromium	3.75E-08	lb/ton	2.85E-04
						Cobalt	1.61E-08	lb/ton	1.22E-04
						Lead	1.54E-08	lb/ton	1.17E-04
						Manganese	2.61E-07	lb/ton	1.98E-03
						Mercury	5.49E-10	lb/ton	4.17E-06
						Nickel	2.20E-08	lb/ton	1.67E-04
						Selenium	3.47E-09	lb/ton	2.64E-05
001-19 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Ore2TrUnprt	F	3,965	tons	Antimony	1.14E-09	lb/ton	4.50E-06
						Arsenic	1.87E-08	lb/ton	7.41E-05
						Beryllium	1.31E-09	lb/ton	5.19E-06
						Cadmium	9.61E-10	lb/ton	3.81E-06
						Chromium	3.75E-08	lb/ton	1.49E-04
						Cobalt	1.61E-08	lb/ton	6.39E-05
						Lead	1.54E-08	lb/ton	6.11E-05
						Manganese	2.61E-07	lb/ton	1.03E-03
						Mercury	5.49E-10	lb/ton	2.18E-06
						Nickel	2.20E-08	lb/ton	8.73E-05
						Selenium	3.47E-09	lb/ton	1.38E-05
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	HWindCOS 1/5 (AOS1)	F	6.88	acre-yr	Antimony	1.44E-07	lb/acre-hr	9.93E-07
						Arsenic	2.38E-06	lb/acre-hr	1.63E-05
						Beryllium	1.67E-07	lb/acre-hr	1.15E-06
						Cadmium	1.22E-07	lb/acre-hr	8.40E-07
						Chromium	4.77E-06	lb/acre-hr	3.28E-05
						Cobalt	2.05E-06	lb/acre-hr	1.41E-05
						Lead	1.96E-06	lb/acre-hr	1.35E-05
						Manganese	3.32E-05	lb/acre-hr	2.28E-04
						Mercury	6.98E-08	lb/acre-hr	4.80E-07
						Nickel	2.80E-06	lb/acre-hr	1.92E-05
						Selenium	4.41E-07	lb/acre-hr	3.03E-06

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)									
001-12 (AOS1)	Dust Collector AE-002 (AOS1)	AE-002 (AOS1)	NF	720,000	dscf	Antimony	3.38E-13	lb/dscf	2.43E-07
						Arsenic	5.56E-12	lb/dscf	4.01E-06
						Beryllium	3.90E-13	lb/dscf	2.81E-07
						Cadmium	2.86E-13	lb/dscf	2.06E-07
						Chromium	1.12E-11	lb/dscf	8.04E-06
						Cobalt	4.80E-12	lb/dscf	3.45E-06
						Lead	4.59E-12	lb/dscf	3.30E-06
						Manganese	7.77E-11	lb/dscf	5.59E-05
						Mercury	1.63E-13	lb/dscf	1.18E-07
						Nickel	6.55E-12	lb/dscf	4.72E-06
						Selenium	1.03E-12	lb/dscf	7.43E-07
001-13 (AOS1)	Dust Collector AE-003 (AOS1)	AE-003 (AOS1)	NF	900,000	dscf	Antimony	3.38E-13	lb/dscf	3.04E-07
						Arsenic	5.56E-12	lb/dscf	5.01E-06
						Beryllium	3.90E-13	lb/dscf	3.51E-07
						Cadmium	2.86E-13	lb/dscf	2.57E-07
						Chromium	1.12E-11	lb/dscf	1.01E-05
						Cobalt	4.80E-12	lb/dscf	4.32E-06
						Lead	4.59E-12	lb/dscf	4.13E-06
						Manganese	7.77E-11	lb/dscf	6.99E-05
						Mercury	1.63E-13	lb/dscf	1.47E-07
						Nickel	6.55E-12	lb/dscf	5.90E-06
						Selenium	1.03E-12	lb/dscf	9.29E-07
001-14 (AOS1)	Dust Collector AE-016 (AOS1)	AE-016 (AOS1)	NF	720,000	dscf	Antimony	3.38E-13	lb/dscf	2.43E-07
						Arsenic	5.56E-12	lb/dscf	4.01E-06
						Beryllium	3.90E-13	lb/dscf	2.81E-07
						Cadmium	2.86E-13	lb/dscf	2.06E-07
						Chromium	1.12E-11	lb/dscf	8.04E-06
						Cobalt	4.80E-12	lb/dscf	3.45E-06
						Lead	4.59E-12	lb/dscf	3.30E-06
						Manganese	7.77E-11	lb/dscf	5.59E-05
						Mercury	1.63E-13	lb/dscf	1.18E-07
						Nickel	6.55E-12	lb/dscf	4.72E-06
						Selenium	1.03E-12	lb/dscf	7.43E-07
001-15 (AOS1)	Dust Collector AE-017 (AOS1)	AE-017 (AOS1)	NF	720,000	dscf	Antimony	3.38E-13	lb/dscf	2.43E-07
						Arsenic	5.56E-12	lb/dscf	4.01E-06
						Beryllium	3.90E-13	lb/dscf	2.81E-07
						Cadmium	2.86E-13	lb/dscf	2.06E-07
						Chromium	1.12E-11	lb/dscf	8.04E-06
						Cobalt	4.80E-12	lb/dscf	3.45E-06
						Lead	4.59E-12	lb/dscf	3.30E-06
						Manganese	7.77E-11	lb/dscf	5.59E-05
						Mercury	1.63E-13	lb/dscf	1.18E-07
						Nickel	6.55E-12	lb/dscf	4.72E-06
						Selenium	1.03E-12	lb/dscf	7.43E-07
001-20 (AOS1)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6	Ore2TrUnprt	F	1,900	tons	Antimony	1.14E-09	lb/ton	2.16E-06
						Arsenic	1.87E-08	lb/ton	3.55E-05
						Beryllium	1.31E-09	lb/ton	2.49E-06
						Cadmium	9.61E-10	lb/ton	1.83E-06
						Chromium	3.75E-08	lb/ton	7.13E-05
						Cobalt	1.61E-08	lb/ton	3.06E-05
						Lead	1.54E-08	lb/ton	2.93E-05
						Manganese	2.61E-07	lb/ton	4.96E-04
						Mercury	5.49E-10	lb/ton	1.04E-06

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
001-20 (AOS1) (cont'd)	Radial Stacker C-10 (AOS1) to Coarse Ore Stockpile 6 (cont'd)	Ore2TrUnprt (cont'd)	F (cont'd)	1,900	tons (cont'd)	Nickel	2.20E-08	lb/ton	4.18E-05
						Selenium	3.47E-09	lb/ton	6.59E-06
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	HWindCOS 6 (AOS1)	F	2.34	acre-yr	Antimony	1.44E-07	lb/acre-hr	3.38E-07
						Arsenic	2.38E-06	lb/acre-hr	5.56E-06
						Beryllium	1.67E-07	lb/acre-hr	3.90E-07
						Cadmium	1.22E-07	lb/acre-hr	2.86E-07
						Chromium	4.77E-06	lb/acre-hr	1.12E-05
						Cobalt	2.05E-06	lb/acre-hr	4.79E-06
						Lead	1.96E-06	lb/acre-hr	4.58E-06
						Manganese	3.32E-05	lb/acre-hr	7.76E-05
						Mercury	6.98E-08	lb/acre-hr	1.63E-07
						Nickel	2.80E-06	lb/acre-hr	6.55E-06
						Selenium	4.41E-07	lb/acre-hr	1.03E-06
Sycamore Milling Operations (AOS1)									
002-7 (AOS1)	Dust Collector AE-008 (AOS1)	AE-008 (AOS1)	NF	3,000,000	dscf	Antimony	3.38E-13	lb/dscf	1.01E-06
						Arsenic	5.56E-12	lb/dscf	1.67E-05
						Beryllium	3.90E-13	lb/dscf	1.17E-06
						Cadmium	2.86E-13	lb/dscf	8.58E-07
						Chromium	1.12E-11	lb/dscf	3.35E-05
						Cobalt	4.80E-12	lb/dscf	1.44E-05
						Lead	4.59E-12	lb/dscf	1.38E-05
						Manganese	7.77E-11	lb/dscf	2.33E-04
						Mercury	1.63E-13	lb/dscf	4.90E-07
						Nickel	6.55E-12	lb/dscf	1.97E-05
						Selenium	1.03E-12	lb/dscf	3.10E-06
002-8 (AOS1)	Dust Collector AE-009 (AOS1)	AE-009 (AOS1)	NF	720,000	dscf	Antimony	3.38E-13	lb/dscf	2.43E-07
						Arsenic	5.56E-12	lb/dscf	4.01E-06
						Beryllium	3.90E-13	lb/dscf	2.81E-07
						Cadmium	2.86E-13	lb/dscf	2.06E-07
						Chromium	1.12E-11	lb/dscf	8.04E-06
						Cobalt	4.80E-12	lb/dscf	3.45E-06
						Lead	4.59E-12	lb/dscf	3.30E-06
						Manganese	7.77E-11	lb/dscf	5.59E-05
						Mercury	1.63E-13	lb/dscf	1.18E-07
						Nickel	6.55E-12	lb/dscf	4.72E-06
						Selenium	1.03E-12	lb/dscf	7.43E-07
002-9 (AOS1)	Dust Collector AE-010 (AOS1)	AE-010 (AOS1)	NF	1,200,000	dscf	Antimony	3.38E-13	lb/dscf	4.06E-07
						Arsenic	5.56E-12	lb/dscf	6.68E-06
						Beryllium	3.90E-13	lb/dscf	4.68E-07
						Cadmium	2.86E-13	lb/dscf	3.43E-07
						Chromium	1.12E-11	lb/dscf	1.34E-05
						Cobalt	4.80E-12	lb/dscf	5.75E-06
						Lead	4.59E-12	lb/dscf	5.50E-06
						Manganese	7.77E-11	lb/dscf	9.32E-05
						Mercury	1.63E-13	lb/dscf	1.96E-07
						Nickel	6.55E-12	lb/dscf	7.86E-06
						Selenium	1.03E-12	lb/dscf	1.24E-06
002-10 (AOS1)	Dust Collector AE-011 (AOS1)	AE-011 (AOS1)	NF	720,000	dscf	Antimony	3.38E-13	lb/dscf	2.43E-07
						Arsenic	5.56E-12	lb/dscf	4.01E-06
						Beryllium	3.90E-13	lb/dscf	2.81E-07
						Cadmium	2.86E-13	lb/dscf	2.06E-07
						Chromium	1.12E-11	lb/dscf	8.04E-06
						Cobalt	4.80E-12	lb/dscf	3.45E-06
						Lead	4.59E-12	lb/dscf	3.30E-06

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
002-10 (AOS1) (cont'd)	Dust Collector AE-011 (AOS1) (cont'd)	AE-011 (AOS1) (cont'd)	NF (cont'd)	720,000	dscf (cont'd)	Manganese	7.77E-11	lb/dscf	5.59E-05
						Mercury	1.63E-13	lb/dscf	1.18E-07
						Nickel	6.55E-12	lb/dscf	4.72E-06
						Selenium	1.03E-12	lb/dscf	7.43E-07
002-11 (AOS1)	Dust Collector AE-007 (AOS1)	AE-007 (AOS1)	NF	720,000	dscf	Antimony	3.38E-13	lb/dscf	2.43E-07
						Arsenic	5.56E-12	lb/dscf	4.01E-06
						Beryllium	3.90E-13	lb/dscf	2.81E-07
						Cadmium	2.86E-13	lb/dscf	2.06E-07
						Chromium	1.12E-11	lb/dscf	8.04E-06
						Cobalt	4.80E-12	lb/dscf	3.45E-06
						Lead	4.59E-12	lb/dscf	3.30E-06
						Manganese	7.77E-11	lb/dscf	5.59E-05
						Mercury	1.63E-13	lb/dscf	1.18E-07
						Nickel	6.55E-12	lb/dscf	4.72E-06
						Selenium	1.03E-12	lb/dscf	7.43E-07
002-12 (AOS1)	Dust Collector AE-012 (AOS1)	AE-012 (AOS1)	NF	1,980,000	dscf	Antimony	3.38E-13	lb/dscf	6.69E-07
						Arsenic	5.56E-12	lb/dscf	1.10E-05
						Beryllium	3.90E-13	lb/dscf	7.72E-07
						Cadmium	2.86E-13	lb/dscf	5.66E-07
						Chromium	1.12E-11	lb/dscf	2.21E-05
						Cobalt	4.80E-12	lb/dscf	9.49E-06
						Lead	4.59E-12	lb/dscf	9.08E-06
						Manganese	7.77E-11	lb/dscf	1.54E-04
						Mercury	1.63E-13	lb/dscf	3.24E-07
						Nickel	6.55E-12	lb/dscf	1.30E-05
						Selenium	1.03E-12	lb/dscf	2.04E-06
002-13 (AOS1)	Dust Collector AE-013 (AOS1)	AE-013 (AOS1)	NF	1,080,000	dscf	Antimony	3.38E-13	lb/dscf	3.65E-07
						Arsenic	5.56E-12	lb/dscf	6.01E-06
						Beryllium	3.90E-13	lb/dscf	4.21E-07
						Cadmium	2.86E-13	lb/dscf	3.09E-07
						Chromium	1.12E-11	lb/dscf	1.21E-05
						Cobalt	4.80E-12	lb/dscf	5.18E-06
						Lead	4.59E-12	lb/dscf	4.95E-06
						Manganese	7.77E-11	lb/dscf	8.39E-05
						Mercury	1.63E-13	lb/dscf	1.77E-07
						Nickel	6.55E-12	lb/dscf	7.08E-06
						Selenium	1.03E-12	lb/dscf	1.12E-06
Total of Non-Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:									2.23E-03
Total of Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:									6.64E-01
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Updates:									6.66E-01
Affected Emissions Units - Proposed Updated Design of AOS1									
Mining Operations (AOS1)									
026-3 (AOS1)	Drilling (AOS1)	Drilling (AOS1)	F	490	holes	Antimony	3.62E-06	lb/hole	1.77E-03
						Arsenic	1.12E-05	lb/hole	5.48E-03
						Beryllium	9.45E-07	lb/hole	4.63E-04
						Cadmium	4.24E-07	lb/hole	2.08E-04
						Chromium	2.55E-05	lb/hole	1.25E-02
						Cobalt	1.17E-05	lb/hole	5.74E-03
						Lead	1.77E-05	lb/hole	8.65E-03
						Manganese	1.90E-04	lb/hole	9.31E-02
						Mercury	1.97E-07	lb/hole	9.64E-05
						Nickel	1.67E-05	lb/hole	8.18E-03
						Selenium	1.80E-06	lb/hole	8.83E-04

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
026-2 (AOS1)	Blasting (AOS1)	HBlasting (AOS1)	F	1	blasts	POM	2.14E-02	lb/blast	2.14E-02
						Formaldehyde	3.95E-01	lb/blast	3.95E-01
						Antimony	1.19E-02	lb/blast	1.19E-02
						Arsenic	4.02E-02	lb/blast	4.02E-02
						Beryllium	5.74E-03	lb/blast	5.74E-03
						Cadmium	4.04E-03	lb/blast	4.04E-03
						Chromium	8.61E-02	lb/blast	8.61E-02
						Cobalt	3.84E-02	lb/blast	3.84E-02
						Lead	6.58E-02	lb/blast	6.58E-02
						Manganese	6.28E-01	lb/blast	6.28E-01
						Mercury	3.29E-03	lb/blast	3.29E-03
						Nickel	5.74E-02	lb/blast	5.74E-02
						Selenium	1.91E-02	lb/blast	1.91E-02
022-1 (AOS1)	Haul Truck Travel Inside the Pit (AOS1)	HTravel (AOS1)	F	2,239	VMT	Antimony	2.68E-05	lb/VMT	6.00E-03
						Arsenic	8.27E-05	lb/VMT	1.85E-02
						Beryllium	6.99E-06	lb/VMT	1.57E-03
						Cadmium	3.14E-06	lb/VMT	7.03E-04
						Chromium	1.88E-04	lb/VMT	4.22E-02
						Cobalt	8.67E-05	lb/VMT	1.94E-02
						Lead	1.31E-04	lb/VMT	2.93E-02
						Manganese	1.41E-03	lb/VMT	3.15E-01
						Mercury	1.46E-06	lb/VMT	3.26E-04
						Nickel	1.24E-04	lb/VMT	2.77E-02
						Selenium	1.33E-05	lb/VMT	2.98E-03
022-2 (AOS1)	Haul Truck Travel Outside the Pit (AOS1)	HTravel (AOS1)	F	746	VMT	Antimony	2.68E-05	lb/VMT	2.00E-03
						Arsenic	8.27E-05	lb/VMT	6.17E-03
						Beryllium	6.99E-06	lb/VMT	5.22E-04
						Cadmium	3.14E-06	lb/VMT	2.34E-04
						Chromium	1.88E-04	lb/VMT	1.41E-02
						Cobalt	8.67E-05	lb/VMT	6.47E-03
						Lead	1.31E-04	lb/VMT	9.75E-03
						Manganese	1.41E-03	lb/VMT	1.05E-01
						Mercury	1.46E-06	lb/VMT	1.09E-04
						Nickel	1.24E-04	lb/VMT	9.22E-03
						Selenium	1.33E-05	lb/VMT	9.95E-04
023-3 (AOS1)	Other Vehicle Travel (AOS1)	HTravel (AOS1)	F	2,188	VMT	Antimony	2.68E-05	lb/VMT	5.86E-03
						Arsenic	8.27E-05	lb/VMT	1.81E-02
						Beryllium	6.99E-06	lb/VMT	1.53E-03
						Cadmium	3.14E-06	lb/VMT	6.87E-04
						Chromium	1.88E-04	lb/VMT	4.12E-02
						Cobalt	8.67E-05	lb/VMT	1.90E-02
						Lead	1.31E-04	lb/VMT	2.86E-02
						Manganese	1.41E-03	lb/VMT	3.08E-01
						Mercury	1.46E-06	lb/VMT	3.18E-04
						Nickel	1.24E-04	lb/VMT	2.70E-02
						Selenium	1.33E-05	lb/VMT	2.92E-03
023-1 (AOS1)	Dozer Operation (AOS1)	Dozer (AOS1)	F	22.00	hours	Antimony	7.45E-06	lb/hr	1.64E-04
						Arsenic	2.30E-05	lb/hr	5.06E-04
						Beryllium	1.94E-06	lb/hr	4.28E-05
						Cadmium	8.73E-07	lb/hr	1.92E-05
						Chromium	5.24E-05	lb/hr	1.15E-03
						Cobalt	2.41E-05	lb/hr	5.31E-04
						Lead	3.63E-05	lb/hr	7.99E-04
						Manganese	3.91E-04	lb/hr	8.60E-03

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
023-1 (AOS1) (cont'd)	Dozer Operation (AOS1) (cont'd)	Dozer (AOS1) (cont'd)	F (cont'd)	22.00	hours (cont'd)	Mercury	4.05E-07	lb/hr	8.91E-06
						Nickel	3.44E-05	lb/hr	7.56E-04
						Selenium	3.71E-06	lb/hr	8.16E-05
023-2 (AOS1)	Road Grader Operation (AOS1)	Grader (AOS1)	F	48.00	VMT	Antimony	5.11E-06	lb/VMT	2.45E-05
						Arsenic	1.58E-05	lb/VMT	7.58E-05
						Beryllium	1.33E-06	lb/VMT	6.40E-06
						Cadmium	5.99E-07	lb/VMT	2.87E-06
						Chromium	3.59E-05	lb/VMT	1.73E-04
						Cobalt	1.65E-05	lb/VMT	7.94E-05
						Lead	2.49E-05	lb/VMT	1.20E-04
						Manganese	2.68E-04	lb/VMT	1.29E-03
						Mercury	2.78E-07	lb/VMT	1.33E-06
						Nickel	2.36E-05	lb/VMT	1.13E-04
						Selenium	2.54E-06	lb/VMT	1.22E-05
021-1 (AOS1)	Loading Mined Material into Haul Trucks (AOS1)	Ore1TrUnprt (AOS1)	F	39,352	tons	Antimony	5.79E-09	lb/ton	2.28E-04
						Arsenic	1.79E-08	lb/ton	7.04E-04
						Beryllium	1.51E-09	lb/ton	5.95E-05
						Cadmium	6.78E-10	lb/ton	2.67E-05
						Chromium	4.07E-08	lb/ton	1.60E-03
						Cobalt	1.87E-08	lb/ton	7.38E-04
						Lead	2.82E-08	lb/ton	1.11E-03
						Manganese	3.04E-07	lb/ton	1.20E-02
						Mercury	3.15E-10	lb/ton	1.24E-05
						Nickel	2.67E-08	lb/ton	1.05E-03
						Selenium	2.88E-09	lb/ton	1.13E-04
001-6 (AOS1)	Unloading Ore to Primary Crusher 1 (AOS1)	Ore2TrUnprt	F	8,000	tons	Antimony	1.14E-09	lb/ton	9.08E-06
						Arsenic	1.87E-08	lb/ton	1.50E-04
						Beryllium	1.31E-09	lb/ton	1.05E-05
						Cadmium	9.61E-10	lb/ton	7.69E-06
						Chromium	3.75E-08	lb/ton	3.00E-04
						Cobalt	1.61E-08	lb/ton	1.29E-04
						Lead	1.54E-08	lb/ton	1.23E-04
						Manganese	2.61E-07	lb/ton	2.09E-03
						Mercury	5.49E-10	lb/ton	4.39E-06
						Nickel	2.20E-08	lb/ton	1.76E-04
						Selenium	3.47E-09	lb/ton	2.78E-05
001-7 (AOS1)	Unloading Ore to Primary Crusher 2 (AOS1)	Ore2TrUnprt	F	7,000	tons	Antimony	1.14E-09	lb/ton	7.95E-06
						Arsenic	1.87E-08	lb/ton	1.31E-04
						Beryllium	1.31E-09	lb/ton	9.17E-06
						Cadmium	9.61E-10	lb/ton	6.73E-06
						Chromium	3.75E-08	lb/ton	2.63E-04
						Cobalt	1.61E-08	lb/ton	1.13E-04
						Lead	1.54E-08	lb/ton	1.08E-04
						Manganese	2.61E-07	lb/ton	1.83E-03
						Mercury	5.49E-10	lb/ton	3.84E-06
						Nickel	2.20E-08	lb/ton	1.54E-04
						Selenium	3.47E-09	lb/ton	2.43E-05
045-3 (AOS1)	Unloading Ore to Leaching Areas (AOS1)	Ore3TrUnprt	F	1,264	tons	Antimony	0.00E+00	lb/ton	0.00E+00
						Arsenic	1.50E-09	lb/ton	1.89E-06
						Beryllium	3.44E-09	lb/ton	4.35E-06
						Cadmium	0.00E+00	lb/ton	0.00E+00
						Chromium	5.99E-09	lb/ton	7.57E-06
						Cobalt	1.07E-08	lb/ton	1.36E-05
						Lead	1.60E-08	lb/ton	2.02E-05

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
045-3 (AOS1) (cont'd)	Unloading Ore to Leaching Areas (AOS1) (cont'd)	Ore3TrUnprt (cont'd)	F (cont'd)	1,264	tons (cont'd)	Manganese	2.28E-07	lb/ton	2.88E-04
						Mercury	0.00E+00	lb/ton	0.00E+00
						Nickel	8.73E-09	lb/ton	1.10E-05
						Selenium	0.00E+00	lb/ton	0.00E+00
045-1 (AOS1)	Unloading Overburden/Low Grade Ore to Storage Areas (AOS1)	Ore4TrUnprt	F	23,087	tons	Antimony	8.24E-09	lb/ton	1.90E-04
						Arsenic	1.84E-08	lb/ton	4.25E-04
						Beryllium	1.50E-09	lb/ton	3.46E-05
						Cadmium	5.86E-10	lb/ton	1.35E-05
						Chromium	4.41E-08	lb/ton	1.02E-03
						Cobalt	2.04E-08	lb/ton	4.71E-04
						Lead	3.48E-08	lb/ton	8.03E-04
						Manganese	3.28E-07	lb/ton	7.56E-03
						Mercury	2.25E-10	lb/ton	5.19E-06
						Nickel	2.98E-08	lb/ton	6.89E-04
						Selenium	2.77E-09	lb/ton	6.40E-05
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)									
001-5 (AOS1)	Dust Collector C51 (AOS1)	C51 (AOS1)	NF	900,000	dscf	Antimony	1.76E-12	lb/dscf	1.58E-06
						Arsenic	2.89E-11	lb/dscf	2.60E-05
						Beryllium	2.03E-12	lb/dscf	1.82E-06
						Cadmium	1.49E-12	lb/dscf	1.34E-06
						Chromium	5.80E-11	lb/dscf	5.22E-05
						Cobalt	2.49E-11	lb/dscf	2.24E-05
						Lead	2.38E-11	lb/dscf	2.14E-05
						Manganese	4.03E-10	lb/dscf	3.63E-04
						Mercury	8.49E-13	lb/dscf	7.64E-07
						Nickel	3.40E-11	lb/dscf	3.06E-05
						Selenium	5.36E-12	lb/dscf	4.83E-06
001-2 (AOS1)	Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1)	Ore2TrPrt	NF	7,600	tons	Antimony	1.25E-10	lb/ton	9.50E-08
						Arsenic	2.06E-09	lb/ton	1.56E-06
						Beryllium	1.44E-10	lb/ton	1.10E-07
						Cadmium	1.06E-10	lb/ton	8.03E-08
						Chromium	4.13E-09	lb/ton	3.14E-06
						Cobalt	1.77E-09	lb/ton	1.35E-06
						Lead	1.70E-09	lb/ton	1.29E-06
						Manganese	2.87E-08	lb/ton	2.18E-05
						Mercury	6.04E-11	lb/ton	4.59E-08
						Nickel	2.42E-09	lb/ton	1.84E-06
						Selenium	3.82E-10	lb/ton	2.90E-07
001-8 (AOS1)	Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1)	Ore2TrPrt	NF	7,600	tons	Antimony	1.25E-10	lb/ton	9.50E-08
						Arsenic	2.06E-09	lb/ton	1.56E-06
						Beryllium	1.44E-10	lb/ton	1.10E-07
						Cadmium	1.06E-10	lb/ton	8.03E-08
						Chromium	4.13E-09	lb/ton	3.14E-06
						Cobalt	1.77E-09	lb/ton	1.35E-06
						Lead	1.70E-09	lb/ton	1.29E-06
						Manganese	2.87E-08	lb/ton	2.18E-05
						Mercury	6.04E-11	lb/ton	4.59E-08
						Nickel	2.42E-09	lb/ton	1.84E-06
						Selenium	3.82E-10	lb/ton	2.90E-07
001-9 (AOS1)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1)	Ore2TrPrt	NF	7,600	tons	Antimony	1.25E-10	lb/ton	9.50E-08
						Arsenic	2.06E-09	lb/ton	1.56E-06
						Beryllium	1.44E-10	lb/ton	1.10E-07
						Cadmium	1.06E-10	lb/ton	8.03E-08
						Chromium	4.13E-09	lb/ton	3.14E-06

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
001-9 (AOS1) (cont'd)	Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1) (cont'd)	Ore2TrPrt (cont'd)	NF (cont'd)	7,600	tons (cont'd)	Cobalt	1.77E-09	lb/ton	1.35E-06
						Lead	1.70E-09	lb/ton	1.29E-06
						Manganese	2.87E-08	lb/ton	2.18E-05
						Mercury	6.04E-11	lb/ton	4.59E-08
						Nickel	2.42E-09	lb/ton	1.84E-06
						Selenium	3.82E-10	lb/ton	2.90E-07
001-4 (AOS1)	Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (AOS1)	Ore2TrUnprt	F	7,600	tons	Antimony	1.14E-09	lb/ton	8.63E-06
						Arsenic	1.87E-08	lb/ton	1.42E-04
						Beryllium	1.31E-09	lb/ton	9.96E-06
						Cadmium	9.61E-10	lb/ton	7.30E-06
						Chromium	3.75E-08	lb/ton	2.85E-04
						Cobalt	1.61E-08	lb/ton	1.22E-04
						Lead	1.54E-08	lb/ton	1.17E-04
						Manganese	2.61E-07	lb/ton	1.98E-03
						Mercury	5.49E-10	lb/ton	4.17E-06
						Nickel	2.20E-08	lb/ton	1.67E-04
						Selenium	3.47E-09	lb/ton	2.64E-05
001-10 (AOS1)	Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1)	Ore2TrUnprt	F	7,600	tons	Antimony	1.14E-09	lb/ton	8.63E-06
						Arsenic	1.87E-08	lb/ton	1.42E-04
						Beryllium	1.31E-09	lb/ton	9.96E-06
						Cadmium	9.61E-10	lb/ton	7.30E-06
						Chromium	3.75E-08	lb/ton	2.85E-04
						Cobalt	1.61E-08	lb/ton	1.22E-04
						Lead	1.54E-08	lb/ton	1.17E-04
						Manganese	2.61E-07	lb/ton	1.98E-03
						Mercury	5.49E-10	lb/ton	4.17E-06
						Nickel	2.20E-08	lb/ton	1.67E-04
						Selenium	3.47E-09	lb/ton	2.64E-05
001-3 (AOS1)	Free-Standing Stacker 6 (AOS1) to Coarse Ore Stockpile 5 (AOS1)	Ore2TrUnprt	F	7,600	tons	Antimony	1.14E-09	lb/ton	8.63E-06
						Arsenic	1.87E-08	lb/ton	1.42E-04
						Beryllium	1.31E-09	lb/ton	9.96E-06
						Cadmium	9.61E-10	lb/ton	7.30E-06
						Chromium	3.75E-08	lb/ton	2.85E-04
						Cobalt	1.61E-08	lb/ton	1.22E-04
						Lead	1.54E-08	lb/ton	1.17E-04
						Manganese	2.61E-07	lb/ton	1.98E-03
						Mercury	5.49E-10	lb/ton	4.17E-06
						Nickel	2.20E-08	lb/ton	1.67E-04
						Selenium	3.47E-09	lb/ton	2.64E-05
027-1 (AOS1)	Wind Erosion of Coarse Ore Stockpiles 1/5 (AOS1)	HWindCOS 1/5 (AOS1)	F	6.18	acre-yr	Antimony	1.44E-07	lb/acre-hr	8.92E-07
						Arsenic	2.38E-06	lb/acre-hr	1.47E-05
						Beryllium	1.67E-07	lb/acre-hr	1.03E-06
						Cadmium	1.22E-07	lb/acre-hr	7.55E-07
						Chromium	4.77E-06	lb/acre-hr	2.95E-05
						Cobalt	2.05E-06	lb/acre-hr	1.27E-05
						Lead	1.96E-06	lb/acre-hr	1.21E-05
						Manganese	3.32E-05	lb/acre-hr	2.05E-04
						Mercury	6.98E-08	lb/acre-hr	4.31E-07
						Nickel	2.80E-06	lb/acre-hr	1.73E-05
						Selenium	4.41E-07	lb/acre-hr	2.73E-06
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)									
001-12 (AOS1)	PC1 Dust Collector 1 (AOS1)	SDC1 (AOS1)	NF	870,000	dscf	Antimony	2.99E-13	lb/dscf	2.60E-07
						Arsenic	4.92E-12	lb/dscf	4.28E-06
						Beryllium	3.45E-13	lb/dscf	3.00E-07

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
001-12 (AOS1) (cont'd)	PC1 Dust Collector 1 (AOS1) (cont'd)	SDC1 (AOS1) (cont'd)	NF (cont'd)	870,000	dscf (cont'd)	Cadmium	2.53E-13	lb/dscf	2.20E-07
						Chromium	9.88E-12	lb/dscf	8.60E-06
						Cobalt	4.24E-12	lb/dscf	3.69E-06
						Lead	4.06E-12	lb/dscf	3.53E-06
						Manganese	6.87E-11	lb/dscf	5.98E-05
						Mercury	1.45E-13	lb/dscf	1.26E-07
						Nickel	5.80E-12	lb/dscf	5.04E-06
						Selenium	9.13E-13	lb/dscf	7.95E-07
001-13 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	SDC2 (AOS1)	NF	1,002,000	dscf	Antimony	2.99E-13	lb/dscf	3.00E-07
						Arsenic	4.92E-12	lb/dscf	4.93E-06
						Beryllium	3.45E-13	lb/dscf	3.46E-07
						Cadmium	2.53E-13	lb/dscf	2.54E-07
						Chromium	9.88E-12	lb/dscf	9.90E-06
						Cobalt	4.24E-12	lb/dscf	4.25E-06
						Lead	4.06E-12	lb/dscf	4.07E-06
						Manganese	6.87E-11	lb/dscf	6.89E-05
						Mercury	1.45E-13	lb/dscf	1.45E-07
						Nickel	5.80E-12	lb/dscf	5.81E-06
						Selenium	9.13E-13	lb/dscf	9.15E-07
001-14 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	SDC3 (AOS1)	NF	1,002,000	dscf	Antimony	2.99E-13	lb/dscf	3.00E-07
						Arsenic	4.92E-12	lb/dscf	4.93E-06
						Beryllium	3.45E-13	lb/dscf	3.46E-07
						Cadmium	2.53E-13	lb/dscf	2.54E-07
						Chromium	9.88E-12	lb/dscf	9.90E-06
						Cobalt	4.24E-12	lb/dscf	4.25E-06
						Lead	4.06E-12	lb/dscf	4.07E-06
						Manganese	6.87E-11	lb/dscf	6.89E-05
						Mercury	1.45E-13	lb/dscf	1.45E-07
						Nickel	5.80E-12	lb/dscf	5.81E-06
						Selenium	9.13E-13	lb/dscf	9.15E-07
001-15 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	SDC4 (AOS1)	NF	1,002,000	dscf	Antimony	2.99E-13	lb/dscf	3.00E-07
						Arsenic	4.92E-12	lb/dscf	4.93E-06
						Beryllium	3.45E-13	lb/dscf	3.46E-07
						Cadmium	2.53E-13	lb/dscf	2.54E-07
						Chromium	9.88E-12	lb/dscf	9.90E-06
						Cobalt	4.24E-12	lb/dscf	4.25E-06
						Lead	4.06E-12	lb/dscf	4.07E-06
						Manganese	6.87E-11	lb/dscf	6.89E-05
						Mercury	1.45E-13	lb/dscf	1.45E-07
						Nickel	5.80E-12	lb/dscf	5.81E-06
						Selenium	9.13E-13	lb/dscf	9.15E-07
001-20 (AOS1)	PC1 Cross Country Conveyor 3 (AOS1) to Coarse Ore Stockpile 6 (AOS1)	Ore2TrUnprt	F	8,000	tons	Antimony	1.14E-09	lb/ton	9.08E-06
						Arsenic	1.87E-08	lb/ton	1.50E-04
						Beryllium	1.31E-09	lb/ton	1.05E-05
						Cadmium	9.61E-10	lb/ton	7.69E-06
						Chromium	3.75E-08	lb/ton	3.00E-04
						Cobalt	1.61E-08	lb/ton	1.29E-04
						Lead	1.54E-08	lb/ton	1.23E-04
						Manganese	2.61E-07	lb/ton	2.09E-03
						Mercury	5.49E-10	lb/ton	4.39E-06
						Nickel	2.20E-08	lb/ton	1.76E-04
						Selenium	3.47E-09	lb/ton	2.78E-05
027-7 (AOS1)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1)	HWindCOS6 (AOS1)	F	3.04	acre-yr	Antimony	1.44E-07	lb/acre-hr	4.39E-07
						Arsenic	2.38E-06	lb/acre-hr	7.22E-06

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
027-7 (AOS1) (cont'd)	Wind Erosion of Coarse Ore Stockpile 6 (AOS1) (cont'd)	HWindCOS 6 (AOS1) (cont'd)	F (cont'd)	3.04	acre-yr (cont'd)	Beryllium	1.67E-07	lb/acre-hr	5.06E-07
						Cadmium	1.22E-07	lb/acre-hr	3.71E-07
						Chromium	4.77E-06	lb/acre-hr	1.45E-05
						Cobalt	2.05E-06	lb/acre-hr	6.22E-06
						Lead	1.96E-06	lb/acre-hr	5.95E-06
						Manganese	3.32E-05	lb/acre-hr	1.01E-04
						Mercury	6.98E-08	lb/acre-hr	2.12E-07
						Nickel	2.80E-06	lb/acre-hr	8.51E-06
						Selenium	4.41E-07	lb/acre-hr	1.34E-06
Sycamore Milling Operations (AOS1)									
002-7 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	SDC5 (AOS1)	NF	1,320,000	dscf	Antimony	2.99E-13	lb/dscf	3.95E-07
						Arsenic	4.92E-12	lb/dscf	6.50E-06
						Beryllium	3.45E-13	lb/dscf	4.55E-07
						Cadmium	2.53E-13	lb/dscf	3.34E-07
						Chromium	9.88E-12	lb/dscf	1.30E-05
						Cobalt	4.24E-12	lb/dscf	5.60E-06
						Lead	4.06E-12	lb/dscf	5.36E-06
						Manganese	6.87E-11	lb/dscf	9.07E-05
						Mercury	1.45E-13	lb/dscf	1.91E-07
						Nickel	5.80E-12	lb/dscf	7.65E-06
						Selenium	9.13E-13	lb/dscf	1.21E-06
002-8 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	SDC6 (AOS1)	NF	1,320,000	dscf	Antimony	2.99E-13	lb/dscf	3.95E-07
						Arsenic	4.92E-12	lb/dscf	6.50E-06
						Beryllium	3.45E-13	lb/dscf	4.55E-07
						Cadmium	2.53E-13	lb/dscf	3.34E-07
						Chromium	9.88E-12	lb/dscf	1.30E-05
						Cobalt	4.24E-12	lb/dscf	5.60E-06
						Lead	4.06E-12	lb/dscf	5.36E-06
						Manganese	6.87E-11	lb/dscf	9.07E-05
						Mercury	1.45E-13	lb/dscf	1.91E-07
						Nickel	5.80E-12	lb/dscf	7.65E-06
						Selenium	9.13E-13	lb/dscf	1.21E-06
002-9 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	SDC7 (AOS1)	NF	1,380,000	dscf	Antimony	2.99E-13	lb/dscf	4.13E-07
						Arsenic	4.92E-12	lb/dscf	6.79E-06
						Beryllium	3.45E-13	lb/dscf	4.76E-07
						Cadmium	2.53E-13	lb/dscf	3.49E-07
						Chromium	9.88E-12	lb/dscf	1.36E-05
						Cobalt	4.24E-12	lb/dscf	5.85E-06
						Lead	4.06E-12	lb/dscf	5.60E-06
						Manganese	6.87E-11	lb/dscf	9.48E-05
						Mercury	1.45E-13	lb/dscf	2.00E-07
						Nickel	5.80E-12	lb/dscf	8.00E-06
						Selenium	9.13E-13	lb/dscf	1.26E-06
002-10 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	SDC8 (AOS1)	NF	1,620,000	dscf	Antimony	2.99E-13	lb/dscf	4.84E-07
						Arsenic	4.92E-12	lb/dscf	7.97E-06
						Beryllium	3.45E-13	lb/dscf	5.59E-07
						Cadmium	2.53E-13	lb/dscf	4.10E-07
						Chromium	9.88E-12	lb/dscf	1.60E-05
						Cobalt	4.24E-12	lb/dscf	6.87E-06
						Lead	4.06E-12	lb/dscf	6.57E-06
						Manganese	6.87E-11	lb/dscf	1.11E-04
						Mercury	1.45E-13	lb/dscf	2.34E-07
						Nickel	5.80E-12	lb/dscf	9.39E-06
						Selenium	9.13E-13	lb/dscf	1.48E-06

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
002-11 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	SDC9 (AOS1)	NF	1,500,000	dscf	Antimony	2.99E-13	lb/dscf	4.49E-07
						Arsenic	4.92E-12	lb/dscf	7.38E-06
						Beryllium	3.45E-13	lb/dscf	5.18E-07
						Cadmium	2.53E-13	lb/dscf	3.80E-07
						Chromium	9.88E-12	lb/dscf	1.48E-05
						Cobalt	4.24E-12	lb/dscf	6.36E-06
						Lead	4.06E-12	lb/dscf	6.09E-06
						Manganese	6.87E-11	lb/dscf	1.03E-04
						Mercury	1.45E-13	lb/dscf	2.17E-07
						Nickel	5.80E-12	lb/dscf	8.69E-06
						Selenium	9.13E-13	lb/dscf	1.37E-06
002-12 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	SDC10 (AOS1)	NF	600,000	dscf	Antimony	2.99E-13	lb/dscf	1.79E-07
						Arsenic	4.92E-12	lb/dscf	2.95E-06
						Beryllium	3.45E-13	lb/dscf	2.07E-07
						Cadmium	2.53E-13	lb/dscf	1.52E-07
						Chromium	9.88E-12	lb/dscf	5.93E-06
						Cobalt	4.24E-12	lb/dscf	2.55E-06
						Lead	4.06E-12	lb/dscf	2.43E-06
						Manganese	6.87E-11	lb/dscf	4.12E-05
						Mercury	1.45E-13	lb/dscf	8.67E-08
						Nickel	5.80E-12	lb/dscf	3.48E-06
						Selenium	9.13E-13	lb/dscf	5.48E-07
002-13 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	SDC11 (AOS1)	NF	600,000	dscf	Antimony	2.99E-13	lb/dscf	1.79E-07
						Arsenic	4.92E-12	lb/dscf	2.95E-06
						Beryllium	3.45E-13	lb/dscf	2.07E-07
						Cadmium	2.53E-13	lb/dscf	1.52E-07
						Chromium	9.88E-12	lb/dscf	5.93E-06
						Cobalt	4.24E-12	lb/dscf	2.55E-06
						Lead	4.06E-12	lb/dscf	2.43E-06
						Manganese	6.87E-11	lb/dscf	4.12E-05
						Mercury	1.45E-13	lb/dscf	8.67E-08
						Nickel	5.80E-12	lb/dscf	3.48E-06
						Selenium	9.13E-13	lb/dscf	5.48E-07
Sycamore Bulk and Molybdenum Flotation Operations (AOS1)									
044-2 (AOS1)	Sycamore Bulk and Molybdenum Flotation Equipment	MFE	F	59.10	tons	Benzene	8.67E-06	lb/ton	5.12E-04
						Ethylbenzene	1.46E-05	lb/ton	8.63E-04
						Hexane	1.83E-06	lb/ton	1.08E-04
						Toluene	1.04E-04	lb/ton	6.18E-03
						m-Xylene	2.72E-04	lb/ton	1.61E-02
Sycamore Concentrate Handling Operations (AOS1)									
006-11 (AOS1)	Copper Concentrate Filters 1/2 (AOS1) to Copper Concentrate Filter Drop Storage (AOS1)	CCTrPrt	F	57.00	tons	Antimony	1.14E-08	lb/ton	6.51E-07
						Arsenic	1.23E-08	lb/ton	7.04E-07
						Beryllium	2.37E-10	lb/ton	1.35E-08
						Cadmium	8.88E-10	lb/ton	5.06E-08
						Chromium	4.93E-10	lb/ton	2.81E-08
						Cobalt	2.35E-09	lb/ton	1.34E-07
						Lead	1.73E-08	lb/ton	9.85E-07
						Manganese	1.05E-09	lb/ton	5.96E-08
						Mercury	1.58E-10	lb/ton	9.03E-09
						Nickel	2.25E-09	lb/ton	1.28E-07
						Selenium	3.91E-09	lb/ton	2.23E-07
006-12 (AOS1)	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader	CCTrPrt	F	57.00	tons	Antimony	1.14E-08	lb/ton	6.51E-07
						Arsenic	1.23E-08	lb/ton	7.04E-07
						Beryllium	2.37E-10	lb/ton	1.35E-08

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
006-12 (AOS1) (cont'd)	Copper Concentrate Filter Drop Storage (AOS1) to Copper Concentrate Loadout Storage (AOS1) via Front-End Loader (cont'd)	CCTrPrt (cont'd)	F (cont'd)	57.00	tons (cont'd)	Cadmium	8.88E-10	lb/ton	5.06E-08
						Chromium	4.93E-10	lb/ton	2.81E-08
						Cobalt	2.35E-09	lb/ton	1.34E-07
						Lead	1.73E-08	lb/ton	9.85E-07
						Manganese	1.05E-09	lb/ton	5.96E-08
						Mercury	1.58E-10	lb/ton	9.03E-09
						Nickel	2.25E-09	lb/ton	1.28E-07
						Selenium	3.91E-09	lb/ton	2.23E-07
006-13 (AOS1)	Copper Concentrate Loadout Storage (AOS1) to Trucks via Front-End Loader	CCTrPrt	F	57.00	tons	Antimony	1.14E-08	lb/ton	6.51E-07
						Arsenic	1.23E-08	lb/ton	7.04E-07
						Beryllium	2.37E-10	lb/ton	1.35E-08
						Cadmium	8.88E-10	lb/ton	5.06E-08
						Chromium	4.93E-10	lb/ton	2.81E-08
						Cobalt	2.35E-09	lb/ton	1.34E-07
						Lead	1.73E-08	lb/ton	9.85E-07
						Manganese	1.05E-09	lb/ton	5.96E-08
						Mercury	1.58E-10	lb/ton	9.03E-09
						Nickel	2.25E-09	lb/ton	1.28E-07
						Selenium	3.91E-09	lb/ton	2.23E-07
027-8 (AOS1)	Wind Erosion of Copper Concentrate Filter Drop Storage (AOS1) and Copper Concentrate Loadout Storage (AOS1)	HWindSCC (AOS1)	F	0.30	acre-yr	Antimony	9.93E-04	lb/acre-hr	7.45E-05
						Arsenic	1.07E-03	lb/acre-hr	8.05E-05
						Beryllium	2.06E-05	lb/acre-hr	1.54E-06
						Cadmium	7.72E-05	lb/acre-hr	5.79E-06
						Chromium	4.29E-05	lb/acre-hr	3.21E-06
						Cobalt	2.04E-04	lb/acre-hr	1.53E-05
						Lead	1.50E-03	lb/acre-hr	1.13E-04
						Manganese	9.09E-05	lb/acre-hr	6.82E-06
						Mercury	1.38E-05	lb/acre-hr	1.03E-06
						Nickel	1.95E-04	lb/acre-hr	1.47E-05
						Selenium	3.40E-04	lb/acre-hr	2.55E-05
052-2 (AOS1)	Molybdenum Dryer Wet Scrubber System (AOS1)	MDWSS (AOS1)	NF	1	hours	Antimony	3.04E-05	lb/hr	3.04E-05
						Arsenic	9.89E-06	lb/hr	9.89E-06
						Beryllium	6.31E-07	lb/hr	6.31E-07
						Cadmium	2.36E-06	lb/hr	2.36E-06
						Chromium	1.31E-06	lb/hr	1.31E-06
						Cobalt	6.25E-06	lb/hr	6.25E-06
						Lead	9.67E-06	lb/hr	9.67E-06
						Manganese	2.79E-06	lb/hr	2.79E-06
						Mercury	4.22E-07	lb/hr	4.22E-07
						Nickel	5.99E-06	lb/hr	5.99E-06
						Selenium	1.61E-05	lb/hr	1.61E-05
						Benzene	3.48E-03	lb/hr	3.48E-03
						Ethylbenzene	5.86E-03	lb/hr	5.86E-03
						Hexane	7.32E-04	lb/hr	7.32E-04
						Toluene	4.19E-02	lb/hr	4.19E-02
						m-Xylene	1.09E-01	lb/hr	1.09E-01
052-3 (AOS1)	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1)	MC4TrPrt	NF	2.10	tons	Antimony	4.83E-07	lb/ton	1.01E-06
						Arsenic	1.57E-07	lb/ton	3.30E-07
						Beryllium	1.00E-08	lb/ton	2.10E-08
						Cadmium	3.76E-08	lb/ton	7.89E-08
						Chromium	2.09E-08	lb/ton	4.38E-08
						Cobalt	9.93E-08	lb/ton	2.09E-07
						Lead	1.54E-07	lb/ton	3.22E-07
						Manganese	4.42E-08	lb/ton	9.29E-08

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
052-3 (AOS1) (cont'd)	Molybdenum Concentrate Dryer (AOS1) to Dried Molybdenum Concentrate Storage Bin (AOS1) (cont'd)	MC4TrPrt (cont'd)	NF (cont'd)	2.10	tons (cont'd)	Mercury	6.70E-09	lb/ton	1.41E-08
						Nickel	9.51E-08	lb/ton	2.00E-07
						Selenium	2.55E-07	lb/ton	5.36E-07
052-4 (AOS1)	Dried Molybdenum Concentrate Storage Bin (AOS1) to Molybdenum Concentrate Bagging System (AOS1)	MC4TrPrt	F	2.10	tons	Antimony	4.83E-07	lb/ton	1.01E-06
						Arsenic	1.57E-07	lb/ton	3.30E-07
						Beryllium	1.00E-08	lb/ton	2.10E-08
						Cadmium	3.76E-08	lb/ton	7.89E-08
						Chromium	2.09E-08	lb/ton	4.38E-08
						Cobalt	9.93E-08	lb/ton	2.09E-07
						Lead	1.54E-07	lb/ton	3.22E-07
						Manganese	4.42E-08	lb/ton	9.29E-08
						Mercury	6.70E-09	lb/ton	1.41E-08
						Nickel	9.51E-08	lb/ton	2.00E-07
						Selenium	2.55E-07	lb/ton	5.36E-07
Sycamore Lime and Other Regent Operations (AOS1)									
053-2 (AOS1)	Xanthate Mix Tank (AOS1), Xanthate Holding Tank (AOS1), Test Reagent Mix Tank (AOS1), and Test Reagent Holding Tank (AOS1)	SXMS	NF	0.04	tons	Carbon Disulfide	1.23E+01	lb/ton	4.94E-01
Sycamore Emergency ICE (AOS1)									
049-59 (AOS1)	Sycamore Diesel Emergency Generator 1 (AOS1) (609 hp engine)	Tier3-450/560-D	NF	609	hp-hr	Benzene	5.43E-06	lb/hp-hr	3.31E-03
						Toluene	1.97E-06	lb/hp-hr	1.20E-03
						Xylenes	1.35E-06	lb/hp-hr	8.23E-04
						Formaldehyde	5.52E-07	lb/hp-hr	3.36E-04
						Acetaldehyde	1.76E-07	lb/hp-hr	1.07E-04
						Acrolein	5.52E-08	lb/hp-hr	3.36E-05
						Naphthalene	9.10E-07	lb/hp-hr	5.54E-04
						Acenaphthylene	6.46E-08	lb/hp-hr	3.93E-05
						Acenaphthene	3.28E-08	lb/hp-hr	2.00E-05
						Fluorene	8.96E-08	lb/hp-hr	5.46E-05
						Phenanthrene	2.86E-07	lb/hp-hr	1.74E-04
						Anthracene	8.61E-09	lb/hp-hr	5.24E-06
						Fluoranthene	2.82E-08	lb/hp-hr	1.72E-05
						Pyrene	2.60E-08	lb/hp-hr	1.58E-05
						Benz(a)anthracene	4.35E-09	lb/hp-hr	2.65E-06
						Chrysene	1.07E-08	lb/hp-hr	6.52E-06
						Benzo(b)fluoranthene	7.77E-09	lb/hp-hr	4.73E-06
						Benzo(k)fluoranthene	1.53E-09	lb/hp-hr	9.29E-07
						Benzo(a)pyrene	1.80E-09	lb/hp-hr	1.10E-06
						Indeno(1,2,3-cd)pyrene	2.90E-09	lb/hp-hr	1.76E-06
						Dibenz(a,h)anthracene	2.42E-09	lb/hp-hr	1.47E-06
						Benzo(g,h,i)perylene	3.89E-09	lb/hp-hr	2.37E-06
049-60 (AOS1)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine)	Tier2-560-D	NF	762	hp-hr	Benzene	5.43E-06	lb/hp-hr	4.14E-03
						Toluene	1.97E-06	lb/hp-hr	1.50E-03
						Xylenes	1.35E-06	lb/hp-hr	1.03E-03
						Formaldehyde	5.52E-07	lb/hp-hr	4.21E-04
						Acetaldehyde	1.76E-07	lb/hp-hr	1.34E-04
						Acrolein	5.52E-08	lb/hp-hr	4.20E-05
						Naphthalene	9.10E-07	lb/hp-hr	6.93E-04
						Acenaphthylene	6.46E-08	lb/hp-hr	4.92E-05
						Acenaphthene	3.28E-08	lb/hp-hr	2.50E-05
						Fluorene	8.96E-08	lb/hp-hr	6.83E-05
						Phenanthrene	2.86E-07	lb/hp-hr	2.18E-04
						Anthracene	8.61E-09	lb/hp-hr	6.56E-06
						Fluoranthene	2.82E-08	lb/hp-hr	2.15E-05

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
049-60 (AOS1) (cont'd)	Sycamore Diesel Emergency Generator 2 (AOS1) (762 hp engine) (cont'd)	Tier2-560-D (cont'd)	NF (cont'd)	762	hp-hr (cont'd)	Pyrene	2.60E-08	lb/hp-hr	1.98E-05
						Benz(a)anthracene	4.35E-09	lb/hp-hr	3.32E-06
						Chrysene	1.07E-08	lb/hp-hr	8.16E-06
						Benzo(b)fluoranthene	7.77E-09	lb/hp-hr	5.92E-06
						Benzo(k)fluoranthene	1.53E-09	lb/hp-hr	1.16E-06
						Benzo(a)pyrene	1.80E-09	lb/hp-hr	1.37E-06
						Indeno(1,2,3-cd)pyrene	2.90E-09	lb/hp-hr	2.21E-06
						Dibenz(a,h)anthracene	2.42E-09	lb/hp-hr	1.85E-06
						Benzo(g,h,i)perylene	3.89E-09	lb/hp-hr	2.97E-06
049-61 (AOS1)	Sycamore Propane Emergency Generator 1 (AOS1) (84.7 hp engine)	SEG-P	NF	84.70	hp-hr	1,1,2,2-Tetrachloroethane	2.66E-07	lb/hp-hr	2.25E-05
						1,1,2-Trichloroethane	1.61E-07	lb/hp-hr	1.36E-05
						1,1-Dichloroethane	1.19E-07	lb/hp-hr	1.00E-05
						1,2-Dichloroethane	1.19E-07	lb/hp-hr	1.00E-05
						1,2-Dichloropropane	1.37E-07	lb/hp-hr	1.16E-05
						1,3-Butadiene	6.96E-06	lb/hp-hr	5.90E-04
						1,3-Dichloropropene	1.33E-07	lb/hp-hr	1.13E-05
						Acetaldehyde	2.93E-05	lb/hp-hr	2.48E-03
						Acrolein	2.76E-05	lb/hp-hr	2.34E-03
						Benzene	1.66E-05	lb/hp-hr	1.41E-03
						Carbon Tetrachloride	1.86E-07	lb/hp-hr	1.57E-05
						Chlorobenzene	1.35E-07	lb/hp-hr	1.15E-05
						Chloroform	1.44E-07	lb/hp-hr	1.22E-05
						Ethylbenzene	2.60E-07	lb/hp-hr	2.21E-05
						Ethylene Dibromide	2.24E-07	lb/hp-hr	1.89E-05
						Formaldehyde	2.15E-04	lb/hp-hr	1.82E-02
						Methanol	3.21E-05	lb/hp-hr	2.72E-03
						Methylene Chloride	4.33E-07	lb/hp-hr	3.66E-05
						Naphthalene	1.02E-06	lb/hp-hr	8.64E-05
						Polycyclic Aromatic Hydrocarbons	1.48E-06	lb/hp-hr	1.25E-04
						Styrene	1.25E-07	lb/hp-hr	1.06E-05
						Toluene	5.86E-06	lb/hp-hr	4.96E-04
						Vinyl Chloride	7.54E-08	lb/hp-hr	6.39E-06
						Xylene	2.05E-06	lb/hp-hr	1.73E-04
049-62 (AOS1)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine)	SEG-P	NF	84.70	hp-hr	1,1,2,2-Tetrachloroethane	2.66E-07	lb/hp-hr	2.25E-05
						1,1,2-Trichloroethane	1.61E-07	lb/hp-hr	1.36E-05
						1,1-Dichloroethane	1.19E-07	lb/hp-hr	1.00E-05
						1,2-Dichloroethane	1.19E-07	lb/hp-hr	1.00E-05
						1,2-Dichloropropane	1.37E-07	lb/hp-hr	1.16E-05
						1,3-Butadiene	6.96E-06	lb/hp-hr	5.90E-04
						1,3-Dichloropropene	1.33E-07	lb/hp-hr	1.13E-05
						Acetaldehyde	2.93E-05	lb/hp-hr	2.48E-03
						Acrolein	2.76E-05	lb/hp-hr	2.34E-03
						Benzene	1.66E-05	lb/hp-hr	1.41E-03
						Carbon Tetrachloride	1.86E-07	lb/hp-hr	1.57E-05
						Chlorobenzene	1.35E-07	lb/hp-hr	1.15E-05
						Chloroform	1.44E-07	lb/hp-hr	1.22E-05
						Ethylbenzene	2.60E-07	lb/hp-hr	2.21E-05
						Ethylene Dibromide	2.24E-07	lb/hp-hr	1.89E-05
						Formaldehyde	2.15E-04	lb/hp-hr	1.82E-02
						Methanol	3.21E-05	lb/hp-hr	2.72E-03
						Methylene Chloride	4.33E-07	lb/hp-hr	3.66E-05
						Naphthalene	1.02E-06	lb/hp-hr	8.64E-05
						Polycyclic Aromatic Hydrocarbons	1.48E-06	lb/hp-hr	1.25E-04
						Styrene	1.25E-07	lb/hp-hr	1.06E-05

Table G.11 Hourly HAP Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	HAP Information			Emissions (lb/hr)
						Name	EF	EF Units	
049-62 (AOS1) (cont'd)	Sycamore Propane Emergency Generator 2 (AOS1) (84.7 hp engine) (cont'd)	SEG-P (cont'd)	NF (cont'd)	84.70	hp-hr (cont'd)	Toluene	5.86E-06	lb/hp-hr	4.96E-04
						Vinyl Chloride	7.54E-08	lb/hp-hr	6.39E-06
						Xylene	2.05E-06	lb/hp-hr	1.73E-04
Total of Non-Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:									7.30E-01
Total of Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:									2.67E+00
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Following the Proposed Updates:									3.40E+00
Total Change in Non-Fugitive Emissions:									**7.28E-01**
Total Change in Fugitive Emissions:									**2.01E+00**
Total Change in Non-Fugitive and Fugitive Emissions:									**2.73E+00**

APPENDIX H SUGGESTED DRAFT PERMIT LANGUAGE

SIGNIFICANT PERMIT REVISION DESCRIPTION

This significant permit revision authorizes Freeport-McMoRan Bagdad Inc. (FMBI), the Permittee, to update the design of Alternate Operating Scenario 1 (Two Concentrator Operations). The changes meet the requirements for a significant permit revision outlined in A.A.C. R18-2-320.

ATTACHMENT "A": GENERAL PROVISIONS
Addenda (Significant Revision # To be assigned by ADEQ)
to Operating Permit #77414 for
Freeport-McMoRan Bagdad Inc.

No changes shall be made to the requirements set forth in Attachment “A” of Class II Air Quality Permit #77414.

ATTACHMENT "B": SPECIFIC CONDITIONS
Addenda (Significant Revision # To be assigned by ADEQ)
to Operating Permit #77414 for
Freeport-McMoRan Bagdad Inc.

The following changes shall be made to the requirements set forth in Attachment “B” of Class II Air Quality Permit #77414.

Conditions II.A.4.b, II.C.2.f, II.C.3.a, II.C.3.c, II.C.3.d, and II.D.1 shall be amended to read as follows:

II. METALLIC MINERAL PROCESSING OPERATIONS

A. Facilities Subject to the Standards of Performance for Existing Nonferrous Metals Industry Sources Under A.A.C. R18-2-721

4. Monitoring, Recordkeeping, and Reporting Requirements

b. Except for the PC1 Rock Breaker (2110-RKB-0021) and the Rock Breaker (RB), the Permittee shall conduct the periodic opacity monitoring method specified in Condition I.C above on a monthly basis for all emission units subject to Condition II.A. The periodic opacity monitoring for 2110-RKB-0021 and~~the~~ RB is satisfied by the periodic opacity monitoring required by Condition II.B.5.g for Primary Crusher 1 (2110-CRG-0021) and Primary Crusher 2 (PC2), respectively.

[A.A.C. R18-2-306.A.3.c]

C. Voluntary Emission Limitations

2. Emission Limitations and Standards

f. *The Permittee shall not allow the emissions of PM and PM_{10} from the processes identified in Section F of the table in Attachment "D" to exceed ~~0.0026~~0.0023 gr/dscf, as measured at the emission exhaust point to the atmosphere.*

[A.A.C. R 18-2-306.01.A and -331.A.3.a]
[Material permit conditions are indicated by underline and italics]

3. Performance Testing Requirements

a. The Permittee shall within 60 days of achieving the maximum production rate, but no later than 180 days of the startup or restart, conduct performance tests for PM and PM_{10} on the stacks of the following pollution control devices to demonstrate compliance with the emission limits in Condition II.B.2.a and/or Condition II.C.2 above (as applicable).

[A.A.C. R18-2-306.A.3.c and -312]

(1) Scrubber C18 (Process #001-1);

(2) GL5 Dust Collector DC5 (Process #002-6);

(3) PC1 Dust Collector 1~~Dust Collector AE-002~~ (AOS1) (Process #001-12 (AOS1));

(4) Dust Collector C51 (AOS1) (Process #001-5 (AOS1));

(5) PC1 CCC1 Dust Collector 2~~Dust Collector AE-003~~ (AOS1) (Process #001-13 (AOS1));

(6) PC1 CCC2 Dust Collector 3~~Dust Collector AE-016~~ (AOS1) (Process #001-14 (AOS1));

(7) PC1 CCC3 Dust Collector 4~~Dust Collector AE-017~~ (AOS1) (Process #001-15 (AOS1));

~~(8) Dust Collector AE-001 (AOS1) (Process #001-16 (AOS1));~~

~~(9) Dust Collector AE-014 (AOS1) (Process #001-17 (AOS1));~~

~~(10) Dust Collector AE-015 (AOS1) (Process #001-18 (AOS1));~~

(~~11~~8) Coarse Ore Reclaim Conveyor 1 Dust Collector 5~~Dust Collector AE-008~~ (AOS1) (Process #002-7 (AOS1));

(~~12~~9) Coarse Ore Reclaim Conveyor 2 Dust Collector 6~~Dust Collector AE-009~~ (AOS1) (Process #002-8 (AOS1));

(~~13~~10) HPGR Discharge Dust Collector 7~~Dust Collector AE-010~~ (AOS1) (Process #002-9 (AOS1));

(~~14~~11) HPGR Discharge Conveyor Transfer Dust Collector 8~~Dust Collector AE-011~~ (AOS1) (Process #002-10 (AOS1));

(~~15~~12) HPGR Product Bin Dust Collector 9~~Dust Collector AE-007~~ (AOS1) (Process #002-11 (AOS1));

(~~16~~13) HPGR Product Transfer Dust Collector 10~~Dust Collector AE-012~~ (AOS1) (Process #002-12 (AOS1)); and

(~~17~~14) HPGR Product Transfer Dust Collector 11~~Dust Collector AE-013~~ (AOS1) (Process #002-13 (AOS1)).

c. If the result of a performance test on the stack of a pollution control device listed in Condition II.C.3.a~~(1) through Condition II.C.3.a(17)~~ is less than or equal to 35% of the applicable emission limits in Condition II.C.2 above, the Permittee shall conduct a subsequent performance test for PM and PM_{10} on the stack of that pollution control device within two years (between 22 and 26 months from the date of the previous test). The schedule of each subsequent test shall be reevaluated after every test.

[A.A.C. R18-2-306.A.3.c and -312]

d. If the result of a performance test on the stack of a pollution control device listed in Condition II.C.3.a~~(1) through Condition II.C.3.a(17)~~ is greater than 35% of the applicable emission limits in Condition II.C.2 above, the Permittee shall conduct a subsequent performance test for PM and PM_{10} on the stack of that pollution control device within one year (between 11 and 13 months from the date of the previous test). The schedule of each subsequent test shall be reevaluated after every test.

[A.A.C. R18-2-306.A.3.c and -312]

D. Alternate Operating Scenarios

1. Alternate Operating Scenario 1 (AOS1) - Two Concentrator Operations

a. Applicability

The equipment and operations subject to the requirements of this Condition II.D.1 are identified in the last column of the Equipment List in Attachment “C.”

b. Operational Limitations

(1) When operating Under AOS1, the Permittee may operate the modified primary crushing and overland conveying operations, ~~additional~~ Sycamore milling operations, ~~and additional~~ Sycamore bulk and molybdenum flotation operations, Sycamore concentrate handling operations, Sycamore lime and other reagent operations, Sycamore prill handling operations, and Sycamore emergency ICE using the equipment identified in the section titled “AOS1: Two Concentrator Operations” in the Equipment List of Attachment “C.”

[A.A.C. R18-2-306.A.11]

(2) When operating Under AOS1, the Permittee shall not operate the equipment identified in the section titled “Primary Crushing and Overland Conveying Operations” in the Equipment List of Attachment “C” except for the following equipment that is common to both the primary operating scenario and AOS1:

[A.A.C. R18-2-306.A.11]

(a) Primary Crusher 1 (PC1) (~~reconstruction~~ a new crusher is assumed for AOS1);

(b) Rock Breaker (RB);

(c) Primary Crusher 2 (PC2);

(d) Dust Collector C51 (C51);

(e) PC2 Surge Bin (PC2SB);

(f) PC2 Apron Feeder (PC2AF);

(g) PC2 Dribble Conveyor (PC2DC);

(h) Overland Conveyor ~~2~~ 3A (~~OC2~~OC3A);

(i) Overland Conveyor 3 (OC3);

(j) Overland Conveyor 4 (OC4);~~ and~~

(k) Radial Stacker 5 (RST5~~).~~); and

(l) Free-Standing Stacker 6 (FSS6).

c. Air Pollution Prevention and Control Requirements

(1) *At all times when operating under AOS1, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, install,* maintain, and *operate the following pollution control devices in a manner consistent with good air pollution control practices for minimizing particulate matter emissions.*

[A.A.C. R18-2-306.A.2 and -331.A.3.d, e]
[Material permit conditions are indicated by underline and italics]

(a) *PC1 Dust Collector 1~~Dust Collector AE-002~~ (AOS1) (Process #001-12 (AOS1));*

(b) *Dust Collector C51 (AOS1) (Process #001-5 (AOS1));*

(c) *PC1 CCC1 Dust Collector 2~~Dust Collector AE-003~~ (AOS1) (Process #001-13 (AOS1));*

(d) *PC1 CCC2 Dust Collector 3~~Dust Collector AE-016~~ (AOS1) (Process #001-14 (AOS1));*

(e) *PC1 CCC3 Dust Collector 4~~Dust Collector AE-017~~ (AOS1) (Process #001-15 (AOS1));*

~~(f) *Dust Collector AE-001 (AOS1) (Process #001-16 (AOS1));*~~

~~(g) *Dust Collector AE-014 (AOS1) (Process #001-17 (AOS1));*~~

~~(h) *Dust Collector AE-015 (AOS1) (Process #001-18 (AOS1));*~~

(~~i~~f) *Coarse Ore Reclaim Conveyor 1 Dust Collector 5~~Dust Collector AE-008~~ (AOS1) (Process #002-7 (AOS1));*

(~~j~~g) *Coarse Ore Reclaim Conveyor 2 Dust Collector 6~~Dust Collector AE-009~~ (AOS1) (Process #002-8 (AOS1));*

(~~k~~h) *HPGR Discharge Dust Collector 7~~Dust Collector AE-010~~ (AOS1) (Process #002-9 (AOS1));*

(~~l~~i) *HPGR Discharge Conveyor Transfer Dust Collector 8~~Dust Collector AE-011~~ (AOS1) (Process #002-10 (AOS1));*

(~~m~~j) *HPGR Product Bin Dust Collector 9~~Dust Collector AE-007~~ (AOS1) (Process #002-11 (AOS1));*

(~~n~~k) *HPGR Product Transfer Dust Collector 10~~Dust Collector AE-012~~ (AOS1) (Process #002-12 (AOS1)); ~~and~~*

(~~o~~l) *HPGR Product Transfer Dust Collector 11~~Dust Collector AE-013~~ (AOS1) (Process #002-13 (AOS1~~)).~~)); and*

(m) *Molybdenum Dryer Wet Scrubber System (AOS1) (Process #052-2 (AOS1)).*

(2) ~~When~~ As necessary ~~and~~ when operating under AOS1, the Permittee shall, to the extent practicable, utilize wet suppression on the following emission units to minimize particulate matter emissions and comply with the applicable emission limitations and standards of Condition II.A.2 above. Wet suppression options include water sprays, surfactant use, water jets, foggers, inherent moisture content (including moisture from upstream water sprays), or other equivalent control methods.

[A.A.C. R18-2-306.A.2]

(a) Unloading Ore to Primary Crusher 1 (AOS1) (Process #001-6 (AOS1));

(b) Unloading Ore to Primary Crusher 2 (AOS1) (Process #001-7 (AOS1))

(~~a~~c) Radial Stacker 5 (AOS1) to Coarse Ore Stockpiles 1/4 (Process #001-4 (AOS1));

(d) Radial Stacker 5 (AOS1) to Free-Standing Stacker 6 (AOS1) (Process #001-10 (AOS1);

(~~b~~e) Free-Standing Stacker 6~~Radial Stacker C-10~~ (AOS1) to Coarse Ore Stockpile 5 (Process #001-~~19~~ 3 (AOS1)); and

(~~e~~f) PC1 Cross Country Conveyor 3~~Radial Stacker C-10~~ (AOS1) to Coarse Ore Stockpile 6 (Process #001-20 (AOS1)).

(3) At all times when operating under AOS1, the Permittee shall, to the extent practicable, install, maintain, and operate wet suppression on the following emission units to minimize particulate matter emissions and comply with the applicable emission limitations and standards of Condition II.A.2 above. Wet suppression options include water sprays, surfactant use, water jets, foggers, inherent moisture content (including moisture from upstream water sprays), or other equivalent control methods.

[A.A.C. R 18-2-306.01.A]

(a) Overland Conveyor 3A (AOS1) to Overland Conveyor 3 (AOS1) (Process #001-2 (AOS1));

(b) Overland Conveyor 3 (AOS1) to Overland Conveyor 4 (AOS1) (Process #001-8 (AOS1)); and

(c) Overland Conveyor 4 (AOS1) to Radial Stacker 5 (AOS1) (Process #001-9 (AOS1)).

(4) At all times when operating under AOS1, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate the Sycamore Lime Silo Baghouse (AOS1) on the Sycamore Lime Silo (AOS1) (Process #007-6) to minimize particulate matter emissions and comply with applicable emission limitations and standards of Condition II.A.2 below.

[A.A.C. R18-2-306.A.2]

(5) At all times when operating under AOS1, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate the Sycamore Lime System Scrubber (AOS1) on the Sycamore Lime Slaker (AOS1) (Process #007-7) to minimize particulate matter emissions and comply with applicable emission limitations and standards of Condition II.A.2 below.

[A.A.C. R18-2-306.A.2]

(6) At all times when operating under AOS1, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate the Sycamore NaHS System Scrubber (AOS1) to minimize hydrogen sulfide

emissions from the NaHS Storage Tank (AOS1) and NaHS Distribution Tank (AOS1) (Process #055-3 (AOS1)) to comply with the applicable emission limitations and standards of Condition III.A.3 below.

[A.A.C. R18-2-306.A.2]

d. The AOS1 operations shall comply with all the requirements in Condition II.A, Condition II.B, Condition II.C, ~~and~~ Condition III.A, Condition VI.B, Condition V.C, and Condition VI.E, as applicable.

[A.A.C. R18-2-306.A.11.c]

e. Monitoring, Recordkeeping, and Reporting Requirements

The Permittee shall, contemporaneously with making the change from one operating scenario to another, record in a log a record of the scenario under which it is operating.

[A.A.C. R18-2-306.A.11.a]

Conditions III.A.1 and III.A.5.d shall be amended to read as follows:

III. UNCLASSIFIED SOURCES SUBJECT TO A.A.C. R18-2-730

A. Facilities Subject to the Standards of Performance for Unclassified Sources Under A.A.C. R18-2-730

1. Applicability

The facilities subject to the requirements of this Condition III.A are identified in the last column of the Equipment List in Attachment "C." For the Bulk Flotation Equipment (CMF-B1), Molybdenum Flotation Equipment (CMF-M), Steam Deoiler (M-SD), ~~and~~ Sycamore Bulk Flotation Equipment (AOS1) (S-FLO-B~~CMF-B2~~), and Sycamore Molybdenum Flotation Equipment (AOS1) (S-FLO-M), the requirements of Condition II.A and Condition II.B apply (as applicable) instead of the requirements of Condition III.A.2.a, Condition III.A.2.b, and Condition III.A.5.d.

5. Monitoring, Recordkeeping, and Reporting Requirements

d. The Permittee shall conduct the periodic opacity monitoring method specified in Condition I.C above on a monthly basis for the following emission units subject to Condition III.A:

[A.A.C. R18-2-306.A.3.c]

(1) Transfer of Soda Ash to the Soda Ash Storage Bin (Process #047-9);

(2) Transfer of Lime to Lime Storage Bin 1 (Process #007-3);

(3) Transfer of Lime to Lime Storage Bin 2 (Process #007-4);

(4) Delivery of Ammonium Nitrate Prill to Prill Bin 1 (Process #050-1);

(5) Delivery of Ammonium Nitrate Prill to Prill Bin 2 (Process #050-2);

(6) Delivery of Ammonium Nitrate Prill to Prill Bin 4 (Process #050-5);

(7) Delivery of Ammonium Nitrate Prill to Prill Bin 5 (Process #050-6);

(8) Transfer of Leaching Catalyst to LC Feed Hopper 1 (Process #029-5);~~ and~~

(9) Transfer of Leaching Catalyst to LC Feed Hopper 2 (Process #029-6~~).~~);

(10) Transfer of Lime to Sycamore Lime Silo (AOS1) (Process #007-6 (AOS1));

(11) Sycamore Lime Slaker (AOS1) (Process #007-7 (AOS1)); and

(12) Delivery of Ammonium Nitrate Prill to Prill Bin 6 (AOS1) (Process #050-7 (AOS1)).

ATTACHMENT "C": EQUIPMENT LIST
Addenda (Significant Revision # To be assigned by ADEQ)
to Operating Permit #77414 for
Freeport-McMoRan Bagdad Inc.

The equipment under AOS1: Two Concentrator Operations in Attachment "C" shall be replaced with the following equipment:

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
AOS1: Two Concentrator Operations							
Primary Crushing and Overland Conveying Operations (to Bagdad Concentrator) (AOS1)							
RB	Rock Breaker (AOS1)	N/A	NA	NA	NA	NA	Conditions II.A (721) and II.D.1
PC2	Primary Crusher 2 (AOS1)	7,000 tph	Metso	60x89, MK-III	TBD	2019	Conditions II.B (LL) and II.D.1
C51	Dust Collector C51 (AOS1)	15,000 acfm	FARR	GS 36/30	NA	2013	Conditions II.C and II.D.1
PC2SB	PC2 Surge Bin (AOS1)	640 tons	Designed by M3	NA	NA	2005	Conditions II.A (721) and II.D.1
PC2AF	PC2 Apron Feeder (AOS1)	6,700 tph	Metso	84"	NA	2005	Conditions II.A (721) and II.D.1
PC2DC	PC2 Dribble Conveyor (AOS1)	N/A	Turner Engineering	60"	NA	2005	Conditions II.A (721) and II.D.1

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
OC3A	Overland Conveyor 3A (AOS1)	7,600 tph	NA	60"	NA	2005	Conditions II.A (721) and II.D.1
OC3	Overland Conveyor 3 (AOS1)	7,600 tph	NA	54"	NA	1975	Conditions II.A (721) and II.D.1
OC4	Overland Conveyor 4 (AOS1)	7,600 tph	NA	54"	NA	1975	Conditions II.A (721) and II.D.1
RST5	Radial Stacker 5 (AOS1)	7,600 tph	NA	60"	NA	1975	Conditions II.A (721) and II.D.1
FSS6	Free-Standing Stacker 6 (AOS1)	7,600 tph	NA	60"	NA	1990	Conditions II.A (721) and II.D.1
Primary Crushing and Overland Conveying Operations (to Sycamore Concentrator) (AOS1)							
2110-RKB-0021	PC1 Rock Breaker (AOS1)	N/A	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2110-CRG-0021	Primary Crusher 1 (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2140-DCD-0021	PC1 Dust Collector 1 (AOS1)	14,500 acfm	FARR	TBD	TBD	TBD	Conditions II.C and II.D.1
2110-BIN-0021	PC1 Surge Pocket (AOS1)	900 tons	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
2110-FDA-0021	PC1 Discharge Apron Feeder (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2140-CVB-0021	PC1 Discharge Conveyor (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2140-CVB-0022	PC1 Cross Country Conveyor 1 (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2140-DCD-0022	PC1 CCC1 Dust Collector 2 (AOS1)	16,700 acfm	FARR	TBD	TBD	TBD	Conditions II.C and II.D.1
2140-CVB-0023	PC1 Cross Country Conveyor 2 (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2140-DCD-0023	PC1 CCC2 Dust Collector 3 (AOS1)	16,700 acfm	FARR	TBD	TBD	TBD	Conditions II.C and II.D.1
2140-CVB-0024	PC1 Cross Country Conveyor 3 (AOS1)	8,000 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2140-DCD-0024	PC1 CCC3 Dust Collector 4 (AOS1)	16,700 acfm	FARR	TBD	TBD	TBD	Conditions II.C and II.D.1
~~Additional~~ Sycamore Milling Operations (AOS1)							
2210-FDA-0101	Coarse Ore Reclaim Feeder 1 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
2210-FDA-0102	Coarse Ore Reclaim Feeder 2 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2210-FDA-0103	Coarse Ore Reclaim Feeder 3 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2210-CVB-0101	Coarse Ore Reclaim Conveyor 1 (AOS1)	4,954 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2210-DCD-0101	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	22,000 acfm	FARR	TBD	TBD	TBD	Conditions II.C and II.D.1
2210-FDA-0201	Coarse Ore Reclaim Feeder 4 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2210-FDA-0202	Coarse Ore Reclaim Feeder 5 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2210-FDA-0203	Coarse Ore Reclaim Feeder 6 (AOS1)	2,185 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2210-CVB-0201	Coarse Ore Reclaim Conveyor 2 (AOS1)	4,954 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2210-DCD-0201	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	22,000 acfm	FARR	TBD	TBD	TBD	Conditions II.C and II.D.1
2310-MLA-0101	AG Mill 1 (AOS1)	4,954 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
2310-SCN-0101	AG Mill 1 Discharge Screen 1 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2310-SCN-0102	AG Mill 1 Discharge Screen 2 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2310-SCN-0103	AG Mill Rotatable Discharge Screen 1 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2340-MLB-0111	Ball Mill 1 (AOS1)	4,376 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2310-MLA-0201	AG Mill 2 (AOS1)	4,954 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2310-SCN-0201	AG Mill 2 Discharge Screen 1 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2310-SCN-0202	AG Mill 2 Discharge Screen 2 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2310-SCN-0203	AG Mill Rotatable Discharge Screen 2 (AOS1)	2,477 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2340-MLB-0211	Ball Mill 2 (AOS1)	4,376 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2330-CVB-0121	Pebble Conveyor (AOS1)	4,080 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
2330-CVB-0122	HPGR Feed Bin Feed Conveyor (AOS1)	4,080 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-DVT-0123	HPGR Feed Diverter (AOS1)	N/A	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2330-BIN-0130	HPGR Feed Bin (AOS1)	11,400 ft3	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-FDB-0132	HPGR Belt Feeder (AOS1)	4,080 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-CVB-0134	HPGR Feed Conveyor (AOS1)	5,626 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-CRH-0140	High Pressure Grinding Roll (AOS1)	5,626 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-DCD-0141	HPGR Discharge Dust Collector 7 (AOS1)	23,000 acfm	FARR	TBD	TBD	TBD	Conditions II.C and II.D.1
2330-CVB-0141	HPGR Discharge Conveyor 1 (AOS1)	5,626 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-CVB-0142	HPGR Discharge Conveyor 2 (AOS1)	5,626 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-DCD-0142	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	27,000 acfm	FARR	TBD	TBD	TBD	Conditions II.C and II.D.1

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
2330-BIN-0150	HPGR Product Bin (AOS1)	20,700 ft3	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-DCD-0150	HPGR Product Bin Dust Collector 9 (AOS1)	25,000 acfm	FARR	TBD	TBD	TBD	Conditions II.C and II.D.1
2330-FDB-0152	HPGR Product Recycle Feeder (AOS1)	1,546 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-FDB-0163	HPGR Product Feeder 1 (AOS1)	2,040 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-FDB-0263	HPGR Product Feeder 2 (AOS1)	2,040 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-CVB-0163	HPGR Product Return Conveyor 1 (AOS1)	2,040 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-DCD-0163	HPGR Product Transfer Dust Collector 10 (AOS1)	10,000 acfm	FARR	TBD	TBD	TBD	Conditions II.C and II.D.1
2330-CVB-0263	HPGR Product Return Conveyor 2 (AOS1)	2,040 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2330-DCD-0263	HPGR Product Transfer Dust Collector 11 (AOS1)	10,000 acfm	FARR	TBD	TBD	TBD	Conditions II.C and II.D.1

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
~~Additional~~ Sycamore Bulk and Molybdenum Flotation Operations (AOS1)							
S-FLO-B	Sycamore Bulk Flotation Equipment (AOS1)	59.1 tph total conc.	TBD	TBD	TBD	TBD	Conditions II.A (721), III.A (730), and II.D.1
2420-MLV-0303	Sycamore Regrind Mill 1 (AOS1)	250 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2420-MLV-0304	Sycamore Regrind Mill 2 (AOS1)	250 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
S-FLO-M	Sycamore Molybdenum Flotation Equipment (AOS1)	59.1 tph total conc.	NA	NA	NA	varies	Conditions II.A (721), III.A (730), and II.D.1
Sycamore Concentrate Handling Operations (AOS1)							
2630-SCN-0410	Copper Filter Feed Tank Trash Screen (AOS1)	57 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2520-SCN-0517	Molybdenum Thickener Trash Screen (AOS1)	N/A	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2520-HPR-0576	Molybdenum Concentrate Filter Discharge Hopper 1 (AOS1)	N/A	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2520-HPR-0577	Molybdenum Concentrate Filter Discharge Hopper 2 (AOS1)	N/A	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
2520-CVS-0576	Molybdenum Concentrate Dryer Screw Feeder (AOS1)	2.1 tph	TBD	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2520-DRY-0576	Molybdenum Concentrate Dryer (AOS1)	2.1 tph	Holoflite	TBD	TBD	TBD	Conditions II.A (721) and II.D.1
2520-SCU-0576	Molybdenum Dryer Wet Scrubber System (AOS1)	337 acfm	TBD	TBD	TBD	TBD	Conditions II.C and II.D.1
2520-BIN-0576	Dried Molybdenum Concentrate Storage Bin (AOS1)	2.6 tons	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
2520-SYS-0576	Molybdenum Concentrate Bagging System (AOS1)	2.1 tph	TBD	TBD	TBD	TBD	Conditions II.B (LL) and II.D.1
Sycamore Lime and Other Regent Operations (AOS1)							
2360-SLO-0140	Sycamore Lime Silo (AOS1)	617 tons	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2360-BGH-0141	Sycamore Lime Silo Baghouse (AOS1)	590 ft3	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2360-FDR-0140	Sycamore Lime Screw Feeder (AOS1)	19.5 tph	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2360-MLV-0140	Sycamore Lime Slaker (AOS1)	11.36 tph	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
2360-SCU-0140	Sycamore Lime System Scrubber (AOS1)	4,400 scfm	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2720-BIN-0720	Tailings Flocculant Bag Breaker Bin (AOS1)	2.0 tons	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2720-FDR-0720	Tailings Flocculant Screw Feeder (AOS1)	0.83 tph	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2510-BIN-0580	Concentrate Flocculant Bag Breaker Bin (AOS1)	1.0 tons	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2510-FDR-0580	Concentrate Flocculant Screw Feeder (AOS1)	0.06 tph	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2440-TNK-0150	Xanthate Mix Tank (AOS1)	1,575 ft3	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2440-TNK-0152	Xanthate Holding Tank (AOS1)	2,040 ft3	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2440-TNK-0160	Test Reagent Mix Tank (AOS1)	1,575 ft3	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2440-TNK-0162	Test Reagent Holding Tank (AOS1)	2,040 ft3	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2520-TNK-0591	NaHS Storage Tank (AOS1)	7,540 ft3	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
2520-TNK-0592	NaHS Distribution Tank (AOS1)	700 ft3	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
2520-SCU-0591	Sycamore NaHS System Scrubber (AOS1)	735 acfm	TBD	TBD	TBD	TBD	Conditions III.A (730) and II.D.1
Sycamore Prill Handling Operations (AOS1)							
PB6	Prill Bin 6 (AOS1)	100 tons	NA	NA	NA	TBD	Conditions III.A (730) and II.D.1
PBV06	Prill Bin Vent 6 (no filter) (AOS1)	NA	NA	NA	NA	TBD	Conditions III.A (730) and II.D.1
Sycamore Emergency ICE (AOS1)							
2440-GEN-0101	Sycamore Diesel Emergency Generator 1 (AOS1)	609 hp engine	Caterpillar	C13	TBD	TBD	Conditions VI.B (IIII), VI.E (ZZZZ), and II.D.1
2500-GEN-0501	Sycamore Diesel Emergency Generator 2 (AOS1)	762 hp engine	Caterpillar	C15	TBD	TBD	Conditions VI.B (IIII), VI.E (ZZZZ), and II.D.1
3650-GEN-0801	Sycamore Propane Emergency Generator 1 (AOS1)	84.70 hp engine	Cummins	QSJ5.9G-G1	TBD	2023	Conditions VI.C (JJJJ), VI.E (ZZZZ), and II.D.1

Equipment ID Number	Equipment Name	Maximum Capacity	Make	Model	Serial Number	Date of Manufacture	Applicable Attachment "B" Section or Condition
3650-GEN-0802	Sycamore Propane Emergency Generator 2 (AOS1)	84.70 hp engine	Cummins	QSJ5.9G-G1	TBD	2023	Conditions VI.C (JJJJ), VI.E (ZZZZ), and II.D.1

ATTACHMENT "D": PROCESSES WITH VOLUNTARY EMISSION LIMITATIONS

Addenda (Minor Revision # To be assigned by ADEQ)
to Operating Permit #77414 for
Freeport-McMoRan Bagdad Inc.

The entry for Dust Collector C51 (AOS1) under Section A and the entire Section F of the table in Attachment “D” shall be replaced with the following information:

Process Number	Pollution Control Device Controlling the Process	Emission Unit(s) Associated with the Process	Attachment “B” Permit Condition Reference for Performance Testing Requirements
Section A (PM/PM$_{10}$ ≤ 0.0135 gr/dscf)			
001-5 (AOS1)	Dust Collector C51 (AOS1)	• Primary Crusher 2 (AOS1)	Condition II.C.3
		• Primary Crusher 2 (AOS1) to PC2 Surge Bin (AOS1)	
		• PC2 Surge Bin (AOS1) to PC2 Apron Feeder (AOS1)	
		• PC2 Apron Feeder (AOS1) to Overland Conveyor ~~2~~ 3A (AOS1)	
		• PC2 Apron Feeder (AOS1) to PC2 Dribble Conveyor (AOS1)	
		• PC2 Dribble Conveyor (AOS1) to Overland Conveyor ~~2~~ 3A (AOS1)	

Process Number	Pollution Control Device Controlling the Process	Emission Unit(s) Associated with the Process	Attachment "B" Permit Condition Reference for Performance Testing Requirements
Section F (PM/PM_{10} ≤ ~~0.0026~~0.0023 gr/dscf)			
001-12 (AOS1)	PC1 Dust Collector 1 (AOS1)	• Primary Crusher 1 (AOS1)	Condition II.C.3
		• Primary Crusher 1 (AOS1) to PC1 Surge Pocket (AOS1)	
		• PC1 Surge Pocket (AOS1) to PC1 Discharge Apron Feeder (AOS1)	
		• PC1 Discharge Apron Feeder (AOS1) to PC1 Discharge Conveyor (AOS1)	
001-13 (AOS1)	PC1 CCC1 Dust Collector 2 (AOS1)	• PC1 Discharge Conveyor (AOS1) to PC1 Cross Country Conveyor 1 (AOS1)	Condition II.C.3
001-14 (AOS1)	PC1 CCC2 Dust Collector 3 (AOS1)	• PC1 Cross Country Conveyor 1 (AOS1) to PC1 Cross Country Conveyor 2 (AOS1)	Condition II.C.3
001-15 (AOS1)	PC1 CCC3 Dust Collector 4 (AOS1)	• PC1 Cross Country Conveyor 2 (AOS1) to PC1 Cross Country Conveyor 3 (AOS1)	Condition II.C.3
002-7 (AOS1)	Coarse Ore Reclaim Conveyor 1 Dust Collector 5 (AOS1)	• Coarse Ore Reclaim Feeder 1 (AOS1) to Coarse Ore Reclaim Conveyor 1 (AOS1)	Condition II.C.3
		• Coarse Ore Reclaim Feeder 2 (AOS1) to Coarse Ore Reclaim Conveyor 1 (AOS1)	
		• Coarse Ore Reclaim Feeder 3 (AOS1) to Coarse Ore Reclaim Conveyor 1 (AOS1)	
		• HPGR Product Return Conveyor 1 (AOS1) to Coarse Ore Reclaim Conveyor 1 (AOS1)	

Process Number	Pollution Control Device Controlling the Process		Emission Unit(s) Associated with the Process	Attachment "B" Permit Condition Reference for Performance Testing Requirements
002-8 (AOS1)	Coarse Ore Reclaim Conveyor 2 Dust Collector 6 (AOS1)	•	Coarse Ore Reclaim Feeder 4 (AOS1) to Coarse Ore Reclaim Conveyor 2 (AOS1)	Condition II.C.3
		•	Coarse Ore Reclaim Feeder 5 (AOS1) to Coarse Ore Reclaim Conveyor 2 (AOS1)	
		•	Coarse Ore Reclaim Feeder 6 (AOS1) to Coarse Ore Reclaim Conveyor 2 (AOS1)	
		•	HPGR Product Return Conveyor 2 (AOS1) to Coarse Ore Reclaim Conveyor 2 (AOS1)	
002-9 (AOS1)	HPGR Discharge Dust Collector 7 (AOS1)	•	HPGR Feed Conveyor (AOS1) to High Pressure Grinding Roll (AOS1) and Operation of the High Pressure Grinding Roll (AOS1)	Condition II.C.3
		•	High Pressure Grinding Roll (AOS1) to HPGR Discharge Conveyor 1 (AOS1)	
		•	HPGR Product Recycle Feeder (AOS1) to HPGR Feed Conveyor (AOS1)	
002-10 (AOS1)	HPGR Discharge Conveyor Transfer Dust Collector 8 (AOS1)	•	HPGR Discharge Conveyor 1 (AOS1) to HPGR Discharge Conveyor 2 (AOS1)	Condition II.C.3
002-11 (AOS1)	HPGR Product Bin Dust Collector 9 (AOS1)	•	HPGR Discharge Conveyor 2 (AOS1) to HPGR Product Bin (AOS1)	Condition II.C.3
002-12 (AOS1)	HPGR Product Transfer Dust Collector 10 (AOS1)	•	HPGR Product Feeder 1 (AOS1) to HPGR Product Return Conveyor 1 (AOS1)	Condition II.C.3
002-13 (AOS1)	HPGR Product Transfer Dust Collector 11 (AOS1)	•	HPGR Product Feeder 2 (AOS1) to HPGR Product Return Conveyor 2 (AOS1)	Condition II.C.3

APPENDIX I APPLICATION ADMINISTRATIVE COMPLETENESS CHECKLIST

<table>
<tr><th colspan="2" rowspan="2">Requirement</th><th colspan="3">Meets Requirement?</th><th rowspan="2">Comment</th></tr>
<tr><th>Yes</th><th>No</th><th>N/A</th></tr>
<tr><td>1.</td><td>Has the standard application form been completed?</td><td>X</td><td></td><td></td><td>See Appendix A.</td></tr>
<tr><td>2.</td><td>Has the responsible official signed the standard application form?</td><td>X</td><td></td><td></td><td>See Appendix A.</td></tr>
<tr><td>3.</td><td>Has a process description been provided?</td><td>X</td><td></td><td></td><td>See Section 2.</td></tr>
<tr><td>4.</td><td>Are the facility’s emissions documented with all appropriate supporting information?</td><td>X</td><td></td><td></td><td>See Section 5 and Appendices C, F, and G.</td></tr>
<tr><td>5.</td><td>Is the facility subject to Minor NSR requirements? [If the answer is “Yes,” answer 6a, 6b, and 6c, as applicable. If the answer is “No,” skip to 7.]</td><td></td><td>X</td><td></td><td>See Section 10.</td></tr>
<tr><td>6.a</td><td>If the facility chooses to implement RACT, is the RACT determination included for the affected pollutants for all affected emission units?</td><td rowspan="3"></td><td rowspan="3"></td><td rowspan="3">X</td><td rowspan="3">The facility is not subject to minor NSR requirements.</td></tr>
<tr><td>6.b</td><td>If the facility chooses to demonstrate compliance with NAAQS by screen modeling, is the modeling analysis included?</td></tr>
<tr><td>6.c</td><td>If refined modeling has been conducted, is a comprehensive modeling report along with all modeling files included?</td></tr>
<tr><td>7.</td><td>Does the application include an equipment list with the type, name, make, model, serial number, maximum rated capacity, and date of manufacture?</td><td>X</td><td></td><td></td><td>See Appendix B.</td></tr>
<tr><td>8.</td><td>Does the application include an identification and description of pollution controls? (if applicable)</td><td>X</td><td></td><td></td><td>See Section 4.</td></tr>
<tr><td>9.</td><td>For any application component claimed as confidential, are the requirements of A.R.S. 49-432 and A.A.C. R18-2-305 addressed?</td><td>X</td><td></td><td></td><td>See Section 11.</td></tr>
<tr><td>10.</td><td>For any current non-compliance issue, is a compliance schedule attached?</td><td></td><td></td><td>X</td><td>See Section 9.</td></tr>
<tr><td>11.</td><td>For minor permit revision that will make a modification upon submittal of application, has a suggested draft permit been attached?</td><td></td><td></td><td>X</td><td>See Appendix H.</td></tr>
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