FINAL

TITLE V PERMIT RENEWAL APPLICATION FOR FREEPORT-MCMORAN SIERRITA INC.'S EXISTING AIR QUALITY OPERATING PERMIT NO. 6067

Prepared for

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LIST OF ACRONYMS AND ABBREVIATIONS

A.A.C.	Arizona Administrative Code
acfm	actual cubic feet per minute
ADEQ	Arizona Department of Environmental Quality
CAM	Compliance Assurance Monitoring
CE	Control Efficiency
CFR	Code of Federal Regulations
CO	carbon monoxide
dscm	dry standard cubic meter
EF	Emission Factor
EPA	U.S. Environmental Protection Agency
ESP	Electrostatic Precipitator
HAP	hazardous air pollutant
hp	horsepower
IAs	Insignificant Activities
IC	Internal combustion
lbs	pounds
MMBtu	million British thermal units
MoO_3	molybdenum trioxide
MoS_2	molybdenum disulfide
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
O_3	ozone
SIERRITA	Freeport-McMoRan Sierrita, Inc.
PM	Particulate Matter
PM_{10}	particulate matter less than 10 microns in diameter
PSD	prevention of significant deterioration
PTE	potential to emit
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SX/EW	Solution Extraction/Electro winning
TSD	technical support document
tph	tons per hour
tpy	tons per year
VE	Visible Emissions
VOC	volatile organic compound

EXECUTIVE SUMMARY

This submittal serves as the Title V renewal permit application package for Freeport-McMoRan Sierrita Inc. (Sierrita), a copper and molybdenum mining and processing facility located in Green Valley, Arizona. Operations at Sierrita include conventional open-pit mining, crushing and conveying, milling, concentration of mineral values by bulk flotation followed by differential flotation, leaching and roasting of molybdenum disulfide (MoS_2), rhenium recovery, MoS_2 and molybdenum trioxide (MoO_3) packaging, leaching of oxide ore with solution extraction/electrowinning processes and crystallization of copper sulfate pentahydrate. The Sierrita metallic mineral mining and concentration facility produces copper concentrate, copper cathode, copper sulfate, MoS_2, MoO_3, and rhenium.

The Sierrita facility, Arizona Department of Environmental Quality (ADEQ) Place ID 1567, is currently permitted under Title V Operating Permit 6067. This permit will expire on June 23, 2013. In accordance with the requirements in Pima County Code (P.C.C.) 17.12.160.D.1, Sierrita is submitting this application more than six months prior to the expiration of its current air quality operating permit.

The following actions are requested as part of this permitting procedure:

1. Renewal of Sierrita's existing Title V Air Quality Operating Permit 6067.
2. Incorporation into the renewal permit of all the permit revisions to Air Quality Operating Permit 6067 that have been issued by PDEQ.
3. Removal of all equipment replaced under Sierrita's existing Title V Air Quality Operating Permit 6067.

1.0 INTRODUCTION

1.1 FACILITY BACKGROUND

Freeport-McMoRan Sierrita, Inc. (Sierrita) operates an open-pit mine and mineral concentration facility located approximately 25 miles south of Tucson, 8 miles west of Green Valley, at the end of Duval Mine Road, and 9 miles west of I-19, in Pima County, Arizona.

The Sierrita plant became operational in 1970 and currently operates 24 hours per day, seven days per week, 365 days per year. The ore body at Sierrita contains several oxide and sulfide minerals, including copper and molybdenum. Ore is mined from the active Sierrita pit area. Raw ore production from the Sierrita pit supports the operations at Sierrita.

Sierrita is classified as a Class I "major source" pursuant to Pima County Code (P.C.C.) 17.04.340.128. Sierrita has voluntarily accepted emission limitations for PM, PM_{10} and SO_2 to remain below the Prevention of Significant Deterioration (PSD) program major source threshold of 250 tons per year for each pollutant. The potential emission rates of the following pollutants are presented in Table 1-1: particulate matter (PM), particulate matter less than 10 microns in diameter (PM_{10}), sulfur oxides (SO_x), nitrogen oxides (NO_x), carbon monoxide (CO), Volatile Organic Compounds (VOCs), and Hazardous Air Pollutants (HAPs). A detailed emissions analysis is presented in Section 7.0 of this renewal permit application.

Table 1-1. Facility-wide Potential Emissions (tons/year)

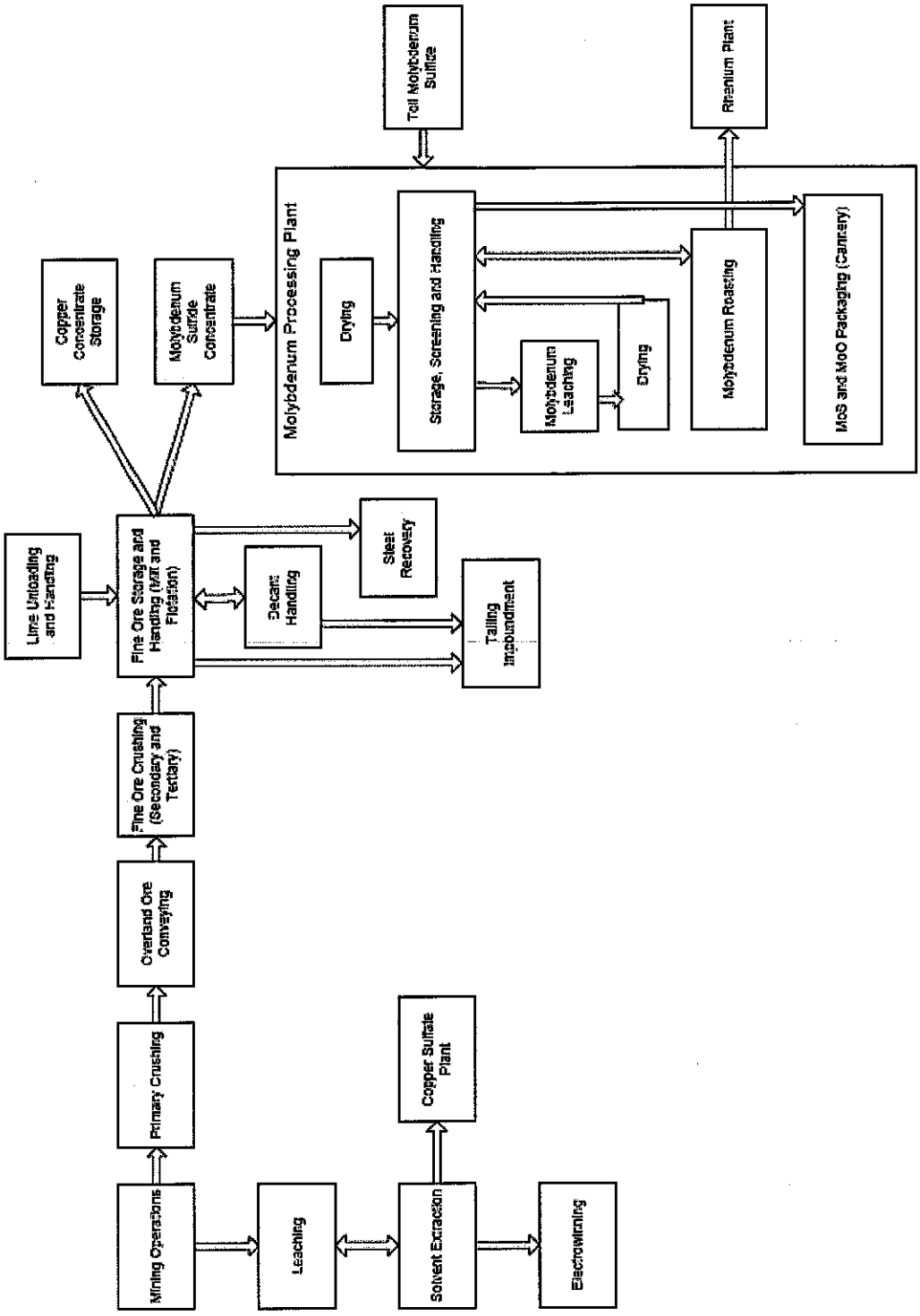
PM	PM_{10}	$PM_{2.5}$	SO_x	NO_x	CO	CO_2	VOC	HAP
84.0	77.6	10.3	85.8	111.3	62.7	44,875	72.3	3.56

1.2 PROCESS DESCRIPTION

The operations at Sierrita comprise of open pit mining, crushing and conveying, milling, concentration of mineral values by bulk flotation followed by differential flotation, leaching and roasting of molybdenum disulfide, rhenium recovery, molybdenum disulfide and trioxide packaging, leaching of oxide ore and solution extraction/electrowinning processes and crystallization of copper sulfate pentahydrate. The Sierrita metallic mineral mining and concentration facility produces copper concentrate, copper cathode, copper sulfate, molybdenum trioxide, molybdenum disulfide, and rhenium.

An overview of the various mechanical and chemical processing operations at Sierrita is shown in Figure 1-1. Individual processing operations are presented schematically in Appendix B, and each figure indicates the flow of material and the air emission sources. Typically, non-fugitive air emissions occur from processes and operations that are locally exhausted to an industrial stack designed for this purpose. Fugitive air emissions occur from processes and operations with emissions that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

Figure 1-1. SIERRITA Process Overview



The major processes at Sierrita and their potential air emission sources are summarized in Sections 1.2.1 through 1.2.9.

1.2.1 Mining Operations

Ore Excavation Operations

The ore body at Sierrita contains several oxide and sulfide minerals, including copper and molybdenum. Open-pit mining operations occur at the Sierrita pit, where ore material is mined from a number of active pit areas. The ore excavation operations include exploration activities, drilling, blasting, haul truck loading, and dumping of blasted material. Fugitive emissions may occur from these operations. The concentration of trace minerals in the waste rock is generally less than 1/1,000 of 1 percent.

Fugitive emissions from haul roads related to mining operations and vehicular traffic on unpaved roads are controlled by utilizing water and other dust suppressants, as appropriate. Air pollutant emissions from ore excavation operations are minimized by utilizing water and other dust suppressants, controlled blasting techniques, and topographical containment, as emissions released below the pit rim will likely not exit the pit and therefore should not impact ambient air quality.

Low grade oxide ore from the mining location at Sierrita is hauled by truck for placement onto the leach fields located within the facility. A solution of dilute sulfuric acid is applied to the leach field through a pumping and sprinkling configuration. The resulting leachate is collected and processed by a solution extraction/electrowinning (SXEW) recovery operation to produce copper cathode. An organic phase diluent, which includes an extraction reagent, is used to transfer the copper in pregnant leach solution to electrolyte. The actual recovery of copper through the electrowinning process is achieved at the Twin Buttes tankhouse. The leaching and solution extraction process, including heavy organic diluent, has negligible air emissions.

The equipment associated with the mining operations is identified under Section I, in Attachment "C-1" of Sierrita's existing Title V Air Quality Operating Permit. No changes are proposed to this process as part of this renewal permit application.

Primary Crushing

After being loaded into haul trucks, sulfide ore is transported to the primary crushing facilities. In the primary crushers, the ore is reduced in size to approximately six inches in diameter and smaller. There are two identical Primary Crushers at the Sierrita facility -- 6A and 6B. These are Svedala Mark II crushers, each capable of processing 5,000 tons per hour (tph). Fugitive and non-fugitive emissions occur from primary crushing. The non-fugitive PM emissions resulting from the primary crushing circuit are controlled by two 20,000 actual cubic feet per minute (cfm) FARR GS72 Cartridge Dust Collectors, while potential fugitive emissions are minimized by using air pollution control devices (e.g., water spray bars).

The equipment associated with the primary crushing circuit is identified under Section II, in Attachment "C-2" of Sierrita's existing Title V Air Quality Operating Permit. No changes are proposed to this process as part of this renewal application.

Overland Ore Conveying System

The crushed ore from the 6A and 6B Primary Crushers is transported to the Sierrita coarse ore stockpile via an overland conveyor system. The transfer of crushed coarse ore is a potential source of fugitive particulate emissions which are controlled by water spray systems when necessary.

The permitted equipment associated with the overland ore conveying system is identified in Section III of Attachment "C-2", in Sierrita's current air quality permit. No changes are proposed to this process as part of this renewal application.

Secondary and Tertiary Crushing

Secondary and tertiary crushing of coarse ore is performed prior to fine grinding. Coarse ore is transferred from the coarse ore stockpile, via a reclaim conveyor system, to the Sierrita secondary crushing system. In the secondary and tertiary crushing system, the primary crushed ore is further reduced in size; first to approximately minus 2-inch diameter using four secondary crushers and finally to approximately minus 5/8-inch diameter using 10 tertiary crushers. Crusher discharge material from each step is screened to remove minus 5/8-inch material, while oversized ore is recycled for additional crushing. The minus 5/8-inch final crushed product is transferred by a conveyor belt system into the Sierrita fine ore bin where it is stored as feed for the ball mills. 16 FARR Cartridge-Style Dust Collectors control particulate emissions from the secondary and tertiary crushing operations. 9 FARR Cartridge-Style Dust Collectors control particulate emissions from the fine ore bin.

The equipment associated with the secondary and tertiary crushing circuit is identified under Section IV, in Attachment "C-2" of Sierrita's existing Title V Air Quality Operating Permit.

1.2.2 Fine Ore Storage and Handling

Milling/Grinding and Flotation

Crushed ore from the Sierrita fine ore bin is transferred to the milling/grinding circuit via the mill feed belt system. The mill feed belt system is contained within the mill building and 16 wet scrubbers control particulate emissions.

The final stage of size reduction, from approximately 5/8-inch to sand, is accomplished through 16 single-stage ball mills. Ore and water are added to each grinding mill and the ore is pulverized as it passes through the mill. Final grind material is then advanced for primary flotation, which uses a mix of reagents to recover copper and molybdenum values from the milled ore leaving only sand or what is more commonly known as "tailing." The tailing slurry is thickened and deposited on the tailing dam. A second flotation circuit is used to separate the molybdenum disulfide from the final copper concentrate. After separation from the copper concentrate, the molybdenum disulfide is upgraded and filtered to enable further refining if necessary in the Molybdenum Processing Plant. The underflow from this flotation step is thickened and filtered to produce the final copper concentrate, which is shipped by rail and truck to an off-site smelter for copper recovery or stored on site. Milling and flotation are wet processes.

Tailing

Tailing slurry gravity flows from the concentrator at about 25,000 gallons per minute and 50% solids by weight through a 42-inch pipeline for permanent disposal at the Sierrita tailing dam. Fugitive emissions from the tailing dam are controlled by following the provisions of Sierrita's existing Title V Air Quality Operating Permit and the Tailing Dam Dust Control Management Plan.

Concentrate Storage

Copper concentrates are stored in covered and outdoor storage areas for loading and shipment off site. Transfer of copper concentrate to and from the copper concentrate pile is a potential source of fugitive emissions controlled by the high material moisture content.

Lime Handling

Bulk lime is also received and stored on site for use as pH control for various processes. Enclosures and a wet scrubber control particulate emissions from the lime handling operation.

The equipment associated with fine ore storage and handling is identified under Section V, in Attachment "C-1" of Sierrita's existing Title V Air Quality Operating Permit. No changes are proposed to this process as part of this renewal application.

1.2.3 Molybdenum Processing Plant

Unleached Molybdenum Sulfide Storage, Screening and Handling

Molybdenum disulfide from the flotation process is filtered and transferred to the Molybdenum Processing Plant where it is dried and stored in bins prior to further refining or shipment as necessary. The molybdenum disulfide is transferred throughout the Molybdenum Processing Plant by enclosed screw conveyors. A fabric filter controls particulate emissions from storage bins and material handling. A wet scrubber controls particulate emissions from the material dryers.

Leached Molybdenum Plant

The unleached molybdenum disulfide product contains some copper and lead sulfide residuals, which are reduced by a hydro-metallurgical process involving a hot ferric chloride leach. Following the hydro-metallurgical process, the liquid is separated from the solids followed by recovery of the dissolved copper as cement copper, and regeneration of the leach liquor through chlorination. The leached molybdenum disulfide is dried and stored in bins. Particulate emissions from the storage bins and material handling are controlled by one of two fabric filters, and particulate emissions from the material dryers are controlled by one of two wet scrubbers. Fugitive emissions from the FeCl leach processing area are controlled by a fume scrubber.

Molybdenum Roasting & Rhenium Recovery

The leached molybdenum disulfide is roasted in two multi-hearth roasters to yield molybdenum trioxide (MoO_3). This process is a source of particulate matter and sulfur dioxide (SO_2) emissions. The roaster emissions are passed through a cyclone for product recovery and an electrostatic precipitator (ESP) to

control particulate matter emissions. Material from the cyclone and the ESP is recycled back to the roasters. Next, SO_2 is scrubbed through a lime slurry scrubber and the cleaned gas passes through a mist eliminator to remove liquid droplets.

The roasted molybdenum oxide is placed in storage bins prior to packaging. The majority of the MoO_3 product is packaged in the cannery for shipment. The MoO_3 product is also pressed into solid molybdenum oxide briquettes. Particulate emissions generated by the MoO_3 storage bins, product packaging operation, and material handling are controlled by a fabric filter and a FARR Cartridge-Style Dust Collector.

The molybdenum roasting operations also have a rhenium recovery circuit. When the rhenium recovery circuit is in operation, the rhenium oxide in the off-gas stream is condensed, collected, concentrated, and pumped to an ion exchange process for refining and shipment.

The equipment associated with the Molybdenum Plant is identified under Section VI, in Attachment "C-1" of Sierrita's existing Title V Air Quality Operating Permit. No additional changes are proposed to this process as part of this renewal application.

1.2.4 Decant Solids Handling Equipment

The Decant Solids Handling equipment collects decant solution from the flotation process in two cement decant ponds where the solids are allowed to dry out. The stockpiled solids are converted back into liquid slurry that is recycled to the flotation process for additional molybdenum recovery.

The equipment associated with the decant solids handling facility is identified under Section VII, in Attachment "C-1" of Sierrita's existing Title V Air Quality Operating Permit. Sierrita is proposing the removal of this equipment from the permit as the process is no longer utilized. Please refer to Section 2.0 for a more detailed description relating to these proposed changes.

1.2.5 Magnetic Steel Recovery Plant

The recovery system consists of six conveyors belts and two magnets. This system operates in conjunction with the portable screen plant described in section 1.2.9 below. The unit uses a magnet to separate coarse ore and metal grinding balls. On June 21, 2011 PDEQ approved a permit revision that allowed the removal of the 160 hP and 168 hP diesel generators which were used to power the Portable Screen Plant and the Magnetic Steel Recovery Plant.

The equipment associated with the magnetic steel recovery plant is identified under Section VIII, in Attachment "C-1" of Sierrita's existing Title V Air Quality Operating Permit. No changes are proposed to this process as part of this renewal application.

1.2.6 Copper Sulfate Plant

The Copper Sulfate Plant uses a bleed stream of copper-enriched mother liquor from the solution extraction plant. The solution is chilled to precipitate copper sulfate pentahydrate crystals that are

collected, dried, and packaged. The main components of the copper sulfate plant include a solution feed tank, cooler tanks, chiller unit, wet crystal cyclones and centrifuges, and a low temperature natural gas dryer. On June 21, 2011 PDEQ approved a permit revision to modify the Compliance Assurance Monitoring (CAM) Plan for the Copper Sulfate Product Recovery Collector. On November 11, 2013 PDEQ approved a permit revision that allowed the installation of an additional baghouse for particulate emissions from the Copper Sulfate Plant.

The equipment associated with the copper sulfate plant is identified under Section IX, in Attachment "C-1" of Sierrita's existing Title V Air Quality Operating Permit. No changes are proposed to this process as part of this renewal application.

1.2.7 Natural Gas Heaters and Boilers

The facility operates several stationary fuel-burning sources such as process boilers and heaters. These units are relatively small, ranging from 1.2 to 25 million British thermal units per hour (MMBtu/hr). The units are primarily natural gas fired but can be fired on propane in emergency situations. Additional fuel burning equipment is used throughout the property for building and water heating. These units are controlled with a thermostat for climate and temperature control. Even though the products of combustion from these natural gas fired units are very minor, they have been included in the permit equipment list as emissions units.

The equipment associated with natural gas heaters and boilers is identified under Section X, in Attachment "C-1" of Sierrita's existing Title V Air Quality Operating Permit. No changes are proposed to this process as part of this renewal application.

1.2.8 Stationary Engines

Sierrita uses numerous natural gas, propane and diesel-fired internal combustion engines for emergency or standby service throughout the property. Sierrita has limited all the hours of operation of stationary internal combustion engines, with the exception of the #3 Headwall Generator, used for emergency or stand-by service to 1000 hours per year. The Headwall #3 Emergency Generator is limited to 1500 hours per year.

The equipment associated with stationary engines is identified under Section XI, in Attachment "C-1" of Sierrita's existing Title V Air Quality Operating Permit. No changes are proposed to this process as part of this renewal application.

1.2.9 Miscellaneous and Fugitive Emission Sources

Electrowinning (EW) Tankhouse

The Twin Buttes EW tankhouse receives pregnant electrolyte solution from the SX plant and returns barren electrolyte back to the SX plant for reuse. The pregnant electrolyte flows through cells containing a submerged array of cathode and anode plates. Electric current is applied to the conductive solution and, by reduction/oxidation reaction, metallic copper is plated on the cathode plates. Three large fans located

in the east-facing wall of the building continuously ventilate the EW tankhouse. Fugitive emissions are controlled by the use of balls or foam blankets.

Gasoline Storage Tanks

Three unleaded gasoline storage tanks are present at the plant. Gasoline tanks are equipped with submerged filling devices. Several other tanks containing organic and inorganic reagents are also present.

Road Rock Crushing and Screening Plant

Rock is crushed in the portable rock crushing plant to produce a product to be used for road base material and fill material, as needed. The portable rock crushing plant consists of a grizzly feeder, conveyors, a triple deck screen, a cone crusher, and a radial stacker. Particulate emissions from this operation are controlled by wet sprays at the crusher.

Miscellaneous Screens and Grizzlies

Miscellaneous portable dump hoppers, screens, and grizzlies are used to facilitate cleanup or classify trench bedding and other fine soil materials. Fugitive emissions may result from unenclosed hoppers, screens, or grizzlies and loading/unloading operations.

Portable Screen Plant

A small, portable screening plant separates spent steel grinding balls from accumulated and in-process ore removed from the ball mills during maintenance activities. The screen plant has a small hopper that discharges to a screen via a conveyor belt. The oversize spent steel grinding balls are sold as scrap, while the undersize ore is returned to the milling circuit.

Ion Exchange Plant

A pilot ion exchange system is used to remove sulfate from groundwater. The Ion Exchange system consists of 4 ion exchange columns (two cation and two anion columns). One set of anion-cation exchange columns is in use while the other anion-cation exchange columns are regenerated. Lime is used to regenerate the anion exchange columns while removing the sulfate ions and producing wet gypsum (40%) moisture. Particulate emissions from this operation may result from a small lime handling facility.

Sequential Metals Extraction Plant

A pilot test plant uses sodium hydrosulfide (NaHS) to sequentially precipitate discrete copper, zinc/cadmium, and nickel/cobalt sulfide concentrates from a pregnant leach solution (PLS) bleed stream from the existing Sierrita Solvent Extraction (SX) plant. The plant consists of four precipitation sections; each composed of two tanks in series holding PLS. NaHS is delivered to the tanks with flow controlled by oxidation-reduction potential (ORP). The addition of NaHS generates hydrogen sulfide gas (H_2S) which is immediately consumed by metals in the PLS causing the metals to precipitate. The plant is designed so that H_2S is fully consumed in the process and no H2S is expected to escape the system. Fugitive emissions may result from addition of dry reagents to the pilot plant.

Biosulfate Plant

On June 21, 2011 PDEQ approved a permit revision that allowed Sierrita to install and operate a Biosulfate pilot plant for the removal of sulfate from groundwater. The Biosulfate Pilot Plant consists of an anaerobic reactor, followed by an aerobic reactor, used to remove sulfates from groundwater. Due to industrial hygiene concerns, the bleed gas is routed through a two-stage wet caustic scrubber to remove the H2S gas prior to passing through a ground flare which burns off the excess hydrogen gas.

The equipment associated with processes described in this section is identified under Section XII, in Attachment "C-1" of Sierrita's existing Title V Air Quality Operating Permit. No changes are proposed to this process as part of this renewal application.

1.3 OPERATING PERMIT CHANGES BEING REQUESTED AS PART OF PERMIT RENEWAL

The following is a summary of the key operating permit changes being requested by Sierrita in this renewal permit application. Some of the requested permit updates relate to facility maintenance/improvement projects proposed for initiation in the next Title V operating permit term for Sierrita. Please refer to Section 2.0 of this renewal permit application for a more detailed discussion.

- Incorporation into Sierrita's renewal permit of the changes requested in permit revision applications submitted by Sierrita to PDEQ since the issuance of Permit 6067;
- Authorization of facility maintenance and improvement projects, included in Permit 6067 which were not completed during the permit term, that will allow minor modifications to the Roasting facility and improve overall equipment performance for specific units.

2.0 PROPOSED PERMIT CHANGES

As part of this renewal permit process, Sierrita requests that the actions described in following subsections be incorporated into its operating permit.

2.1 EXISTING AND PENDING PERMIT REVISION APPLICATIONS

Table 2-1 summarizes permit revision applications submitted by Sierrita to PDEQ since the issuance of Permit 6067. Sierrita is requesting that the changes requested in these revisions be incorporated into the renewal permit as part of this permitting action by PDEQ.

Table 2-1. Summary of Permit Revisions to Permit 6067

Revision No.	Description of Equipment	Status	Issue Date
6067-7P	Minor Revision – Modifications to the Compliance Assurance Monitoring Plan	Issued	06/21/11
6067-9P	Minor Revision – Changes to the Generator List and Installation of a Biosulfate Pilot Plant	Issued	06/21/11
6067-16P	Minor Revision – Replacement of the Road Rock Crushing and Screening Plant	Issued	11/21/13
6067-18P	Minor Revision – Installation of Copper Sulfate Plant Baghouse	Issued	11/21/13
6067-20P	Minor Revision – Installation of an emergency generator at the Sierrita Health Clinic and Ventilation Modifications for Secondary Crushing FARR Units	Issued	11/21/13
6067-21P	Minor Revision – Installation of an emergency generator at the Mobile Tower Radio Station	Issued	11/21/13
6067-22P	Minor Revision – Installation of an emergency generator at the Administration Communications Room	Issued	11/21/13

2.2 FACILITY IMPROVEMENT PROJECTS

Sierrita proposes the following adjustments to improve product quality, roaster efficiency , and availability and to reduce the rate of wear on roaster wear items: addition and/or relocation of feed ports; the relocation or addition of hearth sprays and burners as needed to control the temperature of the hearths; addition or relocation of drop holes on various hearths; the addition of take-offs and take-off gates on each hearth; the addition of oxygen and/or forced air to each roaster; the installation of variable speed drives on the roaster off-gas fans; and the installation of a third lime scrubber. Each of these items is discussed below. These adjustments were proposed and included in Operating Permit 6067, but were not completed during the permit term due to multiple economic and operational factors. Sierrita proposes to initiate the following changes after the issuance of its renewal permit. Sierrita expects to complete a majority of these changes within the next permit term.

Description of Current Sierrita Molybdenum Roaster Operation

The molybdenum roasters at Sierrita are composed of a series of refractory arches spaced vertically to form multiple hearths. Each hearth is enclosed in a refractory lined shell. The concentrate is fed through a single feed chute on the roof of each roaster to the top hearth. A central shaft propels the rabble arms which stir and move the material across each hearth, into drop holes to the next hearth where it is rabbled in the opposite direction radially. This rabble, drop, and reverse action continues successively downward through the roaster until the material is finally discharged from the bottom hearth.

In general, gas flow and off-take within roasters can be described as up-draft, down-draft or cross-draft. Each of these gas handling arrangements has its particular application. For example, when the material being processed is relatively insensitive to temperature variations, up-draft is commonly used to increase energy efficiency. In the up-draft arrangement, combustion and/or cooling air is introduced towards the bottom of the roaster and flows counter to material flow to the top of the roaster where it is routed to the off-gas take-off.

When more precise temperature control is required, cross-draft is used. Cross-draft utilizes combustion/cooling air intakes and gas take-offs at various hearths to achieve temperature targets required by the particular metallurgical application. The Sierrita roasters currently control off-gas movement using the cross-draft arrangement, with one take-off located on hearths 2 through 10.

In general terms, the Sierrita roasters have three thermal zones. Hearths 1 and 2 serve to ignite the sulfur-laden concentrate and begin the combustion process. The bulk of the oxidation of the concentrate occurs in hearths 3 through 6. Hearths 7 through 11 are utilized to oxidize the remaining sulfur, complete the exothermic reaction of molybdenum disulfide (MoS_2) to MoO_3 and to begin lowering the temperature of the concentrate in preparation for handling.

Description of Planned Changes

Addition and/or Relocation of Feed Ports

Concentrate feed is currently introduced to each Sierrita Molybdenum Roaster through one drop chute from a screw conveyor that discharges to Hearth #1, near the center shaft. Benchmarking of other roasting facilities by Sierrita identified the feed management strategy of introducing feed to each roaster through two ports, which dampens the "piling effect" of the single chute feed system. By dampening the piling effect, the rakes are able to level the concentrate sooner on Hearth #1, which then theoretically achieves a more uniform roasting of the MoS_2 sooner, thereby helping assure that product quality specifications are met. Roaster profiling of the sulfur content of the roasted concentrate during a three-month pilot test conducted in 2004 indicated that the concentrate routinely achieves the product sulfur specification sooner and more consistently with a split feed system than it did with a single feed system. Because the amount of sulfur that can be removed is limited by the roasters, the addition and/or relocation of feed ports will not increase intrinsic roaster capacity. The addition and/or relocation of feed ports will simply allow Sierrita to distribute roaster feed more evenly in Hearth #1, assuring that product quality specifications are consistently met.

Addition of Off-gas Take-offs and the Relocation and/or Addition of Hearth Sprays and Burners

Control of roaster temperature in each hearth is critical to the production of MoO_3. A balance must be maintained between the heat generated by the exothermic roasting reaction and the cooling effect of air entering the roaster. Although high temperatures (800 to 1000°F) are needed to drive the roasting reaction in the top hearths, over-heating in the lower hearths causes roaster damage by hardening the feed material which increases the wear rate of wear items (rabble arms and teeth). High temperatures (above 1200°F) can also result in the sublimation of $MoO_3$from solid to gas resulting in the loss of MoO_3 product.

Temperature is controlled by the use of burners, off-gas take-offs and water sprays (hearth sprays). To improve control of roaster hearth temperatures, burners and hearth sprays will be added or removed from individual hearths or relocated within hearths as needed to respond to changes in the roaster reaction rates and temperatures caused by changes in feed. Off-gas take-offs will be added to each hearth so that two take-offs are located on each hearth. Gates installed at each take-off will allow the opening and closing of take-offs as needed to assist with hearth cooling.

Relocation and/or Addition of Drop Holes

Although not done previously at Sierrita, it is common practice at other roasting facilities to adjust the location of drop-holes in roasters. This allows for more even distribution of material as it is transferred to each hearth.

Addition of oxygen to the roasters

Addition of oxygen-enriched air to the roasters will enable more complete oxidation of molybdenum sulfide feed, ensuring that quality specifications are consistently met.

Installation of Variable Speed Drives on the Roaster Off-Gas Fans

Currently, two pollution control trains, consisting of a cyclone, an ESP, a lime scrubber and a mist eliminator, control emissions from the two molybdenum roasters. These pollution control trains are designed so that off-gas from each roaster can be routed to either one of the two pollution control trains as well as between individual devices within the pollution control trains by the operation of fans and the opening and closing of a series of gates and/or louvers. The total draft through the system is controlled by the fans and louvers. The use of the louvers causes strain on the fans, which then occasionally causes them to over-amp and trip out. This has been determined to be the root cause of previous upsets. Sierrita proposes to install variable speed drives on the roaster fans to enable control of draft by the fans rather than the louvers, thereby preventing future upsets due to over-amperage of fans.

Limestone Forced Oxidation

When lime slurry (i.e., calcium oxide and water) is mixed with the SO_2 in the roaster off-gasses, calcium sulfite is formed. This lime slurry solution is recycled back to the lime slurry feed tank where additional lime is added to increase the pH and sent back to the scrubbers. Upon further oxidation in the scrubbers, the calcium sulfite forms calcium sulfate (i.e., gypsum). The gypsum builds up the scrubber potentially plugging it up. In order to prevent plugging, Sierrita cleans the lime scrubbers frequently (i.e., currently every 7 to 10 days). While one lime scrubber is cleaned, one roaster is shut down and off-gasses are diverted to the operating lime scrubber. Sierrita

proposes to retrofit the current lime slurry system that feeds the lime scrubbers with a limestone forced oxidation system. The system will inject air into the lime slurry tank forcing the precipitation of gypsum in the tank rather than in the scrubber. This will allow a higher concentration of lime to be cycled through the scrubber, which could potentially increase the efficiency of the lime scrubber as well as reduce scrubber cleaning.

Potential Throughput Rate / Potential to Emit

The maximum potential concentrate throughput rate of a single roaster is 4.2 tph, although this rate has never been sustained. Even with the assumed benefits of the proposed changes, this estimated maximum rate is not expected to be increased or sustained. This is due to the fact that the actual concentrate throughput rate is highly dependent on feed quality characteristics, such as sulfur content, moisture content, molybdenum content, oil content and hydroxide content, which dramatically affect the rate at which feed can actually be processed. Therefore, Sierrita's use of 4.2 tph to calculate a roaster's PTE is a very conservative assumption. The PTE estimates provided in Table 7-1 are based upon a maximum throughput rate of 4.2 tph per roaster.

2.3 REMOVAL OF EQUIPMENT

Table 2-2 summarizes equipment removed from service and equipment approved for installation but not installed since the issuance of Permit 6067. The proposed installation of the High Pressure Grinding Roll (HPGR) Crushing Circuit was not pursued as originally planned. Sierrita is requesting that this equipment be removed in the renewal permit as part of this permitting action by PDEQ.

Table 2-2. Summary of Equipment Removed or Not Installed Since Issuance of Permit 6067

Source No.	Equipment	Status
002	#1 Wet Scrubber – Sierrita Secondary Crushing Building	Removed
003	#2 Wet Scrubber – Sierrita Secondary Crushing Building	Removed
004	#3 Wet Scrubber – Sierrita Secondary Crushing Building	Removed
005	#4 Wet Scrubber – Sierrita Secondary Crushing Building	Removed
006	#5 Wet Scrubber – Sierrita Secondary Crushing Building	Removed
007	#7 Wet Scrubber – Sierrita Secondary Crushing Building	Removed
008	#6 Wet Scrubber	Removed
075	#10 Wet Scrubber – Sierrita Secondary Scalping Screens	Removed
112	#9 Wet Scrubber	Removed
121	#12 Wet Scrubber	Removed

Source No.	Equipment	Status
116	#11 Wet Scrubber – 8B to 8C Conveyor Transfer	Removed
401	#1 HPGR Crusher HPGR Product Conveyor RB-4 (Discharge of Crusher to Conveyor) #1 HPGR Belt Feeder RFB-1 HPGR Fine Ore Bin #1 HPGR Dust Collector	Not Installed
402	#2 HPGR Crusher HPGR Product Conveyor RB-3 (Discharge of Crusher to Conveyor) #2 HPGR Belt Feeder RFB-2 HPGR Fine Ore Bin #2 HPGR Dust Collector	Not Installed
403	RB-2 to RB-3 Conveyor Transfer Point HPGR CTP Dust Collector	Not Installed

3.0 APPLICABLE REQUIREMENTS

Table 3-1 identifies local, state, and federal regulations applicable to the operations at Freeport-McMoRan's Sierrita facility.

Table 3-1. Summary of Applicable Requirements

Source No.	Process Description	Control Equipment	Applicable Regulations	Applicable Requirements
SECTION I: MINING OPERATIONS				
089	Ammonium Nitrate Storage	No Control	P.P.C. 17.16.130.B P.C. SIP Rule 343	This equipment was installed prior to 8/24/82 and is therefore subject to State SIP R9-3-521. PM Limit: $E = 17.31P^{0.16}$ Visible Emissions (VE): 20% Opacity No VE beyond property line.
066	Blasting	None	P.C.C. 17.16.060 P.C. SIP Rule 343	This is a non-point source subject to P.C.C. 17.16.060. The source must not permit opacity in excess of 20%, and allow no VE beyond property line.
088	Drilling Operations	Water shrouding as necessary	P.C.C. 17.16.060 P.C. SIP Rule 343	This is a non-point source subject to P.C.C. 17.16.060. The source must not permit opacity in excess of 20%, and allow no VE beyond property line.
097, 077	Haul Truck Dumping and Unpaved Roads	Water and dust suppressant	P.C.C 17.16.090 P.C. SIP Rule 343	This operation is a non-point source subject to P.C.C. 17.16090. The source must take reasonable precautions to prevent dust, and allow no VE beyond property line.
SECTION II: PRIMARY CRUSHING				
113A&B	6A & 6B Primary Crushers	Cartridge-Type Dust Collector	40 CFR 60, Subpart LL 40 CFR 64 Arizona SIP R9-3-521	PM Limit: 0.05 grams/dscm Voluntary Limit CAM for PM emissions from cartridge-type dust collector
SECTION III: OVERLAND ORE CONVEYING				
069, 095, 096	Overland Ore Conveying – Sierrita B2 to B3, A2 to A3, B3 to B4	Water sprays	P.P.C. 17.16.130.B P.C. SIP Rule 343	This equipment was installed prior to 8/24/82 and is therefore subject to State SIP R9-3-521. PM Limit:

Source No.	Process Description	Control Equipment	Applicable Regulations	Applicable Requirements
				$E = 17.31P^{0.16}$ Visible Emissions (VE): 20% Opacity No VE beyond property line.
072, 102	Outdoor Storage Piles - coarse ore	Material Moisture Content / Water Sprays	P.C.C 17.16.110 P.C. SIP Rule 343	This operation is a non-point source subject to P.C.C. 17.16.110. The source must take reasonable precautions such as chemical stabilization, wetting, or covering to prevent dust. Stacking machinery shall have minimum fall and spray bars.
SECTION IV: FINE ORE CRUSHING OPERATIONS - SECONDARY AND TERTIARY CRUSHING				
201-204	Secondary Crushing	Cartridge-Type Dust Collector	40 CFR 60, Subpart LL 40 CFR 64 Arizona SIP R9-3-521	PM Limit: 0.05 grams/dscm Voluntary Limit CAM for PM emissions from cartridge-type dust collector
301-310	Tertiary Crushing	Cartridge-Type Dust Collector	40 CFR 60, Subpart LL 40 CFR 64 Arizona SIP R9-3-521	PM Limit: 0.05 grams/dscm Voluntary Limit CAM for PM emissions from cartridge-type dust collector
311-312	Conveyor Transfer Points	Cartridge-Type Dust Collector	40 CFR 60, Subpart LL 40 CFR 64 Arizona SIP R9-3-521	PM Limit: 0.05 grams/dscm Voluntary Limit CAM for PM emissions from cartridge-type dust collector
SECTION V: FINE ORE STORAGE AND HANDLING				
010-017	Fine Ore Storage – Sierrita	FARR Cartridge Dust Collectors	40 CFR 60, Subpart LL 40 CFR 64 Arizona SIP R9-3-521	PM Limit: 0.05 grams/dscm Voluntary Limit CAM for PM emissions from cartridge-type dust collector
009	8B/8C Transfer Fine Ore Storage	FARR Cartridge Style Dust Collector		
018-033	Mill Material Handling System	Wet Scrubber	P.C.C. 17.16.130.B Arizona SIP R9-3-502	This equipment was installed prior to 8/24/82 and is therefore subject to Arizona SIP R9-3-521. PM Limit:

Source No.	Process Description	Control Equipment	Applicable Regulations	Applicable Requirements
			40 CFR 64 P.C. SIP Rule 343	$E = 17.31P^{0.16}$ VE: 20% Opacity No VE beyond property line without taking reasonable precautions (excludes periods when wind speeds are in excess of 25 mph.)
063	Slaked Lime Handling System	Wet Scrubbers	P.C.C. 17.16.130.B Arizona SIP R9-3-502	This equipment was installed prior to 8/24/82 and is therefore subject to State SIP R9-3-502. Process weight rate equation: $E = 17.31P^{0.16}$ VE: 20% Opacity No VE beyond property line without taking reasonable precautions (excludes periods when wind speeds are in excess of 25 mph.).
073	Outdoor Storage Piles -copper concentrate	Material Moisture Content	P.C.C. 17.16.110 P.C. SIP Rule 343	This operation is a non-point source subject to P.C.C. 17.16.110. The source must take reasonable precautions such as chemical stabilization, wetting, or covering to prevent dust. Stacking machinery shall have minimum fall and spray bars.
Section VI: MOLYBDENUM PLANT				
042	Molybdenum Sulfide Storage, Screening, and Handling	Baghouse	P.C.C. 17.16.130.B Arizona SIP R9-3-521 40 CFR 64 P.C. SIP Rule 343	This equipment is subject to Arizona SIP R9-3-521. Process weight rate equation: $E = 3.59P^{0.62}$ VE: 20% Opacity No VE beyond property line without taking reasonable precautions (excludes periods when wind speeds are in excess of 25 mph.) . Sulfur Limit: 10% of sulfur in feed material Continuous Emission Monitoring System for SO_2 CAM for PM emissions from wet
041	Unleached Molybdenum Sulfide Dryers	Wet Scrubber		
059	Cannery Baghouse	FARR Cartridge Dust Collector		
053, 054	Leached Molybdenum Sulfide Dryers	Wet Scrubber		
058	Molybdenum Roasting and Rhenium Recovery	Multi Cyclone, ESP, Lime Slurry Scrubber, Mist Eliminator		

Source No.	Process Description	Control Equipment	Applicable Regulations	Applicable Requirements
048	Molybdenum Oxide Storage, Screening, and Handling	Baghouse		scrubbers (053 and 054) and ESP (058).
118	Molybdenum Leach Plant	Fume Scrubber		
119	Rhenium Recovery Operations	No controls		
044	Moly Sulfide Dump Hopper	Material Moisture Content	P.C.C. 17.16.100 P.C. SIP Rule 343	This is a Non-point source subject to P.C.C. 17.16.100. The source must use reasonable precautions to prevent dust, and allow no VE beyond property line without taking reasonable precautions (excludes periods when wind speeds are in excess of 25 mph.).
045 & 117	Moly Screw Conveyor Loadout #1 & #2	Material Moisture Content	P.C.C. 17.16.100 P.C. SIP Rule 343	This is a non-point source subject to P.C.C. 17.16.100. The source must use reasonable precautions to prevent dust, and allow no VE beyond property line without taking reasonable precautions (excludes periods when wind speeds are in excess of 25 mph.).
SECTION VII: DECANT SOLIDS HANDLING FACILITY				
123	Front-end Loader and Screw Conveyor	None	P.C.C. 17.16.130.B	VE: 20% Opacity
	Feed Hopper	None	40 CFR 60, Subpart LL	VE: 10% Opacity
SECTION VII: MAGNETIC STEEL RECOVERY PLANT				
125	Magnetic Steel Recovery Plant	Water Sprays	40 CFR 60, Subpart LL	PM Limit: 0.05 grams/dscm VE: 20% Opacity
SECTION IX: COPPER SULFATE PLANT				
122	Dryer, Screen, and Material Handling Facilities	Cartridge Filter Dust Collector And Baghouse	P.C.C. 17.16.130.B P.C.C. 17.16.360.B 40 CFR 64 Arizona SIP R9-3-521	PM Limit: $E = 4.10P^{0.67}$ VE: 20% Opacity CAM for PM emissions from the cartridge Collector and baghouse
SECTION X: NATURAL GAS HEATERS AND BOILERS				

Source No.	Process Description	Control Equipment	Applicable Regulations	Applicable Requirements
062	Boiler - Moly Leach Heating (Primary)	No controls	P.C.C. 17.16.165 P.C. SIP Rule 343	These boilers were installed before October 3, 1977 or are smaller than 10 MMBtu/hr; therefore, the NSPS standards do not apply. (ID 084 is larger than 10 MMBtu/hr, but predates NSPS standards.) PM: $E = 1.02Q^{0.769}$ VE: 15% Opacity No VE beyond property line without taking reasonable precautions (excludes periods when wind speeds are in excess of 25 mph.). SO_2: 1.0 lb/MMBtu
	Mine Truck Shop Wash Heater			
	Rhenium Plant Hot Water Heater			
	NG Heater - Moly Dryer Oil Heating System 1 and 2			
	Change Room Boiler			
	SX Electrolyte Heater			
	Moly Autoclave Boiler			
	EW Electrolyte Heater EW Cathode Wash Heater			
	Moly Briquette Heater			
	Moly Leach Heating (Standby)			
	Copper Sulfate Boiler			
	Mine Truck Shop Wash Heater			
	Propane Fire Boiler – Biosulfate Plant Hot Water Heater			
	Miscellaneous fuel burning equipment fired at sustained rate of less than 1 MMBtu/hr			
SECTION XI: STATIONARY ENGINES				

Source No.	Process Description	Control Equipment	Applicable Regulations	Applicable Requirements
126	Tailing Thickener Diesel Generator Mill Reservoir Fire Water Pump Molybdenum Roaster Emergency Generator CEMS Emergency Generator Hydromet Twin Buttes Emergency Fire Water Backup West Robo Shack Generator Truck Shop Generator Love Shack Generator Dispatch Tower Generator Mine Engineering Generator Administration Bldg. Generator Primary Crusher Basement Generator SCC Emergency Generator Twin Buttes Administration Building (Sandcastle) backup power Generator Twin Buttes Radio Hill backup Generator Tailing Pump Station backup power Generator Dispatch Tower #2 backup power Generator	No controls	P.C.C. 17.16.340 P.C. SIP Rule 343	PM: $E = 1.02Q^{0.769}$ VE: 10 seconds 40% opacity No VE beyond property line without taking reasonable precautions (excludes periods when wind speeds are in excess of 25 mph.). Quarterly Opacity surveys Hours: 1000 hours per 12-month rolling period SO_2: Diesel </= 600 HP: 0.00205 lb/hr Diesel > 600 HP: 0.00728 lb/hr Natural Gas: $5 X10^{-6}$ Propane: assume all sulfur converted to SO_2

Source No.	Process Description	Control Equipment	Applicable Regulations	Applicable Requirements
126	Headwall #3 Generator Mine Maintenance Truck Shop Fire Water Generator Sierrita Mobile Radio Tower backup power Generator Sierrita Health Clinic backup power Generator	No Controls	40 CFR 60 IIII P.C.C. 17.16.180A.2 P.C.C 17.16.190	PM: These units are subject to the emissions requirements of 40 CFR 60 Subart IIII PM: $E = 1.02Q^{0.769}$ VE: 10 seconds 40% opacity No VE beyond property line without taking reasonable precautions (excludes periods when wind speeds are in excess of 25 mph.). Quarterly Opacity surveys Hours: 1000 hours per 12-month rolling period SO_2: Diesel </= 600 HP: 0.00205 lb/hr Diesel > 600 HP: 0.00728 lb/hr Natural Gas: $5 X10^{-6}$ Propane: assume all sulfur converted to SO_2
126	Administration Communications Room backup power Generator	No Controls	40 CFR 60 JJJJ P.C.C. 17.16.180A.2 P.C.C 17.16.190	PM: These units are subject to the emissions requirements of 40 CFR 60 Subart JJJJ PM: $E = 1.02Q^{0.769}$ VE: 10 seconds 40% opacity No VE beyond property line without taking reasonable precautions (excludes periods when wind speeds are in excess of 25 mph.). Quarterly Opacity surveys Hours: 1000 hours per 12-month rolling period SO_2: Diesel </= 600 HP: 0.00205 lb/hr Diesel > 600 HP: 0.00728 lb/hr Natural Gas: $5 X10^{-6}$ Propane: assume all sulfur converted to SO_2

Source No.	Process Description	Control Equipment	Applicable Regulations	Applicable Requirements
SECTION XII: MISCELLANEOUS AND FUGITIVE EMISSION SOURCES				
076	SX Plant #1, SX Plant #2, SX Plant #3	Lids maintained on Mixer/Settler Tanks	P.C.C. 17.16.430	This operation is subject to P.C.C. 17.16.430. The operation must not cause the emission of gaseous or odorous material and materials, including solutions, utilized in the process shall be processed, stored, used and transported in such a manner that they will not evaporate, leak, escape or otherwise be discharged into ambient air so as to cause or contribute to air pollution.
078	Gasoline Storage Tanks	None	P.C.C. 17.16.230 40 CFR 63 CCCCCC P.C. SIP Rule 343	This equipment is subject to P.C.C. 17.16.230, and allows no VE to cross property line without taking reasonable precautions (excludes periods when wind speeds are in excess of 25 mph.).
087	Sierrita Tailings Impoundment	Tailing Dam Dust Control Management Plan	P.C.C. 17.16.120 P.C. SIP Rule 343	This source is a non-point source subject to P.C.C. 17.16.120, and allows no VE to cross property line without taking reasonable precautions (excludes periods when wind speeds are in excess of 25 mph.)
093	Road Rock Crushing and Screening Plant	Spray Bars	40 CFR 60 Subpart OOO P.C. SIP Rule 343	PM Limit: $E = 17.31P^{0.16}$ VE: 20% Opacity
124	Portable Screen Plant	Spray Bars	P.C.C. 17.16.130.B P.C.C. 17.16.370 Arizona SIP R9-3-522	PM Limit: $E = 17.31P^{0.16}$ VE: 20% Opacity
105	Twin Buttes Electrowinning Tankhouse	Surfactant, Polypropylene Balls	P.C.C. 17.16.430	This operation is subject to P.C.C. 17.16.430. The operation must not cause the emission of gaseous or odorous material and materials, including solutions, utilized in the process shall be processed, stored, used and transported in such a manner that they will not evaporate, leak, escape or otherwise be discharged into ambient air so as to cause or contribute to air pollution.
120	Miscellaneous Screens and Grizzlies	Water as necessary	P.C.C. 17.16.100 P.C. SIP Rule 343	This is a non-point source subject to P.C.C. 17.16.100. The source must use reasonable precautions to prevent dust, and allow no VE beyond property line without taking reasonable precautions (excludes periods when wind speeds are in

Source No.	Process Description	Control Equipment	Applicable Regulations	Applicable Requirements
				excess of 25 mph.).
127	Sequential Metals Extraction (SME) Pilot Plant	Dry Media Scrubbers	PCC 17.16.1430 PCC 17.12.350.A.3.c	This operation is subject to P.C.C. 17.16.430. The operation must not cause the emission of gaseous or odorous material and materials, including solutions, utilized in the process shall be processed, stored, used and transported in such a manner that they will not evaporate, leak, escape or otherwise be discharged into ambient air so as to cause or contribute to air pollution.
128	Ion Exchange (IX) Pilot Plant	Baghouse	P.C.C. 17.16.130.B P.C.C. 17.16.370 Arizona SIP R9-3-522	PM Limit: $E = 17.31P^{0.16}$ VE: 20% Opacity
129	Biosulfate Pilot Plant	Ventilation Scrubber Bleed Scrubber Ground Flare	PCC 17.16.1430 PCC 17.12.350.A.3.c	This operation is subject to P.C.C. 17.16.430. The operation must not cause the emission of gaseous or odorous material and materials, including solutions, utilized in the process shall be processed, stored, used and transported in such a manner that they will not evaporate, leak, escape or otherwise be discharged into ambient air so as to cause or contribute to air pollution.

4.0 COMPLIANCE ASSURANCE MONITORING

4.1 BACKGROUND

Compliance assurance monitoring (CAM), regulated under 40 CFR Part 64, is intended to provide a reasonable assurance of compliance with applicable requirements under the Clean Air Act for emission units that rely on pollution control device equipment to achieve compliance. Monitoring is conducted to determine that control measures, once installed or otherwise employed, are properly operated and maintained so that they continue to achieve a level of control that complies with applicable requirements.

4.2 SOURCES SUBJECT TO THE CAM REGULATION

CAM is applicable to sources that meet all of the following criteria:

- Unit is located at major source that is required to obtain Part 70 or 71 permit;
- Unit is subject to emission limitation or standard for the applicable pollutant;
- Unit uses a control device to achieve compliance;
- Potential pre-control emissions of applicable pollutant from unit are at least 100% of major source amount; and
- Unit is not otherwise exempt (e.g., subject to 111 or 112 standards promulgated after 11/15/90, stratospheric O_3 protection requirements, Acid Rain Program requirements).

4.3 CAM REVIEW FOR THE SIERRITA FACILITY

Since the Sierrita facility is currently permitted under a Title V Operating Permit, the first criterion has been satisfied. Sierrita completed the following steps during their CAM applicability review:

1. Determined which sources were subject to an applicable emission standard, used a control device to meet that standard, and were not exempt from the CAM regulation;
2. Once those sources were established, the annual pre-control PTE was calculated to determine which sources were greater than or equal to 100 tpy, and therefore, subject to the CAM regulation; and
3. For those sources subject to CAM, Sierrita also verified that none of these sources were considered "large units" (i.e., had post-control PTE of at least 100% of the major source threshold).

Tables 4-1 through 4-3 present the CAM analysis completed by Sierrita.

Table 4-1. Review of Emission Standards, Control Devices and CAM Exemptions

SIERRITA Source ID	Description	Unit is located at major source that is required to obtain Part 70 permit (64.2(a))?	Pollutants Emitted by Source							Unit is subject to an *emission limitation or standard*[1] for the applicable regulated air pollutant (or a surrogate thereof) (64.2(a)(1)).	Unit uses a *control device*[2] to achieve compliance (64.2 (a)(2))?	Any applicable Exemptions (64.2 (b))?	Calculation of potential precontrol emissions required?
			PM	PM_{10}	SO_x	NO_x	VOC	HAP	CO				
113 A	Primary Crusher 6A	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
113 B	Primary Crusher 6B	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
201	No. 1 Secondary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
202	No. 2 Secondary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
203	No. 3 Secondary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
204	No. 4 Secondary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
301	No. 1 Tertiary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
302	No. 2 Tertiary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}

Table 4-1. Review of Emission Standards, Control Devices and CAM Exemptions

SIERRITA Source ID	Description	Unit is located at major source that is required to obtain Part 70 permit (64.2(a))?	Pollutants Emitted by Source							Unit is subject to an *emission limitation or standard*[1] for the applicable regulated air pollutant (or a surrogate thereof) (64.2(a)(1)).	Unit uses a *control device*[2] to achieve compliance (64.2 (a)(2))?	Any applicable Exemptions (64.2 (b))?	Calculation of potential precontrol emissions required?
			PM	PM_{10}	SO_x	NO_x	VOC	HAP	CO				
303	No. 3 Tertiary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
304	No. 4 Tertiary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
305	No. 5 Tertiary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
306	No. 6 Tertiary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
307	No. 7 Tertiary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
308	No. 8 Tertiary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
309	No. 9 Tertiary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
310	No. 10 Tertiary Crushing Line	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}

Table 4-1. Review of Emission Standards, Control Devices and CAM Exemptions

SIERRITA Source ID	Description	Unit is located at major source that is required to obtain Part 70 permit (64.2(a))?	Pollutants Emitted by Source							Unit is subject to an *emission limitation or standard*[1] for the applicable regulated air pollutant (or a surrogate thereof) (64.2(a)(1)).	Unit uses a *control device*[2] to achieve compliance (64.2 (a)(2))?	Any applicable Exemptions (64.2 (b))?	Calculation of potential precontrol emissions required?
			PM	PM_{10}	SO_x	NO_x	VOC	HAP	CO				
311	Conveyor Transfer Points	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
312	7B/7C Conveyor Transfer Point	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
009 through 017	F.O. Bin DC1 through F.O. Bin DC9	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B), Opacity (PCC17.16.130.B)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
018 through 033	Mill Conveyor Belts	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B), Opacity (PCC17.16.130.B)	Yes. Ducons UW-4, III, size 60	No	Yes - PM, PM_{10}
041	Mo Unl. Dry. Scrubber	Yes	x	x			x			Particulate Matter Standard (PCC17.16.360.B), Opacity (PCC17.16.130.B)	Yes. Ducon UW-4X, III, size 48, SI 16062140	No	Yes - PM, PM_{10}
042	Mo Sulfide Bins	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B), Opacity (PCC17.16.130.B)	Yes. Mikro Pulsaire 81S-10-20, SI 16026630. (Alternate Baghouse Scientific Model SPJ-64-RTI)	No	Yes - PM, PM_{10}
044	MoS2 Dump Hopper	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B), Opacity (PCC17.16.130.B)	No	No	No
045	MoS2 Loadout	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B), Opacity (PCC17.16.130.B)	No	No	No
048	Mo Oxide Bins	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B), Opacity (PCC17.16.130.B)	Yes. Mikro Pulsaire 56S-10-20, SI 16026600	No	Yes - PM, PM_{10}

Table 4-1. Review of Emission Standards, Control Devices and CAM Exemptions

SIERRITA Source ID	Description	Unit is located at major source that is required to obtain Part 70 permit (64.2(a))?	Pollutants Emitted by Source							Unit is subject to an *emission limitation or standard*[1] for the applicable regulated air pollutant (or a surrogate thereof) (64.2(a)(1)).	Unit uses a *control device*[2] to achieve compliance (64.2 (a)(2))?	Any applicable Exemptions (64.2 (b))?	Calculation of potential precontrol emissions required?
			PM	PM_{10}	SO_x	NO_x	VOC	HAP	CO				
053	Mo Lcd Dryer 1	Yes	x	x			x			Particulate Matter Standard (PCC17.16.360.B), Opacity (PCC17.16.130.B)	Yes. Ducon UW-4X, III, size 48, SI 160613001	No	Yes - PM, PM_{10}
054	Mo Lcd Dryer 2	Yes	x	x			x			Particulate Matter Standard (PCC17.16.360.B), Opacity (PCC17.16.130.B)	Yes. Ducon UW-4X, III, size 48, SI 1606213002	No	Yes - PM, PM_{10}
058	Roasting (Main)	Yes	x	x	x					Particulate Matter Standard (PCC17.16.360.B), Opacity (PCC17.16.130.B, Reduced Sulfur Standard (PCC 17.16.360.E)	Yes. Cyclone, ESP, Scrubber, Mist Eliminator	Yes for SO_x. See Note 3.	Yes - PM, PM_{10}. No for SO_x because of exemption. See Note 3.
058-062 Misc.	Roasting (Main) - Natural Gas Usage	Yes	x	x	x	x	x	x	x	Opacity (PCC 17.16.165.I.1), Fuel Limitation (PCC 17.12.180.A.2)	No - The Cyclone, ESP, Scrubber, and Mist Eliminator are not required to achieve compliance with these emission limitations or standards.	No	No
059	Cannery	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	Yes. FARR Cartridge-Type Dust Collector	No	Yes - PM, PM_{10}
063	Lime Handling	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	Yes. Ducon UW-4, III, size 48, SI 1502674001	No	Yes - PM, PM_{10}
066	Blasting Ops.	Yes	x	x	x	x			x	Opacity (PCC17.16.060)	No	No	No
069	A2 to A3 Transfer	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	No	No	No
072	A3 Conveyor to pile	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	No	No	No

Table 4-1. Review of Emission Standards, Control Devices and CAM Exemptions

SIERRITA Source ID	Description	Unit is located at major source that is required to obtain Part 70 permit (64.2(a))?	Pollutants Emitted by Source							Unit is subject to an *emission limitation or standard*[1] for the applicable regulated air pollutant (or a surrogate thereof) (64.2(a)(1)).	Unit uses a *control device*[2] to achieve compliance (64.2 (a)(2))?	Any applicable Exemptions (64.2 (b))?	Calculation of potential precontrol emissions required?
			PM	PM_{10}	SO_x	NO_x	VOC	HAP	CO				
073	Cu Conc. Stockpile	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	No	No	No
075	Scalping Screens, DC#10 – No longer in use. Removed as part of this SPR	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. Ducon UW-4, III, size 102, SI 402652010	No	Yes - PM, PM_{10}
076	SX - 1,2,3	Yes					x			Various qualitative standards (R18-2-730)	No	No	No
077	Unpaved Roads	Yes	x	x						Opacity (R-18-2-612)	No	No	No
078	Gasoline Storage Tanks	Yes					x			No	No	No	No
087	Sierrita Tailings	Yes	x	x						Opacity (PCC17.16.120)	No	No	No
088	Drilling Operations	Yes	x	x						Opacity (PCC17.16.060)	No	No	No
089	Ammonium Nitrate Storage	Yes	x	x						Opacity (PCC17.16.130.B)	No	No	No
093	Road Rock Crusher	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart OOO)	No	No	No
095	B2 to B3 Transfer	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	No	No	No
096	B3 to B4 Transfer	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	No	No	No
097	Truck Load/Dump	Yes	x	x						Opacity (PCC17.16.060)	No	No	No

Table 4-1. Review of Emission Standards, Control Devices and CAM Exemptions

SIERRITA Source ID	Description	Unit is located at major source that is required to obtain Part 70 permit (64.2(a))?	Pollutants Emitted by Source							Unit is subject to an *emission limitation or standard*[1] for the applicable regulated air pollutant (or a surrogate thereof) (64.2(a)(1)).	Unit uses a *control device*[2] to achieve compliance (64.2 (a)(2))?	Any applicable Exemptions (64.2 (b))?	Calculation of potential precontrol emissions required?
			PM	PM_{10}	SO_x	NO_x	VOC	HAP	CO				
102	B4 Stacker	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	No	No	No
105	Twin Buttes Electrowin	Yes								Various qualitative standards (R18-2-730)	No	No	No
112	#8T H8000, #8 Screen, #6T, #6 Screen No longer in use. Removed as part of this SPR	Yes	x	x						Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)	Yes. Ducon UW-4, III, size 144, SI 4026490	No	Yes - PM, PM_{10}
116	8B/8C Transfer	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	Yes. Ducon UW-4, IV, size 54, SI 402 652010	No	Yes - PM, PM_{10}
117	MoS2 Loadout	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	No	No	No
118	Moly Leach Plant	Yes								Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	No	No	No
119	Rhenium Recovery	Yes								Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	No	No	No
120	Misc. Screens and Grizzlies	Yes	x	x						Opacity (R-18-2-612)	No	No	No
121	#12 Wet Scrubber - No longer in use. Removed as part of this SPR	Yes	x	x						Particulate Matter Standard (R18-2-721.B), Opacity (R18-2-702.B) Particulate Matter Standard, Visible Emissions (NSPS 40 CFR 60 Subpart LL)[3]	Yes. Ducon UW-4, III, size 144, SI 402652012	No	Yes - PM, PM_{10}

Table 4-1. Review of Emission Standards, Control Devices and CAM Exemptions

SIERRITA Source ID	Description	Unit is located at major source that is required to obtain Part 70 permit (64.2(a))?	Pollutants Emitted by Source							Unit is subject to an *emission limitation or standard*[1] for the applicable regulated air pollutant (or a surrogate thereof) (64.2(a)(1)).	Unit uses a *control device*[2] to achieve compliance (64.2 (a)(2))?	Any applicable Exemptions (64.2 (b))?	Calculation of potential precontrol emissions required?
			PM	PM_{10}	SO_x	NO_x	VOC	HAP	CO				
122	Copper Sulfate Product Recovery Collector	Yes	x	x						Particulate Matter Standard (PCC17.16.360.B) Opacity (PCC17.16.130.B)	Yes. DownFlow II Dust Collector, DFT 4-32	No	Yes - PM, PM_{10}
123	Decant Solids Handling Facility	Yes	x	x						Opacity (PCC17.16.130.B) (Feed Hopper - 40 CFR 60.382(b))	No	No	No
062-CSP	Copper Sulfate Plant Boiler	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No
062-062	East Parker Boiler	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No
062-064	East Hot-oil Heater	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No
062-065	West Hot-oil Heater	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No
062-080	Rh Plant Heater	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No

Table 4-1. Review of Emission Standards, Control Devices and CAM Exemptions

SIERRITA Source ID	Description	Unit is located at major source that is required to obtain Part 70 permit (64.2(a))?	Pollutants Emitted by Source							Unit is subject to an *emission limitation or standard*[1] for the applicable regulated air pollutant (or a surrogate thereof) (64.2(a)(1)).	Unit uses a *control device*[2] to achieve compliance (64.2 (a)(2))?	Any applicable Exemptions (64.2 (b))?	Calculation of potential precontrol emissions required?
			PM	PM_{10}	SO_x	NO_x	VOC	HAP	CO				
062-081	Change Room Boiler	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No
062-082	SX-1 Parker Boiler	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No
062-084	W-Clvr Brooks Boiler	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No
062-091	Twin Buttes Boiler	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No
062-098	Auto/Rh Plant Boiler	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No
062-099	TB Parker Boiler	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No

Table 4-1. Review of Emission Standards, Control Devices and CAM Exemptions

SIERRITA Source ID	Description	Unit is located at major source that is required to obtain Part 70 permit (64.2(a))?	Pollutants Emitted by Source							Unit is subject to an *emission limitation or standard*[1] for the applicable regulated air pollutant (or a surrogate thereof) (64.2(a)(1)).	Unit uses a *control device*[2] to achieve compliance (64.2 (a)(2))?	Any applicable Exemptions (64.2 (b))?	Calculation of potential precontrol emissions required?
			PM	PM_{10}	SO_x	NO_x	VOC	HAP	CO				
062-Misc	Misc. Natural Gas Sources	Yes	x	x	x	x	x	x	x	Particulate Matter Standard (PCC17.16.165.C.1), Opacity(PCC17.16.165.I.1) Fuel Limitation (PCC17.12.180.A.2)	No	No	No
124	Portable Screen Plant	Yes	x	x	x	x	x		x	Particulate Matter Standard (PCC17.16.370.B), Opacity (PCC17.16.130.B)	No	No	No
125	Magnetic Steel Recovery System	Yes	x	x	x	x	x		x	Particulate Matter Standard (40CFR 60.382(a)(1)), Opacity (40 CFR 60.382(a)(2), and (b))	No	No	No

Note 1: "*Emission limitation or standard* means any applicable requirement that constitutes and emission limitation, emission standard, standard of performance or means of emission limitation as defined under the Act... An emission limitation or standard may be expressed in terms of the pollutant, expressed as a specific quantity, rate or concentration of emissions or as the relationship of uncontrolled to controlled emissions. An emission limitation or standard may also be expressed either as a work practice, process or control device parameter, or other form of specific design, equipment , operational, or operation and maintenance requirement. For purposes of this part, an emission limitation or standard shall not include general operation requirements that an owner or operator may be required to meet, such as requirements to obtain a permit, to operate and maintain sources in accordance with good air pollution control practices, to develop and maintain a malfunction abatement plan, to keep records, submit reports, or conduct monitoring. (40 CFR 64.1)"

Note 2: "*Control device* means equipment other than inherent process equipment, that is used to destroy or remove air pollutant (s) prior to discharge to the atmosphere...For purposes of this part, a control device does not include passive control measures that act to prevent pollutants from forming, such as the use of seals, lids, or roofs to prevent the release of pollutants... (40 CFR 64.1)". "CAM does not apply to "pollution prevention" techniques. Control measures, such as watering or enclosing the PSEU, that do not use a traditional control device are considered passive and as a result are not covered by CAM requirements. If on the other hand, the emission unit was enclosed and vented to a control device, CAM would apply. (Summary of Comments and Responses August 1998)."

Note 3: Exemptions to applicability include 40 CFR 64.2(b)(vi). "Emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method, as defined in 64.1." Continuous compliance determination method means a method, specified by the applicable standard or an applicable permit condition, which: (1) Is used to determine compliance with an emission limitation or standard on a continuous bases, consistent with the averaging period established for the emission limitation or standard; and (2) Provides data either in units of the standard or correlated directly with the compliance unit.

Table 4-2. Uncontrolled PTE Calculations for CAM Applicable Sources – PM [1]

SIERRITA ID	Description	Control Device	NSPS	Maximum Annual Throughput Rate		Source of Max Throughput	Control Efficiency of Device	Emission Factor				Source of Emission Factor & Control Efficiency	Estimated Annual Uncontrolled Emissions PM (Tons)	Potential pre-control emissions are at least 100% of major threshold amount? (40 CFR 64.2 (a)(3)) [2]
								Controlled Emission Factor		Uncontrolled Emission Factor				
113 A	Primary Crusher 6A	No. 1 Primary FARR Dust Collector	Y	27,922,500	tons	Throughput Limit divided by 2 primary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,248	YES
113 B	Primary Crusher 6B	No. 2 Primary FARR Dust Collector	Y	27,922,500	tons	Throughput Limit divided by 4 secondary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,248	YES
201	No. 1 Secondary Crushing Line	No. 1 Secondary FARR Dust Collector	Y	13,961,250	tons	Throughput Limit divided by 4 secondary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	3,035	YES
202	No. 2 Secondary Crushing Line	No. 2 Secondary FARR Dust Collector	Y	13,961,250	tons	Throughput Limit divided by 4 secondary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	3,035	YES
203	No. 3 Secondary Crushing Line	No. 3 Secondary FARR Dust Collector	Y	13,961,250	tons	Throughput Limit divided by 4 secondary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	3,035	YES
204	No. 4 Secondary Crushing Line	No. 4 Secondary FARR Dust Collector	Y	13,961,250	tons	Throughput Limit divided by 4 secondary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	3,035	YES
301	No. 1 Tertiary Crushing Line	No. 1 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,061	YES

Table 4-2. Uncontrolled PTE Calculations for CAM Applicable Sources – PM [1]

SIERRITA ID	Description	Control Device	NSPS	Maximum Annual Throughput Rate		Source of Max Throughput	Control Efficiency of Device	Emission Factor				Source of Emission Factor & Control Efficiency	Estimated Annual Uncontrolled Emissions PM (Tons)	Potential pre-control emissions are at least 100% of major threshold amount? (40 CFR 64.2 (a)(3)) [2]
								Controlled Emission Factor		Uncontrolled Emission Factor				
302	No. 2 Tertiary Crushing Line	No. 2 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,061	YES
303	No. 3 Tertiary Crushing Line	No. 3 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,061	YES
304	No. 4 Tertiary Crushing Line	No. 4 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,061	YES
305	No. 5 Tertiary Crushing Line	No. 5 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,061	YES
306	No. 6 Tertiary Crushing Line	No. 6 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,061	YES
307	No. 7 Tertiary Crushing Line	No. 7 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,061	YES

Table 4-2. Uncontrolled PTE Calculations for CAM Applicable Sources – PM [1]

SIERRITA ID	Description	Control Device	NSPS	Maximum Annual Throughput Rate		Source of Max Throughput	Control Efficiency of Device	Emission Factor				Source of Emission Factor & Control Efficiency	Estimated Annual Uncontrolled Emissions PM (Tons)	Potential pre-control emissions are at least 100% of major threshold amount? (40 CFR 64.2 (a)(3)) [2]
								Controlled Emission Factor		Uncontrolled Emission Factor				
308	No. 8 Tertiary Crushing Line	No. 8 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,061	YES
309	No. 9 Tertiary Crushing Line	No. 9 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,061	YES
310	No. 10 Tertiary Crushing Line	No. 10 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,061	YES
311	Conveyor Transfer Points	CTP FARR Dust Collector	Y	55,845,000	tons	Throughput Limit	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	2,248	YES
312	7B/7C Conveyor Transfer Point	No. 12 FARR Dust Collector	Y	55,845,000	tons	Throughput Limit	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %).	899	YES
009	8B/8C Transfer F.O. Bin DC1	No. 1 F.O. Bin FARR Dust Collector	Y	55,845,000	tons	Throughput Limit	99.9%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %)	838	YES

Table 4-2. Uncontrolled PTE Calculations for CAM Applicable Sources – PM [1]

SIERRITA ID	Description	Control Device	NSPS	Maximum Annual Throughput Rate		Source of Max Throughput	Control Efficiency of Device	Emission Factor				Source of Emission Factor & Control Efficiency	Estimated Annual Uncontrolled Emissions PM (Tons)	Potential pre-control emissions are at least 100% of major threshold amount? (40 CFR 64.2 (a)(3)) [2]
								Controlled Emission Factor		Uncontrolled Emission Factor				
010 - 017	F.O. Bin DC2 - F.O. Bin DC9	Nos. 2 – 9 F.O. Bin FARR Dust Collectors	Y	6,205,000	tons	Max throughput = Throughput Limit divided by 9 to distribute across all 9 fabric filters.	99.0%	0.00458	g/dscm	4.58	g/dscm	Uncontrolled EF =Emissions Guarantee /(1-Control Efficiency %)	248.2	YES
018 - 033	Mill Conveyor Belts	Ducons UW-4, III, size 60	N	3,490,313	tons	Max throughput = Throughput Limit divided by 16 (ore distributed to 16 identical mills).	95%	0.00014	lb/ton	0.003	lb/ton	AP-42 11.19.2-2.	5.26	NO
041	Mo Unl. Dry. Scrubber	Ducon UW-4X, III, size 48, SI 16062140	N/A	98,550	tons	EI 2012 - Maximum throughput: 11.25 tph	99%			0.0600	lb/ton	Source Testing August 22, 2002 (PM, PM-10) to determine uncontrolled emissions. VOC source testing 1/13 & 17, 1997. Ducon UW-4 have 99% CE per product literature.	3.0	NO
042	Mo Sulfide Bins	Mikro Pulsaire 81S-10-20, SI 16026630	N/A	315,360	Tons	EI 2012 - Maximum throughput: 36 tph	99%	0.00012	lb/ton	0.1245	lb/ton	EF = AP-42 11.19.2-2 x 83 enclosed screw conveyor transfer points.	19.63	NO
048	Mo Oxide Bins	Mikro Pulsaire 56S-10-20, SI 16026600	N/A	8,760	hours	EI 2012 - Maximum throughput: 12 tph	99.9%	0.02000	lb/hr	20.00	lb/hr	Uncontrolled EF = Source Test/(1-Control Efficiency% - estimated at 99.9% for conservative estimate of uncontrolled emissions). 1996 Source Test of Baghouse Stack.	88	NO

Table 4-2. Uncontrolled PTE Calculations for CAM Applicable Sources – PM [1]

SIERRITA ID	Description	Control Device	NSPS	Maximum Annual Throughput Rate		Source of Max Throughput	Control Efficiency of Device	Emission Factor				Source of Emission Factor & Control Efficiency	Estimated Annual Uncontrolled Emissions PM (Tons)	Potential pre-control emissions are at least 100% of major threshold amount? (40 CFR 64.2 (a)(3)) [2]
								Controlled Emission Factor		Uncontrolled Emission Factor				
053	Mo Lcd Dryer 1	Ducon UW-4X, III, size 48, SI 160613001,	N/A	52,560	tons	EI 2012 - Maximum throughput: 12.0 tons/hr divided by 2 to distribute between the 2 scrubbers.	99%	0.12857	lb/ton	12.8571	lb/ton	Uncontrolled EF = Source Test/(1-Control Efficiency %). Source Testing Jan 13-17, 1997. Throughput from the 3 sets of dryers is divided by 2. Half apportioned to 053 and half apportioned to 054. Ducon UW-4 have 99% CE per product literature.	337.9	YES
054	Mo Lcd Dryer 2	Ducon UW-4X, III, size 48, SI 1606213002,	N/A	52,560	tons	EI 2012 - Maximum throughput: 12.0 tons/hr divided by 2 to distribute between the 2 scrubbers.	99%	0.12857	lb/ton	12.8571	lb/ton	Uncontrolled EF = Source Test/(1-Control Efficiency %). Source Testing Jan 13-17, 1997. Throughput from the 3 sets of dryers is divided by 2. Half apportioned to 053 and half apportioned to 054. Ducon UW-4 have 99% CE per product literature.	337.9	YES
058	Roasting (Main)	Cyclone, ESP, Scrubber, Mist Eliminator	N/A	73,584	tons	Maximum throughput: Intrinsic Roaster Capacity of 8.4 tph	99%	0. 3679	lb/ton	116.8500	lb/hr	Controlled based on source test results (2/8/13). Uncontrolled based on 2/14/95 In-house test of bypass stack, feed rate at time of test not known.	511.8	YES
059	Cannery	FARR Dust Collector	N/A	105,120	tons	EI 2012 - Maximum throughput: 12 tph	99.9%			0.1200	lb/ton	AP-42 Table 11.24-2, 1/95 - Low Moisture. Emission factor for material handling and transfer.	6.3	NO

Table 4-2. Uncontrolled PTE Calculations for CAM Applicable Sources – PM [1]

SIERRITA ID	Description	Control Device	NSPS	Maximum Annual Throughput Rate		Source of Max Throughput	Control Efficiency of Device	Emission Factor				Source of Emission Factor & Control Efficiency	Estimated Annual Uncontrolled Emissions PM (Tons)	Potential pre-control emissions are at least 100% of major threshold amount? (40 CFR 64.2 (a)(3)) [2]
								Controlled Emission Factor		Uncontrolled Emission Factor				
063	Lime Handling	Ducon UW-4, III, size 48, SI 1502674001	N	87,600	tons	Maximum product throughput is based on the maximum capacity of slaked lime handling system of 10 tph.	99%			0.1200	lb/ton	AP-42 Table 11.24-2, 1/95 - Low Moisture. Emission factor for material handling and transfer.	5.3	NO
122A	Copper Sulfate Product Recovery Collector - Process Equipment	DownFlow II Dust Collector, DFT 4-32	N	30,310	tons	07/23/12 Minor Permit Revision: 3.46 tph for material transfer point.	99.9%	0.00012	lb/ton	0.12	lb/ton	AP-42 Table 11.24-2, 1/95, SCC 3-03-024-04.	1.8	NO
122B	Copper Sulfate Baghouse - Process Equipment	Scientific SPJ-96-X4RT8	N	151,548	tons	07/23/12 Minor Permit Revision: 3.46 tph for 5 pieces of process equipment.	99.9%	0.00001	lb/ton	0.01	lb/ton	AP-42 Table 11.24-2, 1/95, SCC 3-03-024-04.	7.6	NO
122	Copper Sulfate Product Recovery Collector - CSP Dryer	DownFlow II Dust Collector, DFT 4-32	N	30,310	tons	03/17/04 Minor Permit Revision: Table 1- 3.46 tph.	99.95%	0.00985	lb/ton	19.70	lb/ton	AP-42 Table 11.24-2, 1/95, SCC 3-03-024-04.	298.5	YES

Note 1: For all sources, PM and PM_{10} are the only criteria pollutants for which an emission limitation or standard is applicable and a control device is used to achieve compliance and a calculation of potential precontrol emissions can be completed. Additionally, for all sources PM_{10} is considered to be at least 50% of PM. Therefore, PM is the limiting factor for determining if emissions are at least 100% of major threshold amount.
Note 2: If potential pre-control emissions are at least 100% of major threshold amount (YES), CAM Plan is required (40 CFR 64.2 (a)(3)).

Table 4-3. Controlled PTE Calculations for CAM Applicable Sources - PM [1]

SIERRITA ID	Description	Control Device	NSPS	Maximum Annual Throughput Rate		Source of Max Throughput	Emission Factor: Controlled Emission Factor		Source of Emission Factor & Control Efficiency	Estimated Annual Controlled Emissions PM (Tons)	Is source considered a "Large Unit" for purposes of CAM? (40 CFR 64.3 (b)(4)(ii)) [2]
113 A	Primary Crusher 6A	No. 1 Primary FARR Dust Collector	Y	27,922,500	tons	Throughput Limit divided by 2 secondary crushers.	0.0005	Lb/ton	Voluntary Emissions Limit	6.98	NO
113 B	Primary Crusher 6B	No. 2 Primary FARR Dust Collector	Y	27,922,500	tons	Throughput Limit divided by 2 secondary crushers.	0.0005	Lb/ton	Voluntary Emissions Limit	6.98	NO
201	No. 1 Secondary Crushing Line	No. 1 Secondary FARR Dust Collector	Y	13,961,250	tons	Throughput Limit divided by 4 secondary crushers.	0.0012	Lb/ton	Voluntary Emissions Limit	8.38	NO
202	No. 2 Secondary Crushing Line	No. 2 Secondary FARR Dust Collector	Y	13,961,250	tons	Throughput Limit divided by 4 secondary crushers.	0.0012	Lb/ton	Voluntary Emissions Limit	8.38	NO
203	No. 3 Secondary Crushing Line	No. 3 Secondary FARR Dust Collector	Y	13,961,250	tons	Throughput Limit divided by 4 secondary crushers.	0.0012	Lb/ton	Voluntary Emissions Limit	8.38	NO
204	No. 4 Secondary Crushing Line	No. 4 Secondary FARR Dust Collector	Y	13,961,250	tons	Throughput Limit divided by 4 secondary crushers.	0.0012	Lb/ton	Voluntary Emissions Limit	8.38	NO
301	No. 1 Tertiary Crushing Line	No. 1 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	0.002	Lb/ton	Voluntary Emissions Limit	5.58	NO
302	No. 2 Tertiary Crushing Line	No. 2 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	0.002	Lb/ton	Voluntary Emissions Limit	5.58	NO

Table 4-3. Controlled PTE Calculations for CAM Applicable Sources - PM [1]

SIERRITA ID	Description	Control Device	NSPS	Maximum Annual Throughput Rate		Source of Max Throughput	Emission Factor: Controlled Emission Factor		Source of Emission Factor & Control Efficiency	Estimated Annual Controlled Emissions PM (Tons)	Is source considered a "Large Unit" for purposes of CAM? (40 CFR 64.3 (b)(4)(ii)) [2]
303	No. 3 Tertiary Crushing Line	No. 3 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	0.002	Lb/ton	Voluntary Emissions Limit	5.58	NO
304	No. 4 Tertiary Crushing Line	No. 4 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	0.002	Lb/ton	Voluntary Emissions Limit	5.58	NO
305	No. 5 Tertiary Crushing Line	No. 5 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	0.002	Lb/ton	Voluntary Emissions Limit	5.58	NO
306	No. 6 Tertiary Crushing Line	No. 6 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	0.002	Lb/ton	Voluntary Emissions Limit	5.58	NO
307	No. 7 Tertiary Crushing Line	No. 7 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	0.002	Lb/ton	Voluntary Emissions Limit	5.58	NO
308	No. 8 Tertiary Crushing Line	No. 8 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	0.002	Lb/ton	Voluntary Emissions Limit	5.58	NO
309	No. 9 Tertiary Crushing Line	No. 9 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	0.002	Lb/ton	Voluntary Emissions Limit	5.58	NO

Table 4-3. Controlled PTE Calculations for CAM Applicable Sources - PM [1]

SIERRITA ID	Description	Control Device	NSPS	Maximum Annual Throughput Rate		Source of Max Throughput	Emission Factor: Controlled Emission Factor		Source of Emission Factor & Control Efficiency	Estimated Annual Controlled Emissions PM (Tons)	Is source considered a "Large Unit" for purposes of CAM? (40 CFR 64.3 (b)(4)(ii)) [2]
310	No. 10 Tertiary Crushing Line	No. 10 Tertiary FARR Dust Collector	Y	5,584,500	tons	Max throughput = Throughput Limit divided by 10 tertiary crushers.	0.002	Lb/ton	Voluntary Emissions Limit	5.58	NO
311	Conveyor Transfer Points	CTP FARR Dust Collector	Y	55,845,000	tons	Throughput Limit	0.0003	Lb/ton	Voluntary Emissions Limit	8.38	NO
312	7B/7C Conveyor Transfer Point	No. 12 FARR Dust Collector	Y	55,845,000	tons	Throughput Limit	0.00015	Lb/ton	Voluntary Emissions Limit	4.19	NO
009	8B/8C Transfer F.O. Bin DC1	No. 1 F.O. Bin FARR Dust Collector	Y	55,845,000	tons	Throughput Limit	0.0007	lb/ton	Voluntary Emissions Limit	19.54	NO
010 - 017	F.O. Bin DC2 - F.O. Bin DC9	Nos. 2 – 9 F.O. Bin FARR Dust Collectors	Y	6,205,000	tons	Max throughput = Throughput Limit divided by 9 to distribute across all 9 fabric filters.	0.00047	lb/ton	Voluntary Emissions Limit	11.66	NO
053	Mo Lcd Dryer 1	Ducon UW-4X, III, size 48, SI 160613001	N/A	52,560	tons	EI 2003 -Maximum throughput: 12 tph divided by 2 to distribute between the 2 scrubbers.	0.12857	lb/ton	Uncontrolled EF = Source Test/(1-Control Efficiency %). Source Testing Jan 13-17, 1997. Throughput from the 3 sets of dryers is divided by 2. Half apportioned to 053 and half apportioned to 054. Ducon UW-4 have 99% CE per product literature.	4.7	NO

Table 4-3. Controlled PTE Calculations for CAM Applicable Sources - PM [1]

SIERRITA ID	Description	Control Device	NSPS	Maximum Annual Throughput Rate		Source of Max Throughput	Emission Factor: Controlled Emission Factor		Source of Emission Factor & Control Efficiency	Estimated Annual Controlled Emissions PM (Tons)	Is source considered a "Large Unit" for purposes of CAM? (40 CFR 64.3 (b)(4)(ii)) [2]
054	Mo Lcd Dryer 2	Ducon UW-4X, III, size 48, SI 1606213002	N/A	36,792	tons	EI 2003 -Maximum throughput: 12 tons/hr divided by 2 to distribute between the 2 scrubbers.	0.12857	lb/ton	Uncontrolled EF = Source Test/(1-Control Efficiency %). Source Testing Jan 13-17, 1997. Throughput from the 3 sets of dryers is divided by 2. Half apportioned to 053 and half apportioned to 054. Ducon UW-4 have 99% CE per product literature.	4.7	NO
058	Roasting (Main)	Cyclone, ESP, Scrubber, Mist Eliminator	N/A	73,584	tons	EI 2003 -Maximum throughput: Intrinsic Roaster Capacity of 8.4 tph	0.3679	lb/ton	Source test results (2/8/13)	13.5	NO
122	Copper Sulfate Plant - CSP Dryer	DownFlow II Dust Collector, DFT 4-32, Scientific SPJ-96-X4RT8	N	30,310	tons	03/17/04 Minor Permit Revision: Table 1- 3.46 tph.	0.00985	lb/ton	Uncontrolled EF = AP-42 /(1-Control Efficiency %).	0.1	NO

Note 1: For all sources, PM and PM_{10} are the only criteria pollutants for which an emission limitation or standard is applicable and a control device is used to achieve compliance and a calculation of potential precontrol emissions can be completed. Additionally, for all sources PM_{10} is considered to be at least 50% of PM. Therefore, PM is the limiting factor for determining if emissions are at least 100% of major threshold amount.

Note 2: If potential controlled emissions are at least 100 percent of major threshold amount (YES), unit is considered large and must collect four or more data values each hour (i.e., Continuous Emission Monitoring System) (40 CFR 64.3 (b)(4)(ii)).

As a result of the above analysis, specific baghouses, wet scrubbers and ESPs located at the Sierrita facility are subject to the CAM regulation. As such, Sierrita will comply with all the applicable requirements specified in the standard and will certify compliance with the requirements of the aforementioned subparts as part of the compliance certification as required by 40 CFR Part 70. Sierrita has modeled their CAM plans according to the illustrations given in Appendix B of U.S. Environmental Protection Agency's (EPA's) *Technical Guidance Document: Compliance Assurance Monitoring* (August 1998). Table 4-4 presents the illustrations used for the required CAM plans.

Table 4-4. EPA Illustrations Used for SIERRITA CAM Plans

SIERRITA Source	EPA CAM Illustration No.	EPA CAM Illustration Description	Illustration Indicators Monitored	Comments
Baghouses and Cartridge Dust Collectors	1c	Fabric Filter for PM Control	Pressure differential, opacity, and inlet temperature	This illustration was chosen as it closely matches Sierrita's current monitoring approach. Please note, inlet temperature is not monitored as it is not applicable to Sierrita's operations.
ESPs	2a	ESP for PM Control	Secondary voltage, secondary current	This illustration was chosen as it closely matches Sierrita's current monitoring approach. Please note, Sierrita has chosen to use primary voltage and primary current as they are indicative of the overall operation and particulate collection efficiency of the ESP.
Wet Scrubbers	4b	Wet Scrubber for PM Control	Pressure differential, scrubber liquid flow rate	This illustration was chosen as it closely matches Sierrita's current monitoring approach.

Sierrita requests that the CAM plans and monitoring approaches associated with the following sources be removed from the permit as the related equipment has been removed since issuance of Permit #6067.

I. Sierrita Secondary Crushing Building, Source IDs 002 - 007

II. Two Tertiary Crushers (No. 6 and No. 8) and Associated Discharge Screens, Source ID 112

III. Primary Crushers 6A and 6B, Source ID 113

IV. No. 2 and No. 4 Tertiary Crushers, No. 2, No. 3 and No. 4 Tertiary Discharge Screens, and Three Conveyor Transfer Points, Source ID 121

V. Sierrita Secondary Scalping Screens, Source ID 075

VI. Fine Ore Transfer Building, Source ID 008

VII. 8B to 8C Conveyor Transfer, Source ID 116

Sierrita requests that the CAM plans and monitoring approaches associated with the following sources be maintained in the renewal permit as currently included in Permit #6067.

I. Sierrita Crushing Operations: Source IDs 113A and B, 201-204, and 301-312

II. Leached Moly Sulfide Dryers, Source IDs 053 and 054

III. Sierrita Fine Ore Bin, Source IDs 009 - 017

IV. Molybdenum Roasting Source ID 058

V. Copper Sulfate Plant Fluid Bed Dryer, Source ID 122A & B

For reference purposes, these CAM plans and monitoring approaches have been provided below:

I. Sierrita Crushing Operations: Source IDs 113A and B, 201-204, and 301-312

A. Background

1. Emissions Unit

Description:	(1) Two primary crushers and associated dump hoppers and conveyors. Each primary crushing system is ducted to a 30,000 acfm cartridge-type dust collector. These sources are identified as Source IDs 113A and B. (2) Four secondary crushing lines each consisting of an apron feeder, coarse ore reclaim belt, scalping screen, secondary crusher and discharge screen. Each secondary crushing line is ducted to a 40,500 acfm cartridge-type dust collector. These sources are identified as Source IDs 201-204 (3) Ten tertiary crushing lines each consisting of a tertiary feeder belt, tertiary crusher and discharge screen. Each tertiary crushing line is ducted to a 27,500 acfm cartridge-type dust collector. These sources are identified as Source IDs 301-310. (4) One conveyor transfer point: 8D/8B. This conveyor transfer point is ducted to one 30,000 acfm cartridge-type dust collector. This source is identified as Source ID 311. (5) 7B/7C Conveyor transfer point ducted to one 12,000 acfm cartridge-type dust collector. This source is identified as Source ID 312 The copper bearing ore crushed, screened and conveyed by these units ranges in moisture content from 3 to 5 percent by weight.
Identification:	Source IDs, 113A and B, 201-204, 301-312
Facility:	Freeport-McMoRan Sierrita, Inc. (Sierrita)

2. Applicable Regulation, Emission Limit, and Pre-CAM Monitoring Requirements

Regulation: 40 CFR 60.382 and PCC 17.12.350

Emissions limits:

- Stack emissions shall not contain PM in excess of 0.05 grams per dry standard cubic meter.
- The facility shall not cause to be discharged into the atmosphere any process fugitive emissions that exhibit greater than 7% opacity.
- Voluntary Unit Specific Limits:

  201-202: 0.0006 lb/ton

  203-204: 0.0012 lb/ton

  302, 304, 306, 308, 310: 0.002 lb/ton

  301, 303, 305, 307, 309: 0.001 lb/ton

  311: 0.0003 lb/ton

  312: 0.00015 lb/ton

  113A&B: 0.0005 lb/ton

Monitoring Requirements:

- Conduct a biweekly visual survey of visible emissions from the metallic mineral mining units (non-fugitive sources) when they are in operation.
- Conduct PM performance tests on Source IDs 113A&B within 180 days after initial startup of each dust collector and subsequent tests occurring annually with at least 9 months between tests.
- Conduct PM Performance tests on Source IDs 203 and 204 within 180 days after initial startup of each dust collector and one representative test per year on a rotating basis.
- Conduct PM Performance tests on Source IDs 302, 304, 306, 308 and 310 within 180 days after initial startup of each dust collector and two representative tests per year on a rotating basis.
- Perform Monthly Emission Rate Calculations as required by Condition II.K

3. Control Technology

Controls: 113A & B: (2) 30,000 acfm FARR GS72 Cartridge Dust Collectors

201-204: (4) 40,500 acfm FARR GS72 Cartridge Dust Collectors

301-310: (10) 27,500 acfm FARR GS48 Cartridge Dust Collectors

	311: (1) 30,000 FARR acfm Cartridge Dust Collector
	312: (1) 12,000 acfm FARR Cartridge Dust Collector
Capture System:	Closed-duct System
Bypass:	N/A

B. Monitoring Approach

General Criteria	The key elements of the monitoring approach are presented in 4-6. Monitoring Approach for Baghouses and Cartridge Dust Collectors. Normal process operations will not produce conditions that adversely affect the FARR Dust collectors; therefore, no process operation parameters will be monitored.

C. Justification

1. Monitoring Approach and Indicator

Pressure differential and opacity were selected because they are indicative of the overall operation and performance of the FARR units. FARR pressure differential was selected since increases in pressure differential indicate fabric blinding or decreased permeability, while decreases in pressure differential indicate changes in operation. Opacity was selected since increases indicate process changes, changes in FARR efficiency, or leaks.

2. Indicator Ranges

The range of pressure differential was selected based on upon manufacturer's recommendations for optimal pressure differential operation ranges. The cartridge collector is designed with lower and upper differential pressure settings of 1 inch and 5.0 inches respectively. Differential pressure data collected since the start-up of the FARR Dust Collectors indicates that the differential pressure has been maintained within this range.

3. Indicator Ranges – Opacity

The proposed opacity indicator range (no visible emissions) is based upon the monitoring requirements in the current Title V Operating Permit. Pursuant to the current Title V Operating Permit, Sierrita conducted certified Method 9 observations on the FARR cartridge dust collectors while they were operating at normal representative working conditions to establish baseline opacity levels and submitted the results to the Director. The baseline opacity levels for the 18 FARR collectors controlling emissions from the Sierrita Primary, Secondary and Tertiary Crushing operations are zero percent. Bi-weekly observations conducted during the past 6 months indicate that the baseline opacity levels have not been exceeded.

II. Leached Moly Sulfide Dryers, Source IDs 053 and 054

A. Background

1. Emissions Unit

Description:	Three sets of low-temperature, indirectly-heated thermal screw conveyors convey and heat leached molybdenum sulfide to reduce moisture from approximately 18 percent to approximately 5 to 8 percent. Emissions from the thermal screw conveyors are collected and ducted to one of two 6,400 acfm Ducon venturi wet scrubbers to remove particulate matter (PM) emissions.
Identification:	Source IDs 053 and 054, Moly Sulfide Dryers
Facility:	Freeport-McMoRan Sierrita Inc. (Sierrita)

2. Applicable Regulation, Emission Limit, and Pre-CAM Monitoring Requirements

Regulation: PCC 17.16.360 and 17.16.130

Emissions limits:

- Stack emissions shall not contain PM in excess of the amount calculated by the following equation: E = 3.59P^0.62. Where, E = the maximum allowable particulate emissions rate in pounds-mass per hour and P = the process weight rate in tons-mass per hour.
- The opacity of emissions from any of the equipment shall not be greater than 20 percent as measured by EPA Reference Method 9.

Monitoring Requirements:

- Within 180 days of startup, conduct certified Method 9 observations on the scrubbers while they are operating at normal representative working conditions to establish a baseline opacity level.
- Conduct performance tests biennially of Source IDs 053 & 054.
- Perform Monthly Emission Rate Calculations as required by Condition II.K

3. Control Technology

Controls:	Two 6,400 acfm Ducon Venturi Wet Scrubbers, used on an alternating basis.
Capture System:	Closed-duct System
Bypass:	N/A

B. Monitoring Approach

General Criteria — The key elements of the monitoring approach are presented in Table 4-7, Monitoring Approach for Leached Moly Sulfide Dryers. This monitoring is the same as the monitoring approach for wet scrubbers. Normal process operations will not produce conditions that adversely affect the scrubbers; therefore, no process operation parameters will be monitored.

C. Justification

1. Monitoring Approach and Indicator

The pressure differential and liquid flow rate were selected because they are indicative of the overall operation and performance of wet scrubbers. Pressure is an indicator of the overall performance of the efficiency of the system as a collection device. Sufficient water flow providing contact between the inlet and exhaust gas flows indicates the scrubber is performing as designed to reduce particulate emissions.

2. Indicator Ranges

The range of differential pressure and liquid flow rate was selected based upon the existing semiannual reporting requirement of New Source Performance Standard Subpart LL, Standards of Performance for Metallic Mineral Processing Plants as described for other wet scrubbers at Sierrita. Although the Leached Moly Sulfide Dryers are non-NSPS affected facilities, Sierrita will monitor and record the differential pressure and water flow from the wet scrubbers daily. A flow meter and differential pressure meter have been installed on the scrubber and data is electronically recorded continuously.

Performance testing of Source IDs 053 and 054 has been conducted with differential pressures averaging from 6.2 to 6.6 inches water and with water flows averaging 31 gallons per minute.

III. Sierrita Fine Ore Bin, Source IDs 009 - 017.

A. Background

1. Emissions Unit

Description:	All ore from the fine crushing building is conveyed to the Sierrita Fine Ore Bin where it is stored for further processing in the Mill/Concentrator. Sprays located on the conveyor belt from the fine crushing building maintain material moisture content of approximately 3-5 percent. A tripper car distributes material evenly across the fine ore bin. Emissions from the bin and the distribution of material from the tripper car are controlled by eight 3,000 acfm FARR Cartridge Dust Collectors (Source IDs 010 – 017) and one 10,500 acfm FARR Dust Collector(Source ID 009).
Identification:	Source IDs 009 - 017, Sierrita Fine Ore Bin
Facility:	Freeport-McMoRan Sierrita, Inc. (SIERRITA)

2. Applicable Regulation, Emission Limit, and Pre-CAM Monitoring Requirements

Regulation: 40 CFR 60.382 and PCC 17.12.350

Emissions limits:

- Stack emissions shall not contain PM in excess of 0.05 grams per dry standard cubic meter.
- The facility shall not cause to be discharged into the atmosphere any process fugitive emissions that exhibit greater than 7% opacity.
- Voluntary Unit Specific Limits:

  009: 0.0001 lb/ton

  010-017: 0.00025 lb/ton

Monitoring Requirements:

- Conduct a biweekly visual survey of visible emissions from the metallic mineral mining units (non-fugitive sources) when they are in operation.
- Conduct PM Performance tests on Source IDs 009-017 within 180 days after initial startup of each dust collector and two representative tests per year on a rotating basis.
- Perform Monthly Emission Rate Calculations as required by Condition II.K

3. Control Technology

Controls:	Eight 3,000 acfm FARR Cartridge Dust Collectors and one 10,500 acfm FARR Cartridge Dust Collectors are mounted on the top of the Sierrita Fine Ore Bin.
Capture System:	Closed-duct System
Bypass:	N/A

B. Monitoring Approach

General Criteria	The key elements of the monitoring approach are presented in Table 4-6, Monitoring Approach for Baghouses and Cartridge Dust Collector. Normal process operations will not produce conditions that adversely affect the FARR Units; therefore, no process operation parameters will be monitored.

C. Justification

1. Monitoring Approach and Indicator

Pressure differential and opacity were selected because they are indicative of the overall operation and performance of the FARR units. FARR pressure differential was selected since increases in pressure differential indicate fabric blinding or decreased permeability, while decreases in pressure differential indicate changes in operation. Opacity was selected since increases indicate process changes, changes in FARR efficiency, or leaks.

2. Indicator Ranges

The range of pressure differential was selected based on upon manufacturer's recommendations for optimal pressure differential operation ranges. The cartridge collector is designed with lower and upper differential pressure settings of 1 inch and 5.0 inches respectively. Differential pressure data collected since the start-up of the FARR Dust Collectors indicates that the differential pressure has been maintained within this range.

3. Indicator Ranges – Opacity

The proposed opacity indicator range (no visible emissions) is based upon the monitoring requirements in the current Title V Operating Permit. Pursuant to the current Title V Operating Permit, Sierrita conducted certified Method 9 observations on the FARR cartridge dust collectors while they were operating at normal representative working conditions to establish baseline opacity levels and submitted the results to the Director. The baseline opacity levels for the 9 FARR collectors controlling emissions from the Sierrita Fine Ore Bin operations are zero percent. Bi-weekly observations conducted during the past 6 months indicate that the baseline opacity levels have not been exceeded.

IV. Molybdenum Roasting Source ID 058

A. Background

1. Emissions Unit

Description: Leached molybdenum disulfide is roasted in two Skinner Multiple Hearth Roasters to yield molybdenum trioxide. This process is a source of particulate and sulfur dioxide emissions. Emissions are passed through a cyclone for product recovery, an electrostatic precipitator for particulate matter removal, a lime scrubber for removal of sulfur dioxide and a mist eliminator for removal of moisture and acid mist.

The monitoring of SO2 emissions is exempt from CAM pursuant to 40 CFR 64.2(b)(vi). "Emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method, as defined in §64.1." Therefore, PM is the only regulated air pollutant for which CAM applies.

Identification: Source ID 058, Molybdenum Roasting

Facility: Freeport-McMoRan Sierrita Inc. (Sierrita)

2. Applicable Regulation, Emission Limit, and Pre-CAM Monitoring Requirements

Regulation: PCC 17.16.360 and 17.16.130

Emissions limits (PM Only):

- Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

  $E = 3.59P^{0.62}$

  Where:

  E = the maximum allowable particulate emissions rate in pounds-mass per hour

  P = the process weight rate in tons-mass per hour. The total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter.

- Voluntary Emissions Limit: 7.0 lb/hour PM/PM10
- The opacity of emissions from any of the equipment into the atmosphere shall not be greater than 20 percent as measured by EPA Reference Method 9.

Monitoring Requirements (Particulate Matter Only):

- Within 180 days of startup, conduct certified Method 9 observations on the scrubbers while they are operating at normal representative working conditions to establish a baseline opacity level.
- Conduct a biweekly visual survey of visible emissions from the metallic mineral mining units when they are in operation.
- Perform Monthly Emission Rate Calculations as required by Condition II.K

3. Control Technology

Controls: The Sierrita molybdenum roaster off-gas system is designed so that off-gas from either of the two roasters can be routed to either one of two pollution control trains each consisting of a cyclone used for product recovery, an electrostatic precipitator for removal of particulate matter, a lime scrubber for removal of sulfur dioxide and a mist eliminator for removal of moisture and acid mist.

Although some additional particulate matter control is expected from the lime scrubber and mist eliminator, the electrostatic precipitator (designed to 99% control efficiency) is the control device used to achieve compliance with the particulate matter standard. Therefore, CAM is proposed for the electrostatic precipitator only.

The electrostatic precipitators (ESP) are 52,300 acfm dry ESPs with three fields each. Each field is equipped with separate, independent power supplies, controllers, and meters. Each of these fields acts as a separate ESP. This allows flexibility in operating the ESP and reduces the likelihood of an electrical failure shutting down the entire ESP. Two fields of the ESP are operated at the proposed indicator ranges at all times during which the emissions unit is operating. One field may be shutdown or operated at a lower amperage and voltage.

Capture System: Closed-duct System

Bypass: N/A

B. Monitoring Approach

General Criteria: The key elements of the monitoring approach are presented in Table 4-8, Monitoring Approach for the Electrostatic Precipitator. Normal process operations will not produce conditions that adversely affect the ESP; therefore, no process operation parameters will be monitored.

C. Justification

1. Monitoring Approach and Indicator

The monitoring approach was modeled from CAM Illustration No. 2a – ESP for PM Control. The primary current and voltage were selected because they are indicative of the overall operation and particulate collection efficiency of the ESP and the ESPs are currently equipped to monitor these parameters (secondary voltage and current can be calculated from primary current and voltage). Measuring the primary current and voltage helps in identifying which fields are operating properly. Primary current is an indicator of spark rate. Excessive sparking may decrease control efficiency. Decreases in primary voltage indicates a loss of power to a field.

2. Indicator Ranges

Sierrita consulted with pollution control specialists Baghouse Associates (BHA) to evaluate the ESPs and propose indicator ranges that will provide a reasonable assurance of compliance with the particulate matter standard and signal potential problems with the operation or maintenance of the ESP. BHA has informed Sierrita that the ESPs could be operated at ½ the current power with equal efficiency. The indicator ranges were developed using the expertise of BHA and over thirty years of experience at Sierrita operating and maintaining the ESPs.

As described above, the ESPs each contain three fields. Each field is equipped with separate, independent power supplies, controllers, and meters. Each of these fields acts as a separate ESP. This allows flexibility in operating the ESP and reduces the likelihood of an electrical failure shutting down the entire unit. At least two fields of each ESP will be operated at greater than 25 amps (primary current) and greater than 200 volts (primary voltage) at all times during which feed is entering both roasters. When feed is entering only one roaster, at least two fields of one ESP will be operated at greater than 25 amps (primary current) and greater than 200 volts (primary voltage) at all times during which feed is entering one roaster.

A PM performance test was completed on March 11, 2008 during which the proposed indicators were monitored and recorded. The data recorded during the performance test is provided below. Measured PM emissions during the performance test were 3.58 pounds per hour (PPH). Based on the process-weight-rate equation above, the maximum allowable emissions rate was 12.43 pounds per hour (PPH).

V. Copper Sulfate Plant Fluid Bed Dryer, Source ID 122.

A. Background

1. Emissions Unit

Description:	Low temperature (180° F) natural gas fluidized bed dryer. The copper sulfate plant fluid bed dryer dries precipitated copper sulfate pentahydrate crystals in the Copper Sulfate Plant to approximately one percent moisture by weight. Emissions from the dryer are vented to a product recovery cartridge collector and baghouse.
Identification:	Source ID 122, Copper Sulfate Plant Fluid Bed Dryer
Facility:	Freeport-McMoRan Sierrita, Inc. (Sierrita)

2. Applicable Regulation, Emission Limit, and Pre-CAM Monitoring Requirements

Regulation: PCC 17.16.360 and 17.16.130

Emissions limits:

- Standard Applicable Until A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County: Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

  $E = 17.31P^{0.16}$

  Where:

  E = the maximum allowable particulate emissions rate in pounds-mass per hour

  P = the process weight rate in tons-mass per hour. The total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter.

- The opacity of emissions from any of the equipment into the atmosphere shall not be greater than 20 percent as measured by EPA Reference Method 9.

Monitoring Requirements:

- Conduct a biweekly visual survey of visible emissions from the metallic mineral mining units when they are in operation.
- Perform Monthly Emission Rate Calculations as required by Condition II.K

3. Control Technology

Controls:	One DownFlow II Cartridge Dust Collector
	One Scientific SPJ-96-X4RT8 Baghouse
Capture System:	Closed-duct System
Bypass:	N/A

B. Monitoring Approach

General Criteria — The key elements of the monitoring approach are presented in Table 4-6, Monitoring Approach for Baghouses and Cartridge Dust Collector. Normal process operations will not produce conditions that adversely affect the dust collectors; therefore, no process operation parameters will be monitored.

C. Justification

1. Monitoring Approach and Indicator

Pressure differential and opacity were selected because they are indicative of the overall operation and performance of the dust collector. Dust collector pressure differential was selected since increases in pressure differential indicate fabric blinding or decreased permeability, while decreases in pressure differential indicate changes in operation. Opacity was selected since increases indicate process changes, changes in dust collector efficiency, or leaks.

2. Indicator Ranges – Pressure Differential

The range of pressure differential was selected based upon baseline historical monitoring data and recommendations by the designer of the Copper Sulfate Plant.. The cartridge collector is designed with lower and upper differential pressure settings of 1 inch and 6.0 inches respectively. Differential pressure data collected since the start-up of the Copper Sulfate Plant indicates that the differential pressure has been maintained within this range.

3. Indicator Ranges – Opacity

The proposed opacity indicator range (not to exceed the baseline opacity level) is based upon the monitoring requirements in the current Title V Operating Permit for the Sierrita Fine Ore Bin (see Section III above). Bi-weekly observations conducted during the past 6 months indicate that the opacity standard has not been exceeded.

D. Implementation Plan

The proposed opacity indicator range (no visible emissions) is based upon the monitoring requirements in the current Title V Operating Permit. Pursuant to the current Title V Operating Permit, Sierrita conducted certified Method 9 observations on the product recovery dust collector and the baghouse while they were operating at normal

representative working conditions to establish baseline opacity levels and submitted the results to the Director. The baseline opacity levels for the 2 collectors controlling emissions from the Copper Sulfate Plant operations are zero percent. Bi-weekly observations conducted during the past 6 months indicate that the baseline opacity levels have not been exceeded.

Table 4-5. Monitoring Approach for Wet Scrubbers

	Indicator No. 1	Indicator No. 2
I. Indicator	Change in pressure of the gas stream though the Wet Scrubber	Change in liquid flow rate through the Wet Scrubber
Measurement Approach	Gas stream pressure is measured by a pressure gauge as "inches of water".	Liquid flow rate is measured by a flow monitor as "gallons per minute."
II. Indicator Range	An excursion is defined as a daily average differential pressure greater than ± 30% from the average obtained during the most recent performance test.	An excursion is defined as a daily average liquid flow rate greater than ± 30 percent from the average obtained during the most recent performance test.
III. Performance Criteria A. Data Representativeness	Gas stream pressure gauge is located on the body of each scrubber to measure the change in pressure across the scrubber. It has a certified accuracy of ±1 inch of water.	The flow meter is located on the inlet water piping to each scrubber. It has a certified accuracy range of ±5 percent of the design of the required scrubbing liquid flow rate.
B. Verification of Operation Status	NA	NA
C. QA/QC Practices and Criteria	Gas stream pressure gauge is calibrated on an annual basis in accordance with manufacturer's specifications. Maintain and operate according to manufacturer's recommendations.	Liquid flow meter is calibrated on an annual basis in accordance with manufacturer's specifications. Maintain and operate according to manufacturer's recommendations.
D. Monitoring Frequency	Gas stream pressure monitored continuously – 5-second intervals.	Liquid flow rate monitored continuously – 5 second intervals.
Data Collection Procedures	Electronic data file via data acquisition system. A PC computes a 3-hour average.	Electronic data file via data acquisition system. A PC computes a 3-hour average.
Averaging Period	3 hours	3 hours

Table 4-6. Monitoring Approach for Baghouses and Cartridge Dust Collector

	Indicator No. 1	Indicator No. 2
I. Indicator	Pressure differential of the fabric filter bags	Outlet opacity
Measurement Approach	Pressure differential is measured by a pressure gauge in "inches of water column".	Opacity is measured as percent opacity.
II. Indicator Range	1.5 to 4.5 inches of water for baghouses 1.5 to 5.0 inches of water for FARR cartridge collectors 1.0 to 6.0 inches of water for Copper Sulfate Plant Baghouse and Product Recovery collector	No visible emissions for each cartridge collector Not to exceed the baseline opacity for each baghouse.
III. Performance Criteria A. Data Representativeness	Pressure taps are located at the baghouse/cartridge collector inlet and outlet.	Monitoring location is per Reference Method 9 requirements.
B. Verification of Operation Status	NA	NA
C. QA/QC Practices and Criteria	Magnehelic or photohelic gauge is calibrated on an annual basis in accordance with manufacturer's specifications.	Verify that the trained visible emissions observer has a current EPA Reference Method 9 certification.
D. Monitoring Frequency	Pressure differential monitored daily.	Visible emissions surveyed daily.
Data Collection Procedures	Operators record pressure differential manually.	Operators record visible emissions results manually.
Averaging Period	None	N/A

Table 4-7. Monitoring Approach for the Electrostatic Precipitator

	Indicator No. 1	Indicator No. 2
I. Indicator	Primary current	Primary voltage
Measurement Approach	Primary current is measured by an ammeter.	Primary voltage is measured by a voltmeter.
II. Indicator Range	At least two fields are operated at >25 amps in one ESP when feed is entering one roaster. At least two fields are operated at > 25 amps in two ESPs when feed is entering two roasters.	At least two fields are operated at > 200 volts in one ESP when feed is entering one roaster. At least two fields are operated at > 200 volts in two ESPs when feed is entering two roasters.
III. Performance Criteria A. Data Representativeness	Primary current is measured prior to the ESPs	Primary voltage is measured prior to the ESPs..
B. Verification of Operation Status	NA	NA
C. QA/QC Practices and Criteria	Calibrate, maintain and operate instrumentation using procedures that take into account manufacturer's specifications.	Calibrate, maintain and operate instrumentation using procedures that take into account manufacturer's specifications.
D. Monitoring Frequency	Primary current is monitored continuously.	Primary voltage is monitored continuously.
Data Collection Procedures	Electronic data file via data acquisition system.	Electronic data file via data acquisition system.
Averaging Period	1 hour averages	1 hour averages

5.0 PROPOSED DRAFT PERMIT

As part of this permit renewal application, Sierrita is proposing draft permit conditions for PDEQ's review and consideration. This draft incorporates the proposed changes presented in Section 2.0, as well as the monitoring, reporting, recordkeeping, and testing scheme proposed in Section 5.0 of this renewal permit application. Sierrita requests the removal of references from the renewal permit to equipment that has been shut down and is no longer operational. This equipment is identified in Section 9.0 of this renewal permit application. The proposed draft permit conditions are located in Appendix F.

6.0 FACILITY EMISSIONS

As part of this Title V permit renewal application Sierrita has estimated annual facility-wide potential to emit. This includes estimates for PM, PM_{10}, SO_2, NO_x, VOC, CO, CO_2 and HAPs. The PTE was estimated based on an assumption that all processes take place simultaneously and continuously for 8760 hours per year. The emissions from emergency generators were estimated based on 1000 hours of operation per year, and 1500 hours of operation per year for Headwall #3 generator. Except for HAPs, fugitive emissions are not included and, therefore, emissions from insignificant activities and trivial activities were not included in estimating the facility's PTE emissions.

The facility-wide PTE was calculated using a combination of EPA's AP-42 emission factors and source test results. Refer to Appendix D for details of emissions calculations. Table 7-1 summarizes facility-wide annual criteria pollutant and total HAP emissions. The table includes the facilities total PTE and actual emissions.

Table 7-1. Facility Annual Emissions Summary

	Potential to Emit Emissions (tons)									Actual Emissions (tons)							
PM	PM_{10}	$PM_{2.5}$	SO_x	NO_x	VOC	CO	CO_2	HAP	PM	PM_{10}	$PM_{2.5}$	SO_x	NO_x	VOC	CO	HAP
84.0	77.6	10.3	85.8	11.3	72.3	62.7	44,875	3.56	36.12	27.92	4.925	71.144	13.97	36.23	12.79	3.27

Table 7-2 shows source-specific PM, PM_{10}, and SO_x PTE emissions.

Table 7-2. PTE Emissions by Source

ID	Source	Potential to Emit Emissions (tons)		
		PM	PM_{10}	SO_x
113A	Primary Crusher 6A	0.08	0.08	0.00
113B	Primary Crusher 6B	0.08	0.08	0.00
069	A2 to A3 Transfer	1.95	0.64	0.00
095	B2 to B3 Transfer	1.95	0.64	0.00
096	B3 to B4 Transfer	1.95	0.64	0.00
312	F.O. Trans. Tower	0.11	0.11	0.00
201	#1 Secondary Crusher	0.76	0.76	0.00
202	#2 Secondary Crusher	0.76	0.76	0.00
203	#3 Secondary Crusher	1.53	1.53	0.00
204	#4 Secondary Crusher	1.53	1.53	0.00
301	#1 Tertiary Crusher	1.50	1.50	0.00
302	#2 Tertiary Crusher	3.00	3.00	0.00
303	#3 Tertiary Crusher	1.50	1.50	0.00
304	#4 Tertiary Crusher	3.00	3.00	0.00
305	#5 Tertiary Crusher	1.50	1.50	0.00
306	#6 Tertiary Crusher	3.00	3.00	0.00
307	#7 Tertiary Crusher	1.50	1.50	0.00
308	#8 Tertiary Crusher	3.00	3.00	0.00
309	#9Tertiary Crusher	1.50	1.50	0.00

ID	Source	Potential to Emit Emissions (tons)		
		PM	PM_{10}	SO_x
310	#10 Tertiary Crusher	3.00	3.00	0.00
311	CTP FARR	0.56	0.56	0.00
009	F.O. Bin FARR1 & 8B/8C CTP	0.32	0.32	0.00
010	F.O. Bin FARR2	0.07	0.07	0.00
011	F.O. Bin FARR3	0.07	0.07	0.00
012	F.O. Bin FARR4	0.07	0.07	0.00
013	F.O. Bin FARR5	0.07	0.07	0.00
014	F.O. Bin FARR6	0.07	0.07	0.00
015	F.O. Bin FARR7	0.07	0.07	0.00
016	F.O. Bin FARR8	0.07	0.07	0.00
017	F.O. Bin FARR9	0.07	0.07	0.00
018	Mill Feeder Belt DC0	0.91	0.91	0.00
019	Mill Feeder Belt DC1	0.91	0.91	0.00
020	Mill Feeder Belt DC2	0.91	0.91	0.00
021	Mill Feeder Belt DC3	0.91	0.91	0.00
022	Mill Feeder Belt DC4	0.91	0.91	0.00
023	Mill Feeder Belt DC5	0.91	0.91	0.00
024	Mill Feeder Belt DC6	0.91	0.91	0.00
025	Mill Feeder Belt DC7	0.91	0.91	0.00
026	Mill Feeder Belt DC8	0.91	0.91	0.00
027	Mill Feeder Belt DC9	0.91	0.91	0.00
028	Mill Feeder Belt DC10	0.91	0.91	0.00
029	Mill Feeder Belt DC11	0.91	0.91	0.00
030	Mill Feeder Belt DC12	0.91	0.91	0.00
031	Mill Feeder Belt DC13	0.91	0.91	0.00
032	Mill Feeder Belt DC14	0.91	0.91	0.00
033	Mill Feeder Belt DC15	0.91	0.91	0.00
041	Mo Unl. Dry. Scrubber	2.52	0.47	0.00
042	Mo Sulfide Bins	0.16	0.06	0.00
053	Mo Lcd Dryer 1	0.44	0.83	0.00
054	Mo Lcd Dryer 2	0.44	0.83	0.00
048	Mo Oxide Bins	1.36	1.36	0.00
058	Roasting (Main)	18.8	18.8	70.1
059	Cannery	0.06	0.03	0.00
063	Lime Handling-Wet Scrubber #1	0.1	0.1	0.00
063A	Lime Handling-Wet Scrubber #2	0.1	0.1	0.00
093	Road Rock Crusher	1.746	0.574	0.00
044A	MoS2 Dump Hopper	0.004	0.001	0.00
	Misc. Natural Gas Sources	0.3	0.3	0.020
062	East Parker Boiler	0.3	0.3	0.022
062-064	East Hot-oil Heater	0.2	0.2	0.016
062-065	West Hot-oil Heater	0.2	0.2	0.016
062-080	Rh Plant Heater	0.0	0.0	0.003
062-081	Change Room Boiler	0.1	0.1	0.005

ID	Source	Potential to Emit Emissions (tons)		
		PM	PM_{10}	SO_x
062-082	SX-1 Parker Boiler	0.1	0.1	0.007
062-084	W Parker Boiler	0.2	0.2	0.016
062-091	Twin Buttes Boiler	0.3	0.3	0.026
062-098	Auto/Rh Plant Boiler	0.1	0.1	0.007
062-099	TB Parker Boiler	0.1	0.1	0.008
062-122	Copper Sulfate Boiler	0.1	0.1	0.009
062-129	Biosulfate Plant Boiler	0.01	0.01	0.012
122A	Copper Sulfate Cartridge Collector	0.0036	0.0009	0.00
122B	Copper Sulfate Baghouse	0.15	0.09	0.1
124	Portable Screen Plant	1.5	1.5	1.4
125	Magnetic Steel Recovery	5.4	3.5	1.5
126	Stationary Engines	0	2.2	11.9
128	IX Plant	0.0005	0.0003	0.00
Total		**84.0**	**77.6**	**85.8**

Table 7-3 summarizes emissions from emergency generators at Sierrita.

Table 7-3. Emergency Generator Emissions

Description	Horsepower Rating	Fuel Used	Max Allowed Operating Hours	PM10 (tons)	NOx (tons)	SOx (tons)	CO (tons)	TOC (tons)
Tailing Thickener Generator	375	Diesel	1000	0.413	5.813	0.384	1.253	0.471
Twin Buttes Emergency Fire Water Back-Up	280	Diesel	1000	0.308	0.336	1.019	0.770	0.099
Mine Truck Shop Emergency Fire Water Back-Up	67	Diesel	1,000	0.074	0.080	0.244	0.184	0.024
Taillings Dam Pumping Station Generator	268	Diesel	1,000	0.295	0.322	0.976	0.737	0.094
Sierrita Health Clinic Generator	145	Diesel	1,000	0.160	0.174	0.528	0.399	0.051
Sierrita Mobile Radio Tower Generator	12.5	Diesel	1,000	0.014	0.015	0.046	0.034	0.004
#3 Headwall Generator	1600	Diesel	1500	0.840	2.880	8.737	6.600	0.846
Mill Reservoir Fire Water Pump	130	Natural Gas	1000	0.000	2.250	0.000	0.175	0.065
Moly Roaster Generator	168	Natural Gas	1000	0.000	2.907	0.000	0.226	0.084
CEMS Emergency Generator	20	Natural Gas	1000	0.000	0.346	0.000	0.027	0.010
Administration Building Generator	200	Natural Gas	1000	0.000	3.461	0.000	0.269	0.100
SCC Emergency Generator	137	Natural Gas	1000	0.000	2.371	0.000	0.184	0.069
Administration Communications Generator	200	Natural Gas	1000	0.000	3.461	0.000	0.269	0.100
Radio Hill Generator	23	Propane	1000	0.005	0.150	0.000	0.139	0.089
Love Shack Generator - Removed	10	Propane		0.000	0.000	0.000	0.000	0.000
Dispatch Tower Generator	57	Propane	1000	0.013	0.371	0.001	0.345	0.222
Dispatch Tower #2 Generator	63	Propane	1000	0.015	0.410	0.001	0.381	0.245
Mine Engineering Generator	10	Propane	1000	0.002	0.065	0.000	0.060	0.039
Primary Crusher Generator	134	Propane	1000	0.031	0.873	0.002	0.810	0.521
West Robo Shack Generator - Removed	10	Propane		0.000	0.000	0.000	0.000	0.000
Truck Shop Generator - Removed	10	Propane		0.000	0.000	0.000	0.000	0.000
Twin Buttes Radio Hill Generator	39.5	Propane	1000	0.009	0.257	0.001	0.239	0.154
Twin Buttes Sandcastle Generator	39.5	Propane	1000	0.009	0.257	0.001	0.239	0.154
			Totals:	**2.188**	**26.801**	**11.942**	**13.339**	**3.441**

7.0 INSIGNIFICANT ACTIVITIES

In accordance with PCC 17.04.340.(114), Table 8-1 lists the Insignificant Activities (IAs) identified by Sierrita for this renewal permit application. The list in Table 8-1 is derived from the list of IAs approved by ADEQ in the Technical Support Document (TSD) for Sierrita's existing Title V Operating Permit 6067. It is important to note that Sierrita is not proposing any new IAs as part of this renewal permit application.

Sierrita assessed the contribution of IAs towards total facility-wide PM, PM_{10}, and SO_x emissions. The insignificant activities listed in Table 8-1 result in negligible emission contribution towards total PM, PM_{10} and SO_2 emissions.

Table 8-1. List of Proposed Insignificant Activities (IAs)

No. in currently approved IA list in TSD for 6067	Activity	Comment
1	Diesel and fuel oil storage tanks with a capacity of 40,000 gallons or less.	Insignificant pursuant to PCC 17.04.340.114.c
2	Batch mixers with rated capacity of 5 cubic feet or less.	Insignificant pursuant to PCC 17.04.340.114.d
3	Equipment using water, water and soap or detergent, or a suspension of abrasives in water for purposes of cleaning or finishing.	Insignificant pursuant to PCC 17.04.340.114.j
4	Aerosol can usage.	Insignificant pursuant to PCC 17.04.340.114.j
5	Acetylene, butane, and propane torches.	Insignificant pursuant to PCC 17.04.340.114.j
6	Blast-cleaning equipment using a suspension of abrasive in water and any exhaust system or collector serving them exclusively.	Insignificant pursuant to PCC 17.04.340.114.j
7	Lubricating system reservoirs.	Insignificant pursuant to PCC 17.04.340.114.j
8	Hydraulic system reservoirs.	Insignificant pursuant to PCC 17.04.340.114.j
9	Adhesive use which is not related to production.	Insignificant pursuant to PCC 17.04.340.114.j
10	Production of hot/chilled water for onsite use not related to an industrial process.	Insignificant pursuant to PCC 17.04.340.114.j
11	General vehicle maintenance and servicing activities.	Insignificant pursuant to PCC 17.04.340.114.j
12	Storage cabinet for flammable materials.	Insignificant pursuant to PCC 17.04.340.114.j
13	Housekeeping activities and associated products used for cleaning purposes, including collected spilled and accumulated materials at the source, including operation of fixed vacuum cleaning systems for such purposes.	Insignificant pursuant to PCC 17.04.340.114.a

No. in currently approved IA list in TSD for 6067	Activity	Comment
14	General office activities such as paper shredding and copying, photographic activities, and blueprinting.	Insignificant pursuant to PCC 17.04.340.114.j
15	Vacuum cleaning systems where the system is used exclusively for industrial or commercial use.	Insignificant pursuant to PCC 17.04.340.114.j
16	Chemical storage associated with water and wastewater treatment where the water is treated for consumption and/or use within the permitted facility (limited to chemicals not listed in 40 CFR 68.13, chemicals listed in 40 CFR 68.13 but stored in quantities less than threshold levels, and not subject to any applicable regulation under the Act or the Arizona Revised Rules.	Insignificant pursuant to PCC 17.04.340.114.j
17	The collection, transmission, liquid treatment and solids treatment process and domestic type wastewater and sewage treatment, or treatment facilities, including septic tank systems which treat only domestic type wastewater and sewage.	Insignificant pursuant to PCC 17.04.340.114.j
18	Chemical storage and process holding tanks (limited to chemicals not listed in 40 CFR 68.13, chemicals listed in 40 CFR 68.13 but stored in quantities less than threshold levels, and not subject to any applicable regulation under the Act or the Arizona Revised Rules).	Insignificant pursuant to PCC 17.04.340.114.j
19	Storage and piping of natural gas or liquefied petroleum gas.	Insignificant pursuant to PCC 17.04.340.114.j
20	Petroleum product storage tanks containing lubricating oil, transformer oil, or used oil.	Insignificant pursuant to PCC 17.04.340.114.j
21	Distribution and piping of diesel fuel, lubricating oil, used oil, and transformer oil.	Insignificant pursuant to PCC 17.04.340.114.j
22	Storage and handling of drums or other transportable containers where the containers are sealed during storage, and covered during loading and unloading (includes containers of Resource Conservation and Recovery Act waste and used oil).	Insignificant pursuant to PCC 17.04.340.114.j
23	Used oil collection and storage.	Insignificant pursuant to PCC 17.04.340.114.j
24	Use of pesticides, fumigants, and herbicides.	Insignificant pursuant to PCC 17.04.340.114.j
25	Air lance operations.	Insignificant pursuant to PCC 17.04.340.114.j
26	Railroad maintenance.	Insignificant pursuant to PCC 17.04.340.114.j
27	Cleanup of railcars.	Insignificant pursuant to PCC 17.04.340.114.j
28	Cleanup of clogged chutes.	Insignificant pursuant to PCC 17.04.340.114.j
29	Street and parking lot striping.	Insignificant pursuant to PCC 17.04.340.114.j
30	Maintenance, repair or dismantlement of buildings, utility lines, pipelines, wells, and other structures that do not constitute an emission unit.	Insignificant pursuant to PCC 17.04.340.114.j
31	Surface impoundments such as ash ponds, cooling ponds, evaporation ponds, settling ponds and storm water ponds.	Insignificant pursuant to PCC 17.04.340.114.j

No. in currently approved IA list in TSD for 6067	Activity	Comment
32	Pump/motor oil reservoirs, such as gearbox lubrication.	Insignificant pursuant to PCC 17.04.340.114.j
33	Transformer vents.	Insignificant pursuant to PCC 17.04.340.114.j
34	Caulking operations that are not part of a production process.	Insignificant pursuant to PCC 17.04.340.114.j
35	Electric motors.	Insignificant pursuant to PCC 17.04.340.114.j
36	Cathodic protection systems.	Insignificant pursuant to PCC 17.04.340.114.j
37	Soil gas sampling.	Insignificant pursuant to PCC 17.04.340.114.j
38	Filter draining.	Insignificant pursuant to PCC 17.04.340.114.j
39	General vehicle maintenance and servicing activities at the source.	Insignificant pursuant to PCC 17.04.340.114.j
40	Station transformers.	Insignificant pursuant to PCC 17.04.340.114.j
41	Circuit breakers.	Insignificant pursuant to PCC 17.04.340.114.j
42	Generation unit gas vents.	Insignificant pursuant to PCC 17.04.340.114.j
43	Wet cyclones and the ball mill circuits operated at the concentrators.	Insignificant pursuant to PCC 17.04.340.114.j
44	Copper and Molybdenite Flotation.	Insignificant pursuant to PCC 17.04.340.114.j
45	General research activities such as testing water mist/spray controls for dust abatement.	Insignificant pursuant to PCC 17.04.340.114.j
46	Filter Press vacuum manifolds	Insignificant pursuant to PCC 17.04.340.114.j

8.0 NON-ROAD ENGINES

"Nonroad engines" are regulated as mobile sources under Title II of the federal Clean Air Act (CAA) ("Emissions Standards for Moving Sources"), which preempts all state air quality regulation of nonroad engines, with very limited exceptions. CAA § 302(z) specifically excludes nonroad engines from the definition of "stationary source" and therefore nonroad engines are not subject to federal stationary source permitting requirements. Under CAA § 216(10), "nonroad engine" is defined as "an internal combustion engine (including the fuel system) that is not used in a motor vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under section 111 or section 202." EPA has promulgated definitions under its implementing regulations that incorporate the requirements of the "nonroad engine" definition contained in CAA § 216. For example, the regulations at 40 C.F.R. Parts 89 and 90 regulate air emission from nonroad compression-ignition and spark-ignition engines, respectively, which provide the following definition:

Nonroad engine means:

(1) Except as discussed in paragraph (2) of this definition, [a nonroad engine] is any internal combustion engine:

(i) In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or

(ii) In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or

(iii) That, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

(2) An internal combustion engine is not a nonroad engine if:

(i) the engine is used to propel a motor vehicle or a vehicle used solely for competition, or is subject to standards promulgated under section 202 of the Act; or

(ii) the engine is regulated by a federal New Source Performance Standard promulgated under section 111 of the Act; or

(iii) the engine otherwise included in paragraph (1)(iii) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single

location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. This paragraph does not apply to an engine after the engine is removed from the location.

40 C.F.R. §§ 89.2 and 90.3.

Based on the above definition, Sierrita has identified the following categories of nonroad engines at the Sierrita facility that are not included in the application:

- Portable generators (mounted on trailers, skids, mobile equipment or hand carried);
- Fusion machines for belt and pipe splicing;
- Welding units;
- Air compressors;
- Welding/compressor combo units;
- Light plants;
- Battery chargers;
- Portable motorvators;
- Pressure washers;
- Pumps; and
- Magnets (mounted on mobile equipment).

9.0 EQUIPMENT LIST

Table 9-1 includes equipment shown in Attachment "C" Table "C-1" and "C-2" of the existing Permit No. 6067. This table combines these two existing tables, replacing equipment in Table "C-1" with equipment listed in Table "C-2" .

Table 9-2 lists equipment that has been removed and operational changes approved since the issuance of Permit 6067.

Table 9-1. List of Equipment

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
SECTION I: MINING OPERATIONS							
088	Drilling Operations			N	N	N	
089	Ammonium Nitrate Storage			N	N	N	
066	Blasting Operations			N	N	N	
097	Haul Truck Loading and Dumping			N	N	N	
077	Unpaved Roads			N	N	N	
SECTION II: PRIMARY CRUSHING							
113	Primary Crusher 6A and associated feed belts	5000 tph	1996	Y	N	Y	Svedala Mark II
	Primary Crusher 6B and associated feed belts	5000 tph	1996	Y	N	Y	Svedala Mark II
	6A Cartridge Dust Collector	20,000 acfm	2012	Y	N	Y	FARR GS72 Cartridge Dust Collector
	6B Cartridge Dust Collector	20,000 acfm	2012	Y	N	Y	FARR GS72 Cartridge Dust Collector
SECTION III: OVERLAND ORE CONVEYING							
095	Sierrita A2 to A3 Conveyor Transfer		1976	N	Y	N	
072	A3 Stacker to Sierrita Coarse Ore Stockpile		1968	N	Y	N	
069	Sierrita B2 to B3 Conveyor Transfer		1976, 1981	N	Y	N	
096	Sierrita B3 Conveyor to B4 Stacker Transfer		1967, 1981	N	Y	N	
102	B4 Stacker to Sierrita Coarse Ore Stockpile		1967	N	Y	N	Stephen-Adamson 60"

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
SECTION IV: FINE ORE CRUSHING – SECONDARY AND TERTIARY CRUSHING							
201	#1 Secondary Crushing Line						
	#1 Coarse Ore Reclaim Belt (Apron Feeder)	NA	1968	Y	N	Y	NA
	#1 Coarse Ore Reclaim Feeders (2 Feeders – North and South)	NA	1968	Y	N	Y	NA
	#1 Scalping Screen	2,124 tph	2010	Y	N	Y	Ludowici 10'x20' DD Screen
	8A Conveyor Belt (fugitive emissions pick up on conveyor belt)	NA	1968	Y	N	Y	NA
	#1 Secondary Crusher (emissions pick-up from discharge screen)	1,234	2009	Y	N	Y	Sandvik H8800 Crusher
	#1 Secondary Discharge Screen	1,234	2010	Y	N	Y	Ludowici 10'x20' Screen
	7B Conveyor Belt (emissions pick-up on belt from #1 Secondary Discharge Screen)	NA	1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #1 Secondary Discharge Screen)	NA	1968	Y	N	Y	NA
	#1 Secondary Dust Collector	40,500 acfm	2009	Y	N	Y	FARR GS72 Cartridge Dust Collector
202	#2 Secondary Crushing Line						
	#2 Coarse Ore Reclaim Belt (Apron Feeders)	NA	1968	Y	N	Y	NA
	#2 Coarse Ore Reclaim Feeders (2 Feeders – North and South)	NA	1968	Y	N	Y	NA
	#2 Scalping Screen	2,124 tph	2007	Y	N	Y	Ludowici 10'x20' DD Screen
	8A Conveyor Belt (fugitive emissions pick up on conveyor belt)	NA	1968	Y	N	Y	NA
	#2 Secondary Crusher (emissions pick-up from discharge screen)	1,234	2008	Y	N	Y	Sandvik H8800 Crusher
	#2 Secondary Discharge Screen	1,234	2007	Y	N	Y	Ludowici 10'x20' Screen
	7B Conveyor Belt (emissions pick-up on belt from #2 Secondary Discharge Screen)	NA	2009 – 1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #2 Secondary Discharge Screen)	NA	1968	Y	N	Y	NA
	#2 Secondary Dust Collector –	40,500 acfm	2008	Y	N	Y	FARR GS72 Cartridge Dust Collector

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
	Vented Indoors						
203	#3 Secondary Crushing Line						
	#3 Coarse Ore Reclaim Belt (Apron Feeder)	NA	1968	Y	N	Y	NA
	#3 Coarse Ore Reclaim Feeders (2 Feeders – North and South)	NA	1968	Y	N	Y	NA
	#3 Scalping Screen	2,124 tph	2010	Y	N	Y	Ludowici 10'x20' DD Screen
	8A Conveyor Belt (fugitive emissions pick up on conveyor belt)	NA	1968	Y	N	Y	NA
	#3 Secondary Crusher (emissions pick-up from discharge screen)	1,234	2010	Y	N	Y	Sandvik H8800 Crusher
	#3 Secondary Discharge Screen	1,234	2010	Y	N	Y	Ludowici 10'x20' Screen
	7B Conveyor Belt (emissions pick-up on belt from #3 Secondary Discharge Screen)	NA	1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #3 Secondary Discharge Screen)	NA	1968	Y	N	Y	NA
	#3 Secondary Dust Collector	40,500 acfm	2010	Y	N	Y	FARR GS72 Cartridge Dust Collector
204	#4 Secondary Crushing Line						
	#4 Coarse Ore Reclaim Belt (Apron Feeder)	NA	1968	Y	N	Y	NA
	#4 Coarse Ore Reclaim Feeders (2 Feeders – North and South)	NA	1968	Y	N	Y	NA
	#4 Scalping Screen	2,124 tph	2011	Y	N	Y	Ludowici 10'x20' DD Screen
	8A Conveyor Belt (fugitive emissions pick up on conveyor belt)	NA	1968	Y	N	Y	NA
	#4 Secondary Crusher (emissions pick-up from discharge screen)	1,234	2011	Y	N	Y	Sandvik H8800 Crusher
	#4 Secondary Discharge Screen	1,234	2011	Y	N	Y	Ludowici 10'x20' Screen
	7B Conveyor Belt (emissions pick-up on belt from #4 Secondary Discharge Screen)	NA	1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #4 Secondary Discharge Screen)	NA	1968	Y	N	Y	NA
	#4 Secondary Dust Collector	40,500 acfm	2011	Y	N	Y	FARR GS72 Cartridge Dust Collector

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
301	#1 Tertiary Crushing Line						
	Coarse Ore Bin	NA	1968	Y	N	Y	NA
	#1 Tertiary Crusher Feeder Belt	NA	1968	Y	N	Y	NA
	#1 Tertiary Crusher (emissions pick-up from discharge screen)	614 tph	2009	Y	N	Y	Sandvik Hydrocone C880 Crusher
	#1 Tertiary Discharge Screen	614 tph	2010	Y	N	Y	Ludowici 10'x20' Screen
	7B Conveyor Belt (emissions pick-up on belt from #1 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #1 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	#1 Tertiary Dust Collector	27,500 acfm	2009	Y	N	Y	FARR GS48 Cartridge Dust Collector
302	#2 Tertiary Crushing Line						
	Coarse Ore Bin	NA	1968	Y	N	Y	NA
	#2 Tertiary Crusher Feeder Belt	NA	1968	Y	N	Y	NA
	#2 Tertiary Crusher (emissions pick-up from discharge screen)	614 tph	2004	Y	N	Y	Sandvik Hydrocone H8800
	#2 Tertiary Discharge Screen	614 tph	2004	Y	N	Y	Svedala 10'x20'
	7B Conveyor Belt (emissions pick-up on belt from #2 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #2 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	#2 Tertiary Dust Collector	27,500 acfm	2011	Y	N	Y	FARR GS48 Cartridge Dust Collector
303	#3 Tertiary Crushing Line						
	Coarse Ore Bin	NA	1968	Y	N	Y	NA
	#3 Tertiary Crusher Feeder Belt	NA	1968	Y	N	Y	NA
	#3 Tertiary Crusher (emissions pick-up from discharge screen)	614 tph	2011	Y	N	Y	Sandvik Hydrocone H8800 Crusher
	#3 Tertiary Discharge Screen	614 tph	2011	Y	N	Y	Ludowici 10'x20' Screen
	7B Conveyor Belt (emissions pick-up on belt from #3 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #3 Tertiary	NA	1968	Y	N	Y	NA

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
	Discharge Screen)						
	#3 Tertiary Dust Collector	27,500 acfm	2011	Y	N	Y	FARR GS48 Cartridge Dust Collector
304	#4 Tertiary Crushing Line						
	Coarse Ore Bin	NA	1968	Y	N	Y	NA
	#4 Tertiary Crusher Feeder Belt	NA	1968	Y	N	Y	NA
	#4 Tertiary Crusher (emissions pick-up from discharge screen)	614 tph	2004	Y	N	Y	Sandvik Hydrocone H8800
	#4 Tertiary Discharge Screen	614 tph	2004	Y	N	Y	Svedala 10'x20'
	7B Conveyor Belt (emissions pick-up on belt from #4 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #4 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	#4 Tertiary Dust Collector	27,500 acfm	2011	Y	N	Y	FARR GS48 Cartridge Dust Collector
305	#5 Tertiary Crushing Line						
	Coarse Ore Bin	NA	1968	Y	N	Y	NA
	#5 Tertiary Crusher Feeder Belt	NA	1968	Y	N	Y	NA
	#5 Tertiary Crusher (emissions pick-up from discharge screen)	614 tph	2011	Y	N	Y	Sandvik Hydrocone H8800 Crusher
	#5 Tertiary Discharge Screen	614 tph	2011	Y	N	Y	Ludowici 10'x20' Screen
	7B Conveyor Belt (emissions pick-up on belt from #5 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #5 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	#5 Tertiary Dust Collector	27,500 acfm	2011	Y	N	Y	FARR GS48 Cartridge Dust Collector
306	#6 Tertiary Crushing Line						
	Coarse Ore Bin	NA	1968	Y	N	Y	NA
	#6 Tertiary Crusher Feeder Belt	NA	1968	Y	N	Y	NA
	#6 Tertiary Crusher (emissions pick-up from discharge screen)	614 tph	2011	Y	N	Y	Sandvik Hydrocone H8800 Crusher
	#6 Tertiary Discharge Screen	614 tph	2011	Y	N	Y	Ludowici 10'x20' Screen
	7B Conveyor Belt (emissions pick-up on belt from #6 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
	8B Conveyor Belt (emissions pick-up on belt from #6 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	#6 Tertiary Dust Collector	27,500 acfm	2011	Y	N	Y	FARR GS48 Cartridge Dust Collector
307	#7 Tertiary Crushing Line						
	Coarse Ore Bin	NA	1968	Y	N	Y	NA
	#7 Tertiary Crusher Feeder Belt	NA	1968	Y	N	Y	NA
	#7 Tertiary Crusher (emissions pick-up from discharge screen)	614 tph	2012	Y	N	Y	Sandvik Hydrocone H8800 Crusher
	#7 Tertiary Discharge Screen	614 tph	2012	Y	N	Y	Ludowici 10'x20' Screen
	7B Conveyor Belt (emissions pick-up on belt from #7 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #7 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	#7 Tertiary Dust Collector	27,500 acfm	2011	Y	N	Y	FARR GS48 Cartridge Dust Collector
308	#8 Tertiary Crushing Line						
	Coarse Ore Bin	NA	1968	Y	N	Y	NA
	#8 Tertiary Crusher Feeder Belt	NA	1968	Y	N	Y	NA
	#8 Tertiary Crusher (emissions pick-up from discharge screen)	614 tph	1999	Y	N	Y	Svedala Hydrocone H8000
	#8 Tertiary Discharge Screen	614 tph	2004	Y	N	Y	Svedala 10'x20'
	7B Conveyor Belt (emissions pick-up on belt from #8 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #8 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	#8 Tertiary Dust Collector	27,500 acfm	2011	Y	N	Y	FARR GS48 Cartridge Dust Collector
309	#9 Tertiary Crushing Line						
	Coarse Ore Bin	NA	1968	Y	N	Y	NA
	#9 Tertiary Crusher Feeder Belt	NA	1968	Y	N	Y	NA
	#9 Tertiary Crusher (emissions pick-up from discharge screen)	614 tph	2012	Y	N	Y	Sandvik Hydrocone H8800 Crusher
	#9 Tertiary Discharge Screen	614 tph	2012	Y	N	Y	Ludowici 10'x20' Screen
	7B Conveyor Belt (emissions pick-	NA	1968	Y	N	Y	NA

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
	up on belt from #9 Tertiary Discharge Screen)						
	8B Conveyor Belt (emissions pick-up on belt from #9 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	#9 Tertiary Dust Collector	27,500 acfm	2011	Y	N	Y	FARR GS48 Cartridge Dust Collector
310	#10 Tertiary Crushing Line						
	Coarse Ore Bin	NA	1968	Y	N	Y	NA
	#10 Tertiary Crusher Feeder Belt	NA	1968	Y	N	Y	NA
	#10 Tertiary Crusher (emissions pick-up from discharge screen)	614 tph	2012	Y	N	Y	Sandvik Hydrocone H8800 Crusher
	#10 Tertiary Discharge Screen	614 tph	2012	Y	N	Y	Ludowici 10'x20' Screen
	7B Conveyor Belt (emissions pick-up on belt from #10 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	8B Conveyor Belt (emissions pick-up on belt from #10 Tertiary Discharge Screen)	NA	1968	Y	N	Y	NA
	#10 Tertiary Dust Collector	27,500 acfm	2011	Y	N	Y	FARR GS48 Cartridge Dust Collector
311	Conveyor Transfer Points						
	7A/7B Conveyor Transfer Point	NA	2004	Y	N	Y	NA
	7C Head Pulley	NA	1968	Y	N	Y	NA
	8D/8B Conveyor Transfer Point	NA	1968	Y	N	Y	NA
	CTP Dust Collector	30,000 acfm	2012	Y	N	Y	FARR Cartridge Dust Collector
312	Fine Ore Transfer Building						
	7B/7C Conveyor Transfer Point	NA	1968	Y	N	Y	NA
	7C Conveyor Belt	NA	1968	Y	N	Y	NA
	Transfer House Dust Collector	30,000 acfm	2012	Y	N	Y	FARR Cartridge Dust Collector
SECTION V: FINE ORE STORAGE AND HANDLING							
	Sierrita Fine Ore Bin						
	Fine Ore Bin & Tripper Conveyor	70,000 tons	1968	N	N	Y	
009	8B/8C Conveyor Transfer Point		1968	N	N	Y	
	#1 FARR - Sierrita Fine Ore Bin	10,500 acfm	2010	Y	N	Y	FARR Cartridge Dust Collector
010	#2 FARR - Sierrita Fine Ore Bin	3000 acfm	2012	Y	N	Y	FARR Cartridge Dust Collector

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
011	#3 FARR - Sierrita Fine Ore Bin	3000 acfm	2012	Y	N	Y	FARR Cartridge Dust Collector
012	#4 FARR - Sierrita Fine Ore Bin	3000 acfm	2012	Y	N	Y	FARR Cartridge Dust Collector
013	#5 FARR - Sierrita Fine Ore Bin	3000 acfm	2012	Y	N	Y	FARR Cartridge Dust Collector
014	#6 FARR - Sierrita Fine Ore Bin	3000 acfm	2012	Y	N	Y	FARR Cartridge Dust Collector
015	#7 FARR - Sierrita Fine Ore Bin	3000 acfm	2012	Y	N	Y	FARR Cartridge Dust Collector
016	#8 FARR - Sierrita Fine Ore Bin	3000 acfm	2012	Y	N	Y	FARR Cartridge Dust Collector
017	#9 FARR - Sierrita Fine Ore Bin	3000 acfm	2012	Y	N	Y	FARR Cartridge Dust Collector
	#0-#15 Mill Feed Belt System						
018	#0 Fine Ore Feeder Belts (3ea.)		1970	N	N	N	SI 503342000-1-2-3
	# 0 Mill Collector Belt		1970	N	N	N	SI 501912000
	# 0 Mill Feed Conveyor		1970	N	N	N	SI 501913000
	# 0 Wet Scrubber - Sieritta Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654000
019	# 1 Fine Ore Feeder Belts (3 ea.)		1968	N	N	N	SI 503342001 -1 - 2 - 3
	# 1 Mill Feed Conveyor		1968	N	N	N	SI 501913001
	# 1 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654001
020	# 2 Fine Ore Feeder Belts (4 ea.)		1968	N	N	N	SI 503342002 - 1 - 2 - 3 - 4
	# 2 Mill Collector Belt		1968	N	N	N	SI 501912002
	# 2 Mill Feed Conveyor		1968	N	N	N	SI 501913002
	# 2 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654002
021	# 3 Fine Ore Feeder Belts (4 ea.)		1968	N	N	N	SI 503342003 - 1 - 2 - 3 - 4
	# 3 Mill Collector Belt		1968	N	N	N	SI 501912003
	# 3 Mill Feed Conveyor		1968	N	N	N	SI 501913003
	# 3 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654003
022	# 4 Fine Ore Feeder Belts (4 ea.)		1968	N	N	N	SI 503342004 - 1 - 2 - 3 - 4
	# 4 Mill Collector Belt		1968	N	N	N	SI 501912004
	# 4 Mill Feed Conveyor		1968	N	N	N	SI 501913004

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
	# 4 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654004
023	# 5 Fine Ore Feeder Belts (4 ea.)		1968	N	N	N	SI 503342005 - 1 - 2 - 3 - 4
	# 5 Mill Collector Belt		1968	N	N	N	SI 501912005
	# 5 Mill Feed Conveyor		1968	N	N	N	SI 501913005
	# 5 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654005
024	# 6 Fine Ore Feeder Belts (4 ea.)		1968	N	N	N	SI 503342006 - 1 - 2 - 3 - 4
	# 6 Mill Collector Belt		1968	N	N	N	SI 501912006
	# 6 Mill Feed Conveyor		1968	N	N	N	SI 501913006
	# 6 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654006
025	# 7 Fine Ore Feeder Belts (4 ea.)		1968	N	N	N	SI 503342007 - 1 - 2 - 3 - 4
	# 7 Mill Collector Belt		1968	N	N	N	SI 501912007
	# 7 Mill Feed Conveyor		1968	N	N	N	SI 501913007
	# 7 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654007
026	# 8 Fine Ore Feeder Belts (4 ea.)		1968	N	N	N	SI 503342008 - 1 - 2 - 3 - 4
	# 8 Mill Collector Belt		1968	N	N	N	SI 501912008
	# 8 Mill Feed Conveyor		1968	N	N	N	SI 501913008
	# 8 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654008
027	# 9 Fine Ore Feeder Belts (4 ea.)		1968	N	N	N	SI 503342009 - 1 - 2 - 3 - 4
	# 9 Mill Collector Belt		1968	N	N	N	SI 501912009
	# 9 Mill Feed Conveyor		1968	N	N	N	SI 501913009
	# 9 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654009
028	# 10 Fine Ore Feeder Belts (4 ea.)		1968	N	N	N	SI 503342010 - 1 - 2 - 3 - 4
	# 10 Mill Collector Belt		1968	N	N	N	SI 501912010
	# 10 Mill Feed Conveyor		1968	N	N	N	SI 501913010
	# 10 Wet Scrubber - Sierrita Mill	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
	Building						502654010
029	# 11 Fine Ore Feeder Belts (4 ea.)		1968	N	N	N	SI 503342011 - 1 - 2 - 3 - 4
	# 11 Mill Collector Belt		1968	N	N	N	SI 501912011
	# 11 Mill Feed Conveyor		1968	N	N	N	SI 501913011
	# 11 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654011
030	# 12 Fine Ore Feeder Belts (4 ea.)		1968	N	N	N	SI 503342012 - 1 - 2 - 3 - 4
	# 12 Mill Collector Belt		1968	N	N	N	SI 501912012
	# 12 Mill Feed Conveyor		1968	N	N	N	SI 501913012
	# 12 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654012
031	# 13 Fine Ore Feeder Belts (3 ea.)		1968	N	N	N	SI 503342013 - 1 - 2 - 3
	# 13 Mill Collector Belt		1968	N	N	N	SI 501912013
	# 13 Mill Feed Conveyor		1968	N	N	N	SI 501913013
	# 13 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654013
032	# 14 Fine Ore Feeder Belts (3 ea.)		1968	N	N	N	SI 503342014 - 1 - 2 - 3
	# 14 Mill Collector Belt		1968	N	N	N	SI 501912014
	# 14 Mill Feed Conveyor		1968	N	N	N	SI 501913014
	# 14 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654014
033	# 15 Fine Ore Feeder Belts (3 ea.)		1970	N	N	N	SI 503342015 - 1 - 2 - 3
	# 15 Mill Collector Belt		1970	N	N	N	SI 501912015
	# 15 Mill Feed Conveyor		1970	N	N	N	SI 501913015
	#15 Wet Scrubber - Mill Feed Belt System	10,000 acfm		N	N	N	Ducon UW-4, III, size 60, SI 502654015
063	Lime Unloading & Handling System						
	Lime Unloading & Handling Processes	10 tph	1968	N	N	N	500-ton Lime Storage Bin and Slaking System
	Wet Scrubber	6400 acfm		N	N	N	Ducon UW-4, III, size 48, SI 1502674001

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
	Alternate Wet Scrubber	6400 acfm		N	N	N	Ducon UW-4, III, size 48
073	Copper/Moly Concentrate Storage Areas	NA	1957, 1968	N	N	N	NA
Section VI: Molybdenum (Moly) Plant							
041	Unleached Molybdenum Sulfide Dryers						
	Three (3) Dryers	3.75 tph	1968 - 1995	N/A	N	N	Holoflite Type 2D-1620-6 Dryers
	Wet Scrubber - Unleached Moly Sulfide Dryers	6400 acfm		N/A	N	N	Ducon UW-4X, III, size 48, SI 16062140
Leach & Unleach Moly Sulfide Storage, Screening and Handling							
042	Leach & Unleach Moly Sulfide Storage, Screening and Handling	60 tph	1969-1994	N/A	Y	N	NA
	Moly Sulfide Baghouse	6000 acfm		N/A	N	N	Mikro Pulsaire 81S-10-20, SI 16026630
	Alternate Moly Sulfide Baghouse	6000 acfm		N/A	N	N	Scientific Model SPJ-64-RTI
044	Moly Sulfide Dump Hopper (includes 3 dump hoppers)	NA	1990	N/A	Y	N	NA
044 A	Moly Sulfide Dump Hopper Baghouse on 1 Dump Hopper	NA	2007	N/A	N	N	NA
045	Moly Sulfide Screw Conveyor Loadout #1	NA	1995	N/A	Y	N	NA
117	Moly Sulfide Screw Conveyor Loadout #2	NA	2001	N/A	Y	N	NA
Moly Oxide Storage, Screening and Handling							
048	Moly Oxide Storage, Screening and Handling	12 tph	1968	N/A	Y	N	
	Moly Oxide Baghouse	4,200 acfm	1968	N/A	N	N	Mikro Pulsaire 56S-10-20, SI 16026600
Leached Moly Sulfide Dryers							
	Three (3) Sets of Dryers	22.5 tph	1968	N/A	N	Y	Holoflite Type 2D-1620-6 Dryers
053	#1 Wet Scrubber - Moly Leach Dryers	6400 acfm	1968	N/A	N	Y	Ducon UW-4X, III, size 48, SI 160613001
054	#2 Wet Scrubber - Moly Leach Dryers	6400 acfm	1968	N/A	N	Y	Ducon UW-4X, III, size 48, SI 160613002

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
Moly Packaging & Handling Systems							
059	Moly Packaging Processes		1968	N/A	Y	N	
	Cannery Cartridge Dust Collector	12,000 acfm	2011	N/A	N	N	FARR Cartridge Dust Collector
Molybdenum Roasting							
058	Two (2) #1 and #2 Molybdenum Roasters		1968	N	N	Y	Skinner Multiple Hearth Roaster
	Two (2) Cyclones	52,300 acfm	1968	N	N	N	Buell Eng. 4BAR #50 Series 43
	Two (2) Electrostatic Precipitators	52,300 acfm	1968	N	N	Y	Western Precipitation Div.
	Two (2) Lime Slurry Scrubbers	46,900 acfm	1968	N	N	N	UOP Model 500TCA, SI 60621101
	Two (2) Brinks Mist Eliminator System	45,000 acfm	1975	N	N	N	Monsanto Enviro-Chem System, Brinks
	Main Roaster Stack	NA	NA	N	N	N	
118	Molybdenum Leach Plant	12,100 lbs Cu Recovery	1970	N/A	N	N	
	Fume Scrubber	6,400 acfm	2007	N	N	N	NA
119	Rhenium Recovery Operation	NA	NA	N/A	N	N	
	DE Storage Bin	60 ft^3	2006	N	Y	N	Hapman Storage Bin
	DE Screw Conveyor	500 lbs/day	2006	N	Y	N	Hapman Series 300 Helix Assembly
SECTION VII: DECANT SOLIDS HANDLING EQUIPMENT							
123	Loader		2004	N	Y	N	
SECTION VIII: MAGNETIC STEEL RECOVERY PLANT							
125	Coarse Conveyor No. 1	490 tph	1993	Y	Y	N	42"x40' Conveyor, 9-42-7405AA
	Magnet No. 1			N	N	N	Dings Magnet, 1669A
	Metal Ball Scrap Conveyor No. 1	700 tph	2001	Y	Y	N	36"x30' Conveyor 9-36-8295AA
	Fines Conveyor No. 1	700 tph	2001	Y	Y	N	36"x30' Conveyor 9-36-8296AA
	Fines Conveyor No. 2	350 tph	1999	Y	Y	N	36"x40' Conveyor 9-36-8039AA
	Magnet No. 2			N	N	N	Dings Magnet
	Metal Chips Conveyor No. 2	700 tph	1977	Y	Y	N	36"x30' Conveyor 9-36-7835AA
	Radial Stacker	700 tph	2003	Y	Y	N	36"x80' Conveyor, 9-36-8441AA
SECTION IX: COPPER SULFATE PLANT							
122	One (1) Crystallizer Feed Tank	NA	2004	N	N	N	
	Five (5)Cooling Tanks	NA	2004	N	N	N	
	One (1) Magnesium Carbonate Bin and Feeder Belt (2 Transfer Points)	NA	2004	N	Y	N	

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
	Three (3) Wet Crystal Cyclones	NA	2004	N	N	N	
	Two (2) Wet Crystal Centrifuges	NA	2004	N	Y	N	
	One (1) Dryer Feed Belt (3 Transfer Points)	NA	2004	N	N	N	
	One (1) Dryer Feed Hopper	NA	2004	N	Y	N	
	One (1) Fluid Bed Dryer	NA	2004	N	N	Y	
	One (1) Vibrating Product Double Deck Screen	NA	2004	N	N	N	
	Product and Magnesium Carbonate / Bagging Bin Screw Conveyor (3 Transfer Points)	NA	2004	N	Y	N	
	One (1) Flow Aid Bin	NA	2004	N	Y	N	
	One (1) Product Bagging Bin	NA	2004	N	Y	N	
	One (1) Product Bagging Feeder Conveyor (2 Transfer Points)	NA	2004	N	Y	N	
	One (1) Bag Filling Machine	NA	2004	N	Y	N	
	One (1) Product Recovery Cyclone	NA	2004	N	N	N	
122A	Copper Sulfate Product Recovery Collector	25,200 acfm	2004	N	N	Y	DownFlow II Dust Collector, DFT 4-32
122B	Copper Sulfate Baghouse	6,800 acfm	2012	N	N	Y	Scientific SPJ-96-X4RT8
SECTION X: NATURAL GAS HEATERS AND BOILERS							
	Boiler - Moly Leach Heating (Primary)	8.3 MMBtu/hr	1960	N	N	N	Parker Model 150
	NG Heater- Moly Dryer Oil Heating System 2	6.3 MMBtu/hr	1968	N	N	N	American Hydrotherm Model 500
	NG Heater- Moly Dryer Oil Heating System 1	6.3 MMBtu/hr	1968	N	N	N	American Hydrotherm Model 500
	Rhenium Plant Water Heater	1.2 MMBtu/hr	1997	N	N	N	Parker Model WH1210
062	Change Room Boiler	2.0 MMBtu/hr		N	N	N	Parker Model
	SX Electrolyte Heater	2.6 MMBtu/hr	1979	N	N	N	Parker Model
	Moly Leach Heating (Standby)	6.3 MMBtu/hr		N	N	N	Parker Model 150
	EW Electrolyte Heater	10 MMBtu/hr	1955	N	N	N	Cyclotherm Model C-10500
	Moly Autoclave Boiler	2.0 MMBtu/hr	pre-1980	N	N	N	

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
	EW Cathode Wash Heater	3.0 MMBtu/hr	1993	N	N	N	Parker Model
	Moly Briquette Heater	3.5 MMBtu/hr	1989	N	N	N	Maxon Oven Pack
	Mine Truck Shop Wash Heater	935,000 Btu/hr	2006	N	N	N	
	Copper Sulfate Boiler	3.6 MMBtu/hr	2004	N	N	N	Parker, T-3600
	Miscellaneous fuel-burning equipment fired at a sustained rate of less than 1 million BTU/hr	< 1 MMBtu/hr			N	N	
SECTION XI: STATIONARY ENGINES							
	Tailing Thickener Diesel Generator	375 hp	1991	N	N	N	Diesel Generator, ID 48104
	Mill Reservoir Fire Water Pump	130 hp	Pre-2006	N	N	N	Natural Gas Emergency Fire Water Pump, ID 905553002
	Molybdenum Roaster Emergency Generator	168 hp	Pre-2006	N	N	N	Natural Gas Generator, ID 7206034810
	CEMS Emergency Generator	20 hp	2006	N	N	N	Natural Gas Generator, ID 7206034820
	Hydromet #3 Headwall Generator	1600 hp	2009	Y 40 CFR 60 IIII	N	N	Diesel Generator, ID 72051857
	Hydromet Twin Buttes Emergency Fire Water Back-Up	280 hp	Pre-2006	N	N	N	Diesel Generator ID 72015015
	Radio Hill Generator	23 hp	Pre-2006	N	N	N	Propane Generator, ID 826088
126	Dispatch Tower Generator	57 hp	Pre-2006	N	N	N	Propane Generator, ID 834016
	Mine Engineering Generator	10 hp	Pre-2006	N	N	N	Propane Generator, ID 834017
	Administration Bldg. Generator	200 hp	Pre-2006	N	N	N	Natural Gas Generator
	Mine Maintenance Truck Shop Fire Water	67 hp	Post-2008	Y 40 CFR 60 IIII	N	N	Diesel Fire Water Pump
	Primary Crusher Basement Generator	158 hp	Pre-2006	N	N	N	Propane Generator, SN E040646390
	SCC Emergency Generator	137 hp	Pre-7/1/2008	N	N	N	Natural Gas Generator
	Twin Buttes Administration Building (Sandcastle) back-up power Generator	25 kW (39.5 hp)	2010	N	Y	N	Cummins 25GGMB

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
	Twin Buttes Radio Hill backup Generator	25 kW (39.5 hp)	2010	N	Y	N	Cummins 25GGMB
	Tailing Pump Station back-up power generator	200 kW (268 hp)	2010	N	Y	N	Cummins DSHAC
	Dispatch Tower #2 backup power Generator	47 kW (63 hp)	2007	N	Y	N	Cummins GGFE5790132
	Sierrita Mobile Radio Tower backup power Generator	9.3 kW (12.5 hp)	2012	Y 40 CFR 60 IIII	Y	N	MultiQuip Whisper™ DS70000SS
	Sierrita Health Clinic backup power Generator	108 kW (145 hp)	2012	Y 40 CFR 60 IIII	Y	N	Cummins DSFAD
	Administration Communications Room backup power Generator	150 kW (200 hp)	2014	Y 40 CFR 60 JJJJ	Y	N	Cummins GGLB
SECTION XII: MISCELLANEOUS AND FUGITIVE EMISSION SOURCES							
076	Organic Storage Tanks - SX #1, #2, #3	NA	NA	N	N	N	NA
078	Gasoline Storage Tanks	12,000 gal/each	1990	N	N	N	Tanks ML-11(1), ML-11(2), SP-13
087	Sierrita Tailing Impoundment	NA	NA	N	N	N	NA
093	6' x 20' Triple Deck Screen	500 tph	2009	Y	N	N	KPI-JCI, 6203-32LP S071980
093	Vibrating Grizzly Feeder	500 tph	2010	Y	N	N	KPI-JCL
093	6' x 20' Triple-Deck Screen	500 tph	2010	Y	N	N	Reuter
093	36"x60' Stackable Triple Deck Screen	500 tph	2010	Y	N	N	Reuter
093	36" x 60' Stackable Conveyor	500 tph	2010	Y	N	N	Reuter
093	36" x 60' Stackable Conveyor	500 tph	2010	Y	N	N	Reuter
093	Portable Radial Stacking Conveyor 36" x 100'	500 tph	2010	Y	N	N	KPI-JCI 13-36100
093	Portable Cone Crusher	500 tph	2010	Y	N	N	KPI-JCI, 1400LS. C080519
105	Twin Buttes Electrowinning Tankhouse	144 cells	1975	N	N	N	NA
120	Miscellaneous Screens and Grizzlies	NA	NA	N	N	N	NA
124	Portable Screen Plant	1300 tph	1978	N	Y	N	Kolberg, 1142-50, 1393-1142PDT-78
127	Sequential Metals Extraction (SME) Tanks	NA	2013	N	N	N	Pilot Plant

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
	SME Dry Media Scrubber #1	100 acfm	2013	N	N	N	Purafil DS100, SM-600-SC-001
	SME Dry Media Scrubber #2	100 acfm	2013	N	N	N	Purafil DS100, SM-600-SC-002
	SME Dry Media Scrubber #3	100 acfm	2013	N	N	N	Purafil DS100, SM-600-SC-003
	SME Dry Media Scrubber #4	100 acfm	2013	N	N	N	Purafil DS100, SM-600-SC-004
	Dry Reagent Mix Tank	NA	2013	N	N	N	
128	Ion Exchange Lime Unloading and Handling		2008	N	Y	N	
	Dry Reagent Mix Tank		2008	N	Y	N	
129	Ventilation Scrubber	232 acfm	2012	N	N	N	
	Bleed Scrubber	501 acfm	2012	N	N	N	
	Ground Flare	48 acfm	2012	N	N	N	

Table 1-2. Summary of Equipment Removed from Attachment "C" of Permit 6067

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
SECTION II: PRIMARY CRUSHING							
113	Primary Crusher Wet Scrubber	40,000 acfm		Y	N	Y	Ducon UW-4, III, size 144, SI 2303221
SECTION IV: FINE ORE CRUSHING – SECONDARY AND TERTIARY CRUSHING (REQUIREMENTS IN SECTION III)							
075	#10 Wet Scrubber- Sierrita Secondary Scalping Screens	25,000 acfm		Y	N	Y	Ducon UW-4, III, size 102, SI 402652010
SECTION IV: FINE ORE CRUSHING – SECONDARY AND TERTIARY CRUSHING (REQUIREMENTS IN SECTION III)							
002-007	#1 Wet Scrubber - Sierrita Secondary Crushing Building	58,000 acfm		Y	N	Y	Ducon UW-4, III, size 144, SI 402652001
	#2 Wet Scrubber – Sierrita Secondary Crushing Building	58,000 acfm		Y	N	Y	Ducon UW-4, III, size 144, SI 402652001
	#3 Wet Scrubber – Sierrita Secondary Crushing Building	58,000 acfm		Y	N	Y	Ducon UW-4, III, size 144, SI 402652001
	#4 Wet Scrubber – Sierrita Secondary Crushing Building	58,000 acfm		Y	N	Y	Ducon UW-4, III, size 144, SI 402652001
	#5 Wet Scrubber – Sierrita Secondary Crushing Building	58,000 acfm		Y	N	Y	Ducon UW-4, III, size 144, SI 402652001
	#7 Wet Scrubber – Sierrita Secondary Crushing Building	58,000 acfm		Y	N	Y	Ducon UW-4, III, size 144, SI 402652001
	#6 Wet Scrubber (to be replaced by 25,500 acfm wet scrubber)	12,000 acfm/ 25,500 acfm		N	N	Y	Ducon UW-4, III, size 66, SI 402652006 to be replaced with Ducon UW-4, size 144, SI 402652008
112	#9 Wet Scrubber	57,000 acfm		Y	N	Y	Ducon UW-4, III, size 144, SI 4026490
121	#12 Wet Scrubber	58,000 acfm		Y	N	Y	Ducon UW-4, III, size 144, SI 402652012
SECTION V: FINE ORE STORAGE AND HANDLING (REQUIREMENTS IN PERMIT SECTION IV)							
116	Wet Scrubber - 8B to 8C Conveyor Transfer	8000 acfm		N	N	Y	Ducon UW-4, IV size 54, SI 402 652010
009	#1 Baghouse - Sierrita Fine Ore Bin	4500 acfm		N	N	Y	Mikro Pulsaire 64-8-20, SI 26530-1
010	#2 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Y	Mikro Pulsaire 36S-8-30, SI 26530-6
011	#3 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Y	Mikro Pulsaire 36S-8-30, SI 26530-8

ID	EQUIPMENT NAME	CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	CAM	MAKE, MODEL, SIERRITA ID#
012	#4 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Y	Mikro Pulsaire 36S-8-30, SI 26530-4
013	#5 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Y	Mikro Pulsaire 36S-8-30, SI 26530-3
014	#6 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Y	Mikro Pulsaire 36S-8-30, SI 26530-2
015	#7 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Y	Mikro Pulsaire 36S-8-30, SI 26530-5
016	#8 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Y	Mikro Pulsaire 36S-8-30, SI 26530-7
017	#9 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Y	Mikro Pulsaire 36S-8-30, SI 26530-9
SECTION XI: STATIONARY ENGINES							
126	West Robo Shack Generator	10 hp	Pre-2006	N	N	N	Propane Generator, ID 826089
	Truck Shop Generator	10 hp	Pre-2007	N	N	N	Propane Generator, ID 826090
	Love Shack Generator	10 hp	Pre-2006	N	N	N	Propane Generator, ID 834015
	Menudo Bowl Generator	25 kW (49 hp)	2012	Y 40 CFR 60 IIII	Y	N	Cummins DSKCA
SECTION XII: MISCELLANEOUS AND FUGITIVE EMISSION SOURCES							
093	Road Rock Crushing & Screening Plant	400 tph	1966	N	N	N	Cedarapids/El Jay RC454 STD Cone Crusher

10.0 REFERENCES

EPA. *Technical Guidance Document:Compliance Assurance Monitoring Revised Draft*, MRI Project No. 4701-05, August 1998

APPENDIX A

TITLE V PERMIT RENEWAL APPLICATION FORMS

RECEIVED
PIMA COUNTY
DEC 27 REC'D
ENVIRONMENTAL QUALITY
AIR PROGRAM

PIMA COUNTY DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Program
33 N. Stone Avenue □ Suite 700 □ Tucson, AZ 85701 □ Phone: (520) 243-7400

STANDARD PERMIT APPLICATION FORM FOR CLASS I SOURCES

(As required by A.R.S. § 49-426, and Title 17 of the Pima County Code)

1. **Permit to be issued to: (Arizona Corporate Commission Registered Name):** Freeport-McMoRan Sierrita Inc.

2. **Mailing Address:** P. O. Box 527
City: Green Valley **State:** Arizona **ZIP:** 85622-0527

3. **Plant Name (if different than item #1):**

4. **Name (or names) of Owner or Operator:** John Broderick
FAX #: 520.393.2363 **Phone:** 520.393.2302
Email: John_Broderick@fmi.com

5. **Name of Owner's Agent:**
FAX #: **Phone:**

6. **Plant/Site manager/Contact Person:** Kali Rhea, Environmental Engineer II
FAX #: 520.393.2651 **Phone:** 520.393.2603
Email: Kali_Hoyack@fmi.com

7. **Proposed Equipment/Plant Location Address:** Sierrita Property, 6200 West Duval Mine Road
City: Green Valley **State:** Arizona **ZIP:** 85614
Indian Reservation (if applicable): NA **T/R/S, Lat/Long, Elev:** 31°52'30" / 111° 06', 3700 ft.

8. **General Nature of Business:**
Standard Industrial Classification Code: 1021 **State Permit Class:** I

9. **Type of Organization:** ☒ Corporation ☐ Individual Owner ☐ Partnership ☐ Government Entity ☐ Other

10. **Permit Application Basis** ***(Check all that apply):*** ☐ New Source ☐ General Permit ☒ Renewal ***Revision:*** ☐ Administrative ☐ Minor ☐ Significant **Existing Permit #** 6067
Date of Commencement of Construction or Modification:
Is any of the equipment to be leased to another individual or entity? ☐ Yes ☒ **No**

11. **Signature of Responsible Official of Organization:**
Official Title of Signer: Vice President and General Manager

12. **Typed or Printed Name and E-mail of Signer:** John Broderick John_Broderick@fmi.com

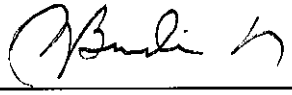
Date: 12/23/2013 **Telephone Number:** 520.393.2302

Certification of Compliance with all Applicable Requirements

Permit Number (If existing source) 6067

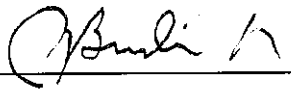
I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by the Pima County Department of Environmental Quality (PDEQ) as public record. I also attest that I am in compliance with the applicable requirements and will continue to comply with such requirements and any future requirements that become effective during the life of my permit. I will present a certification of compliance to PDEQ no less than annually and more frequently if specified by PDEQ. I further state that I will assume responsibility for the construction, modification, or operation of the source in accordance with the requirements of Title 17 of the Pima County Code and any permit issued thereof.

Name (Print/Type): John Broderick Title: Vice President and General Manager

Signature:  Date: 12/23/2013

Certification of Truth, Accuracy, and Completeness

By my signature I, (Name) John Broderick, hereby certify that based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

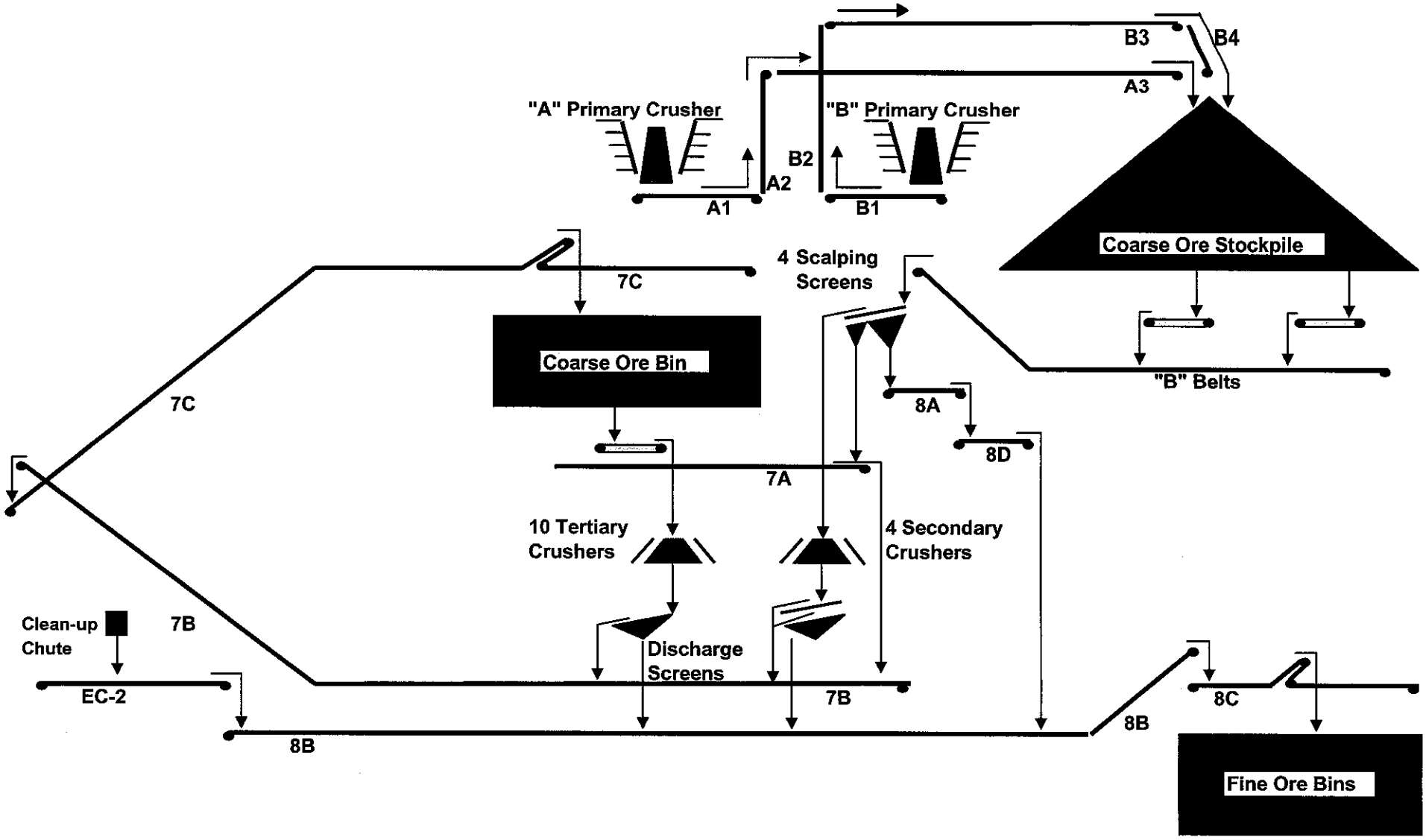
Signature of Responsible Official of Organization: 

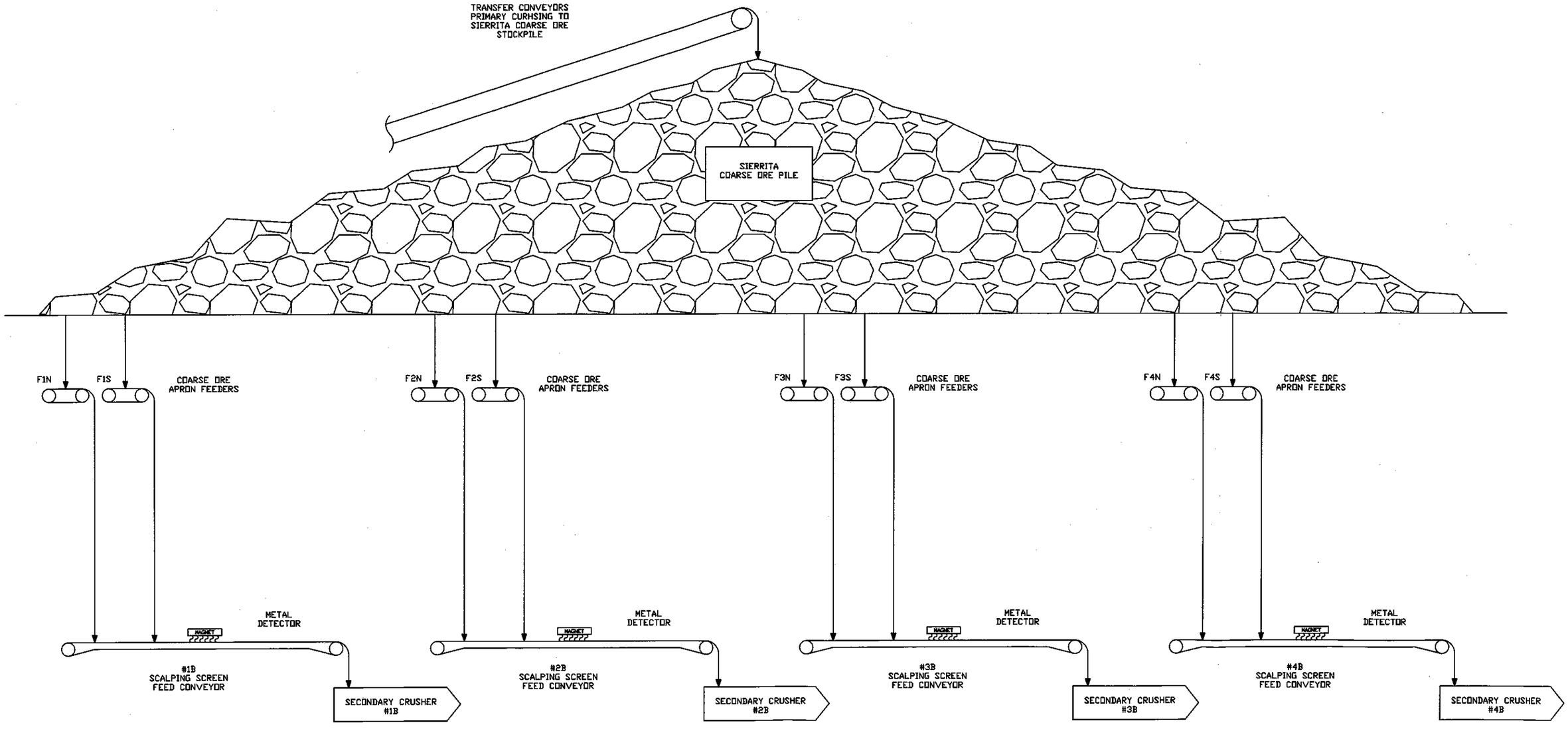
Title: Vice President and General Manager Date: 12/23/2013

APPENDIX B

SITE DIAGRAMS

Crushing and Conveying

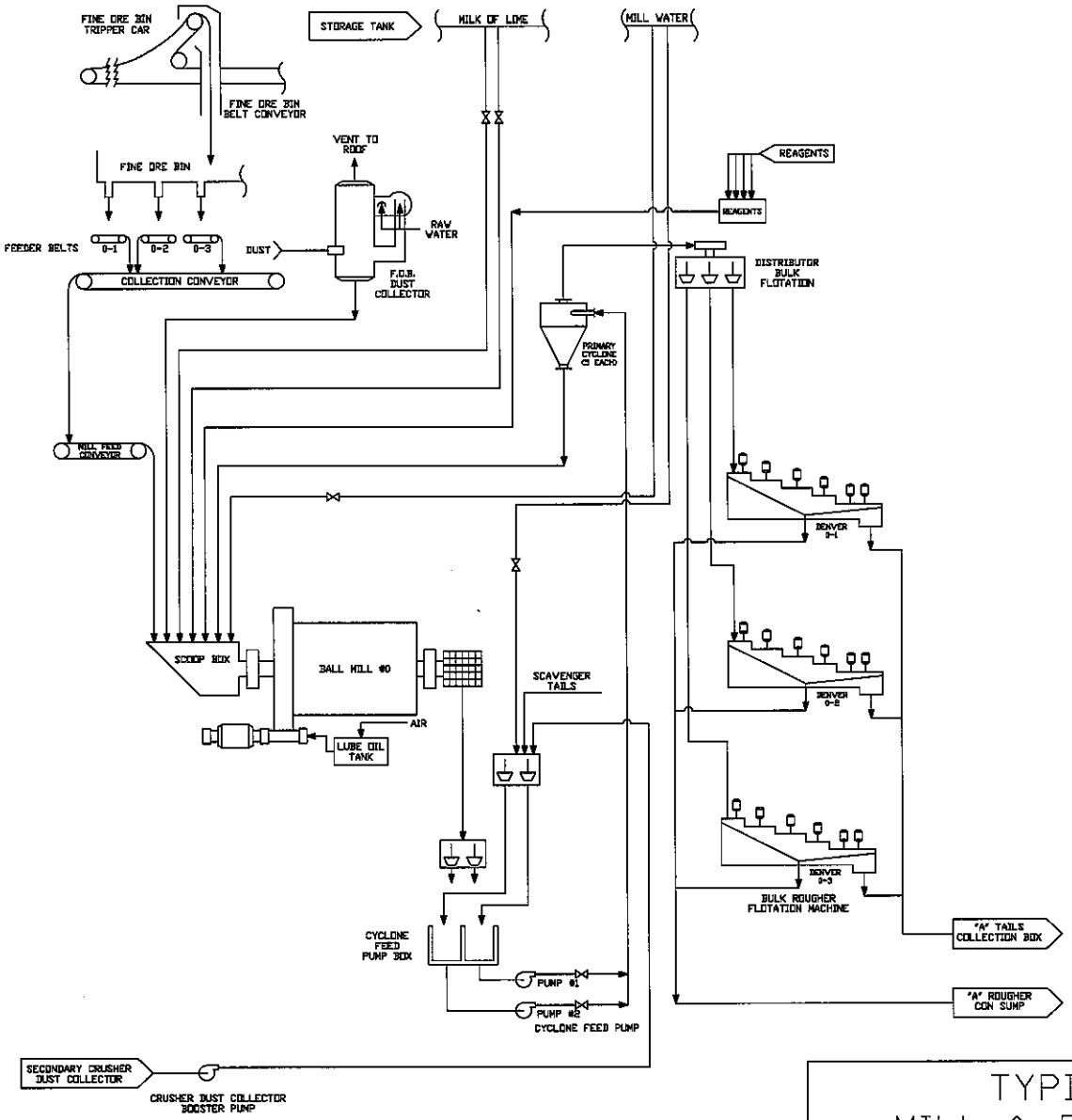




COARSE ORE STOCKPILE RECLAIM FEEDER

by A. Hilshorst

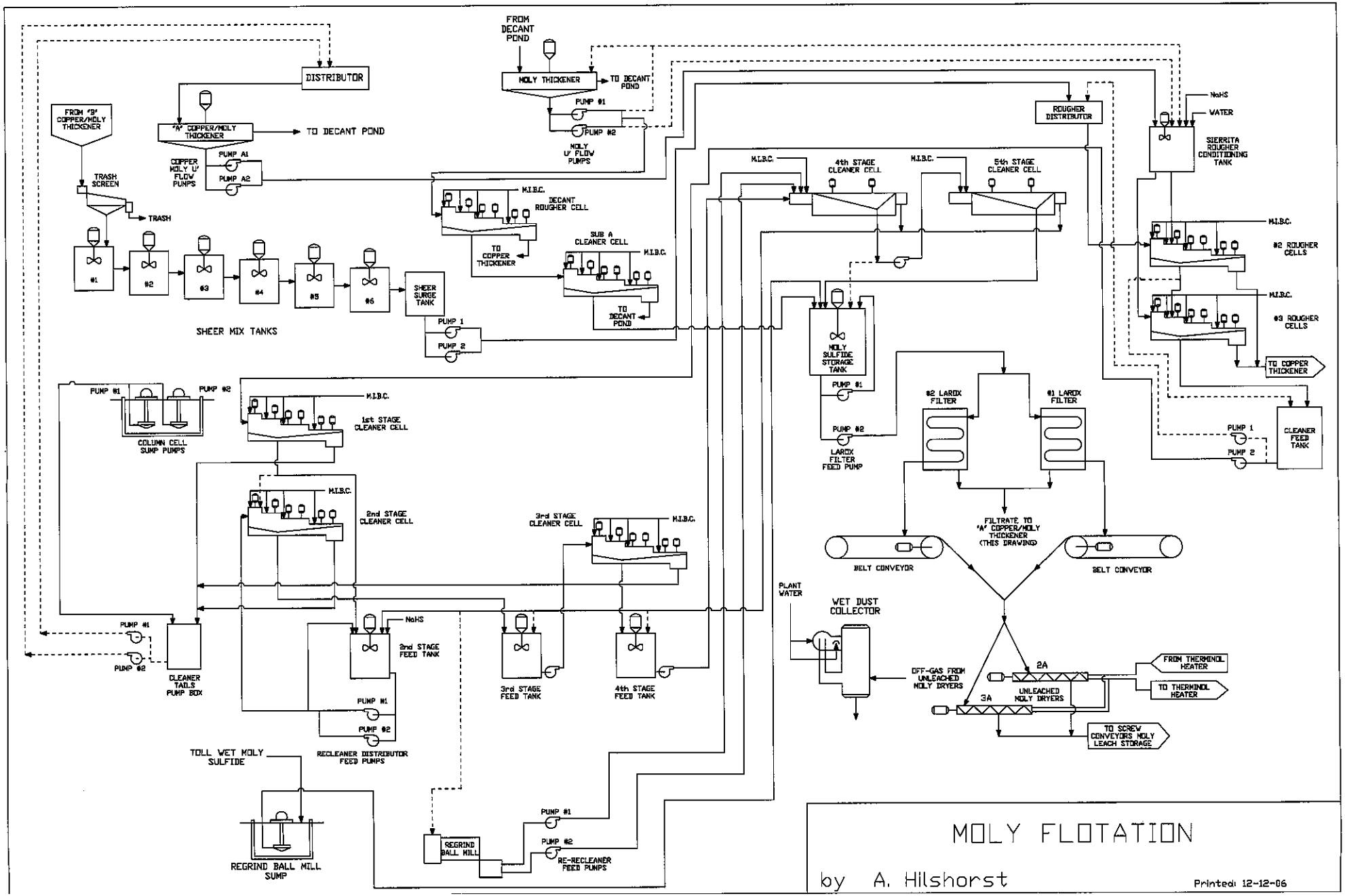
Printed: 07-03-06

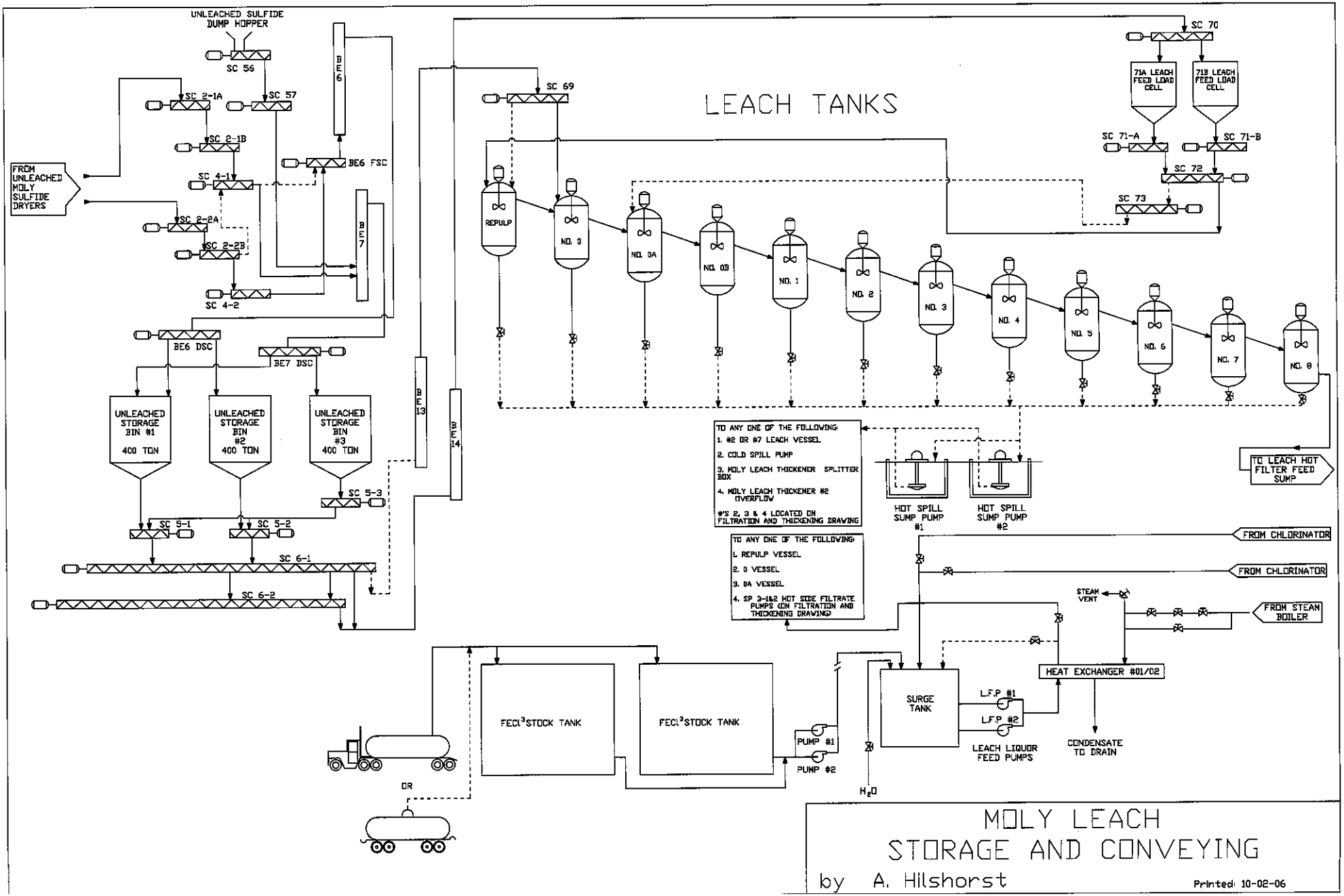


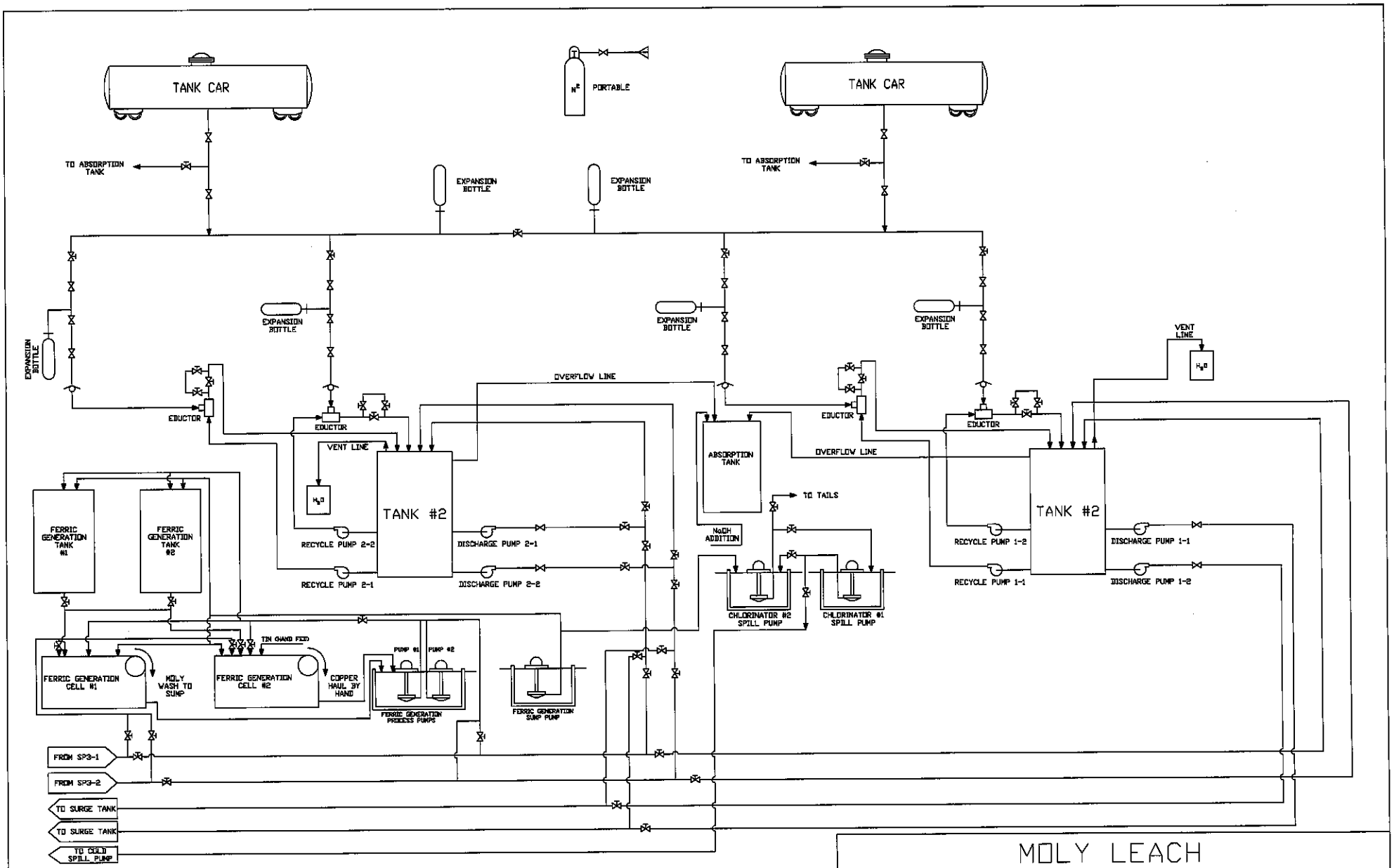
TYPICAL GRINDING MILL & FLOTATION CIRCUIT

by A. Hilshorst

Printed: 07-11-06


FROM DECANT POND
DISTRIBUTOR
MOLY THICKENER
TO DECANT POND
PUMP #1
PUMP #2
MOLY U/ FLOW PUMPS
FROM "B" COPPER/MOLY THICKENER
"A" COPPER/MOLY THICKENER
TO DECANT POND
COPPER MOLY U/ FLOW PUMPS
PUMP A1
PUMP A2
TRASH SCREEN
TRASH
#1
#2
#3
#4
#5
#6
SHEER MIX TANKS
SHEER SURGE TANK
PUMP 1
PUMP 2
M.I.B.C.
DECANT ROUGHER CELL
TO COPPER THICKENER
SUB A CLEANER CELL
TO DECANT POND
4th STAGE CLEANER CELL
5th STAGE CLEANER CELL
ROUGHER DISTRIBUTOR
NaHS
WATER
SIERRITA ROUGHER CONDITIONING TANK
#2 ROUGHER CELLS
#3 ROUGHER CELLS
TO COPPER THICKENER
MOLY SULFIDE STORAGE TANK
PUMP #1
PUMP #2
LARDX FILTER FEED PUMP
#2 LARDX FILTER
#1 LARDX FILTER
PUMP 1
PUMP 2
CLEANER FEED TANK
PUMP #1
PUMP #2
COLUMN CELL SUMP PUMPS
1st STAGE CLEANER CELL
2nd STAGE CLEANER CELL
3rd STAGE CLEANER CELL
FILTRATE TO "A" COPPER/MOLY THICKENER (THIS DRAWING)
BELT CONVEYOR
BELT CONVEYOR
PLANT WATER
WET DUST COLLECTOR
OFF-GAS FROM UNLEACHED MOLY DRYERS
2A
3A
UNLEACHED MOLY DRYERS
FROM THERMINOL HEATER
TO THERMINOL HEATER
TO SCREW CONVEYORS MOLY LEACH STORAGE
PUMP #1
PUMP #2
CLEANER TAILS PUMP BOX
NaHS
2nd STAGE FEED TANK
3rd STAGE FEED TANK
4th STAGE FEED TANK
PUMP #1
PUMP #2
RECLEANER DISTRIBUTOR FEED PUMPS
TOLL WET MOLY SULFIDE
REGRIND BALL MILL SUMP
REGRIND BALL MILL
PUMP #1
PUMP #2
RE-RECLEANER FEED PUMPS
MOLY FLOTATION
by A. Hilshorst
Printed: 12-12-06


UNLEACHED SULFIDE DUMP HOPPER
SC 56
SC 57
SC 2-1A
SC 2-1B
SC 4-1
SC 2-2A
SC 2-2B
SC 4-2
BE6
BE6 FSC
BE7
BE6 DSC
BE7 DSC
BE13
BE14
FROM UNLEACHED MOLY SULFIDE DRYERS
UNLEACHED STORAGE BIN #1 400 TON
UNLEACHED STORAGE BIN #2 400 TON
UNLEACHED STORAGE BIN #3 400 TON
SC 5-1
SC 5-2
SC 5-3
SC 6-1
SC 6-2
LEACH TANKS
SC 69
SC 70
SC 71-A
SC 71-B
SC 72
SC 73
71A LEACH FEED LOAD CELL
71B LEACH FEED LOAD CELL
REPULP
NO. 0
NO. 0A
NO. 0B
NO. 1
NO. 2
NO. 3
NO. 4
NO. 5
NO. 6
NO. 7
NO. 8
TO ANY ONE OF THE FOLLOWING
1. #2 OR #7 LEACH VESSEL
2. COLD SPILL PUMP
3. MOLY LEACH THICKENER SPLITTER BOX
4. MOLY LEACH THICKENER #2 OVERFLOW
#'S 2, 3 & 4 LOCATED ON FILTRATION AND THICKENING DRAWING
TO ANY ONE OF THE FOLLOWING
1. REPULP VESSEL
2. 0 VESSEL
3. 0A VESSEL
4. SP 3-1&2 HOT SIDE FILTRATE PUMPS (ON FILTRATION AND THICKENING DRAWING)
HOT SPILL SUMP PUMP #1
HOT SPILL SUMP PUMP #2
TO LEACH HOT FILTER FEED SUMP
FROM CHLORINATOR
FROM CHLORINATOR
FROM STEAM BOILER
STEAM VENT
HEAT EXCHANGER #01/02
FECl3 STOCK TANK
FECl3 STOCK TANK
PUMP #1
PUMP #2
SURGE TANK
L.F.P #1
L.F.P #2
LEACH LIQUOR FEED PUMPS
CONDENSATE TO DRAIN
H2O
OR
MOLY LEACH
STORAGE AND CONVEYING
by A. Hilshorst
Printed 10-02-06



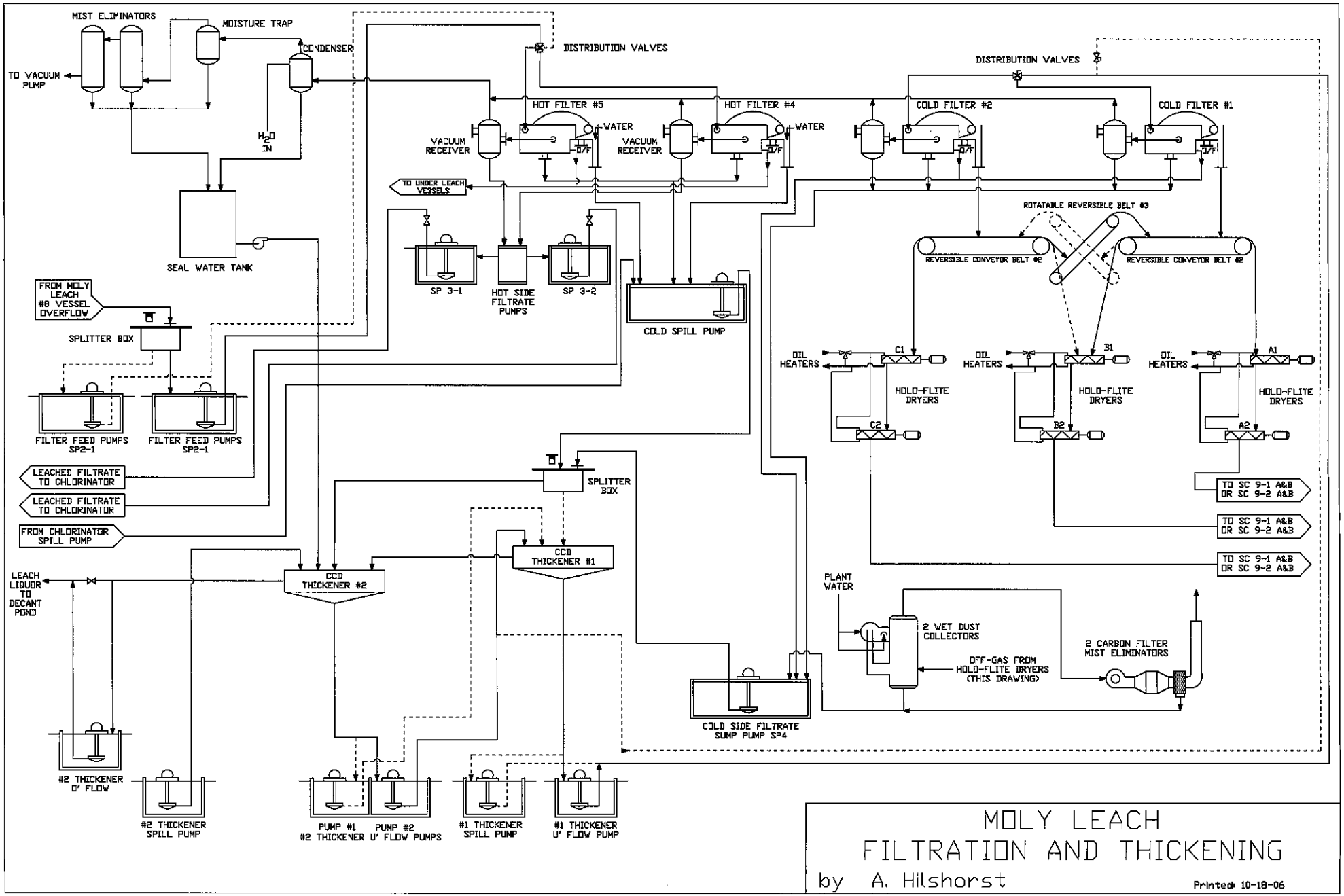
MOLY LEACH

CHLORINATOR AND FERRIC REGENERATION

by A. Hilshorst

Circa JUNE 2005

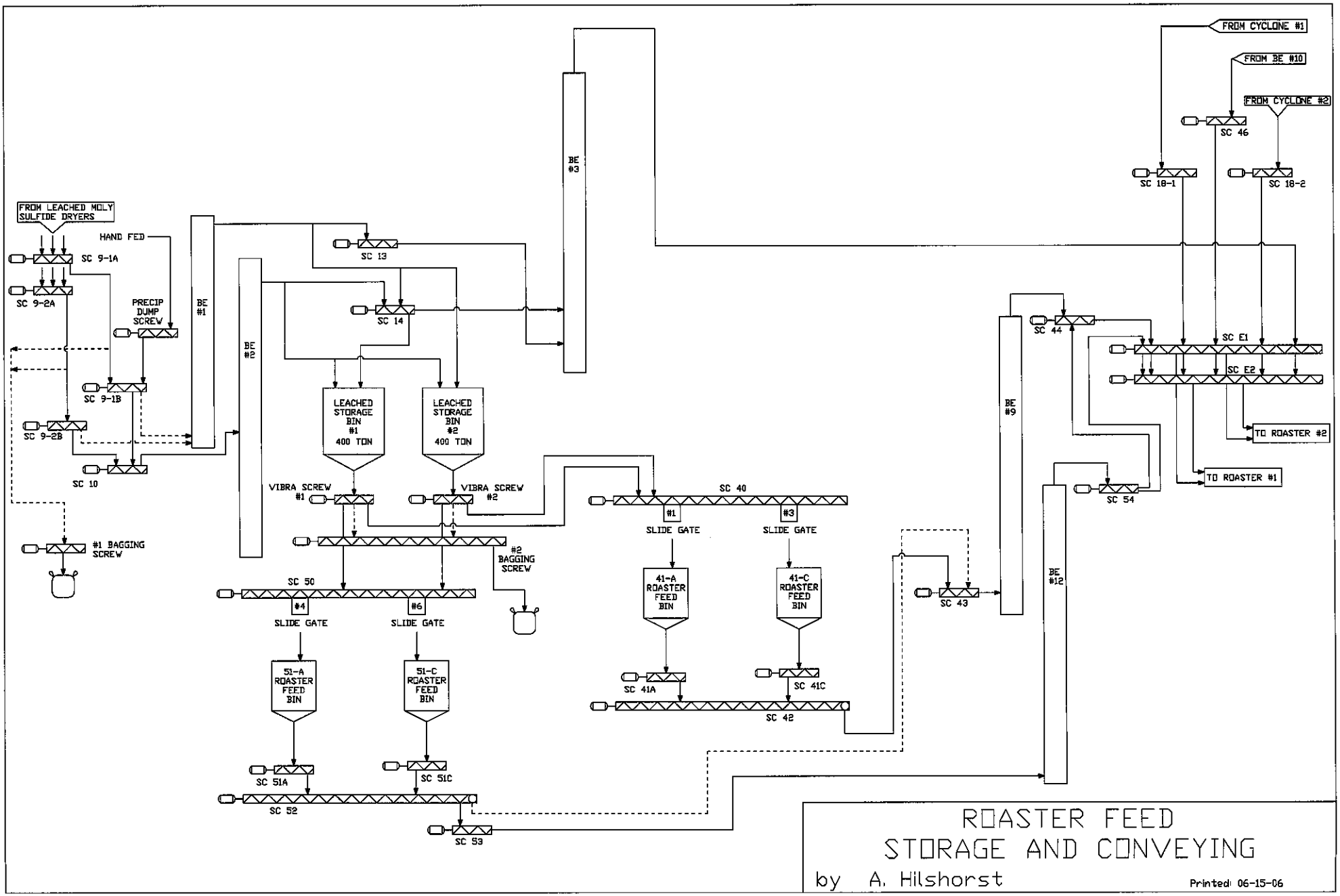
Printed: 07-17-06

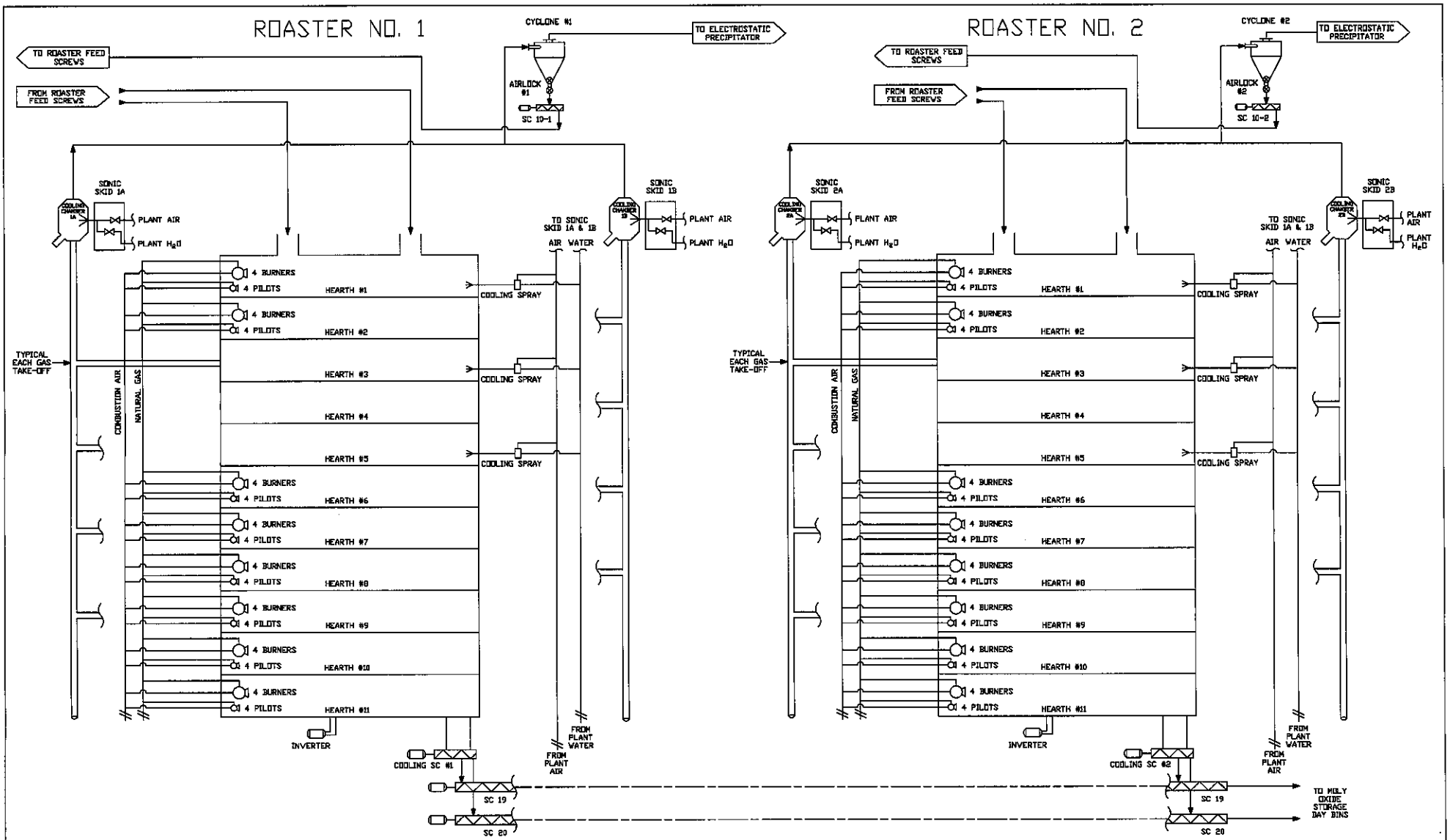


MOLY LEACH FILTRATION AND THICKENING

by A. Hilshorst

Printed: 10-18-06

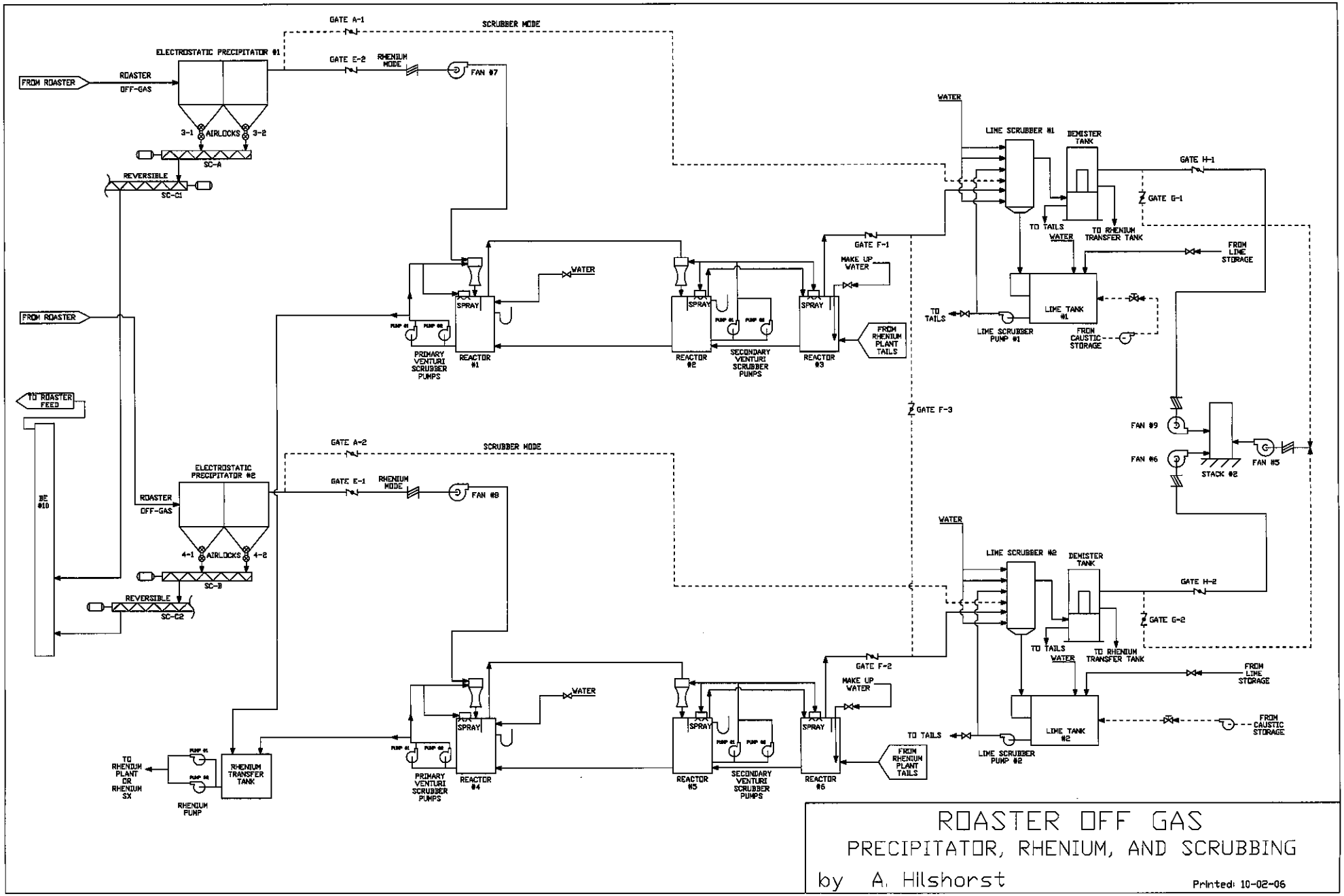

FROM CYCLONE #1
FROM BE #10
FROM CYCLONE #2
SC 46
SC 18-1
SC 18-2
FROM LEACHED MOLY SULFIDE DRYERS
HAND FED
SC 9-1A
SC 9-2A
PRECIP DUMP SCREW
SC 9-1B
SC 9-2B
SC 10
BE #1
BE #2
BE #3
SC 13
SC 14
LEACHED STORAGE BIN #1 400 TON
LEACHED STORAGE BIN #2 400 TON
VIBRA SCREW #1
VIBRA SCREW #2
#1 BAGGING SCREW
#2 BAGGING SCREW
SC 50
#4
#6
SLIDE GATE
SLIDE GATE
51-A ROASTER FEED BIN
51-C ROASTER FEED BIN
SC 51A
SC 51C
SC 52
SC 53
SC 40
#1
#3
SLIDE GATE
SLIDE GATE
41-A ROASTER FEED BIN
41-C ROASTER FEED BIN
SC 41A
SC 41C
SC 42
SC 43
SC 44
SC E1
SC E2
BE #9
BE #12
SC 54
TO ROASTER #2
TO ROASTER #1
ROASTER FEED
STORAGE AND CONVEYING
by A. Hilshorst
Printed: 06-15-06



MOLY ROASTER

by A. Hilshorst

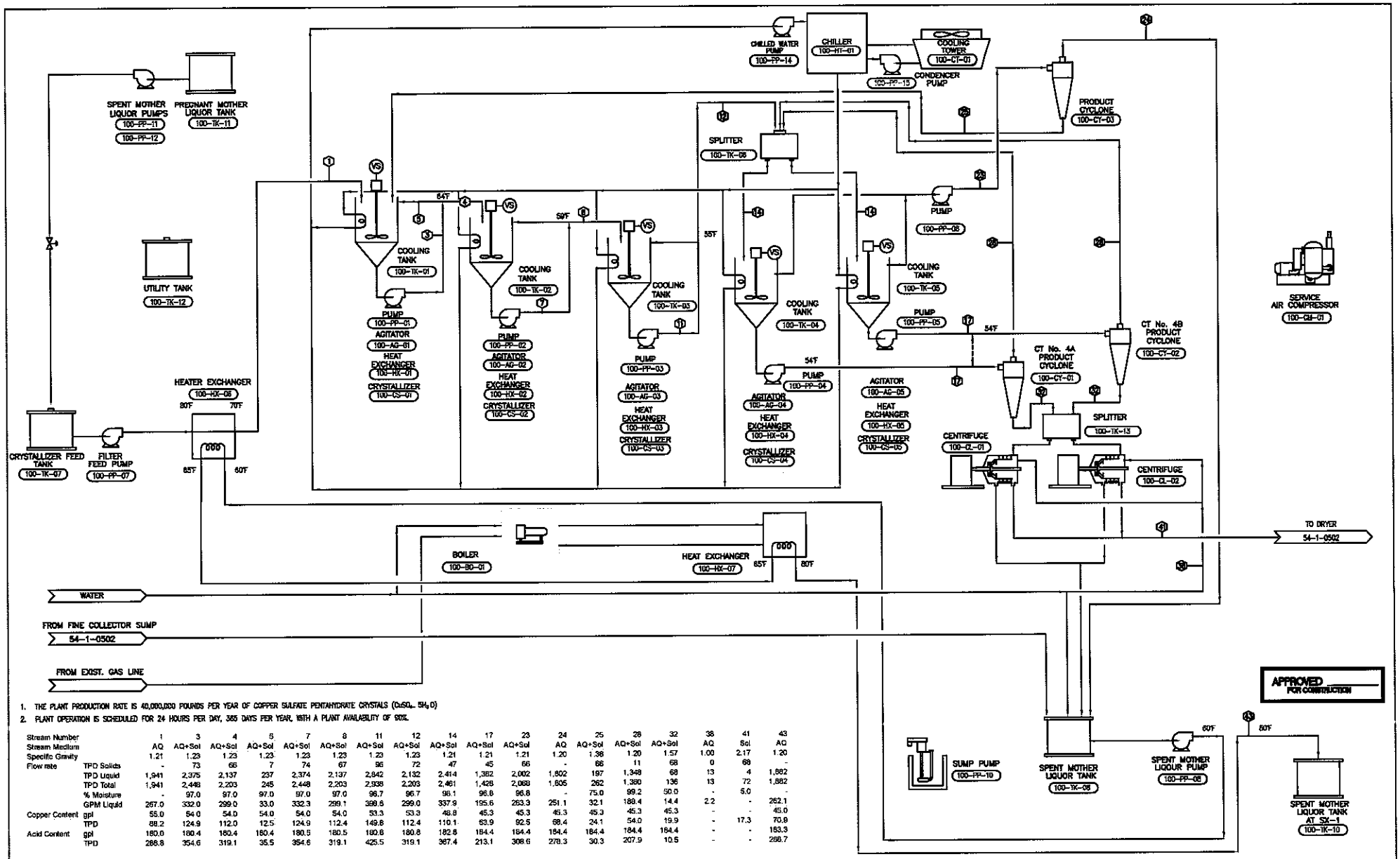
Printed: 09-26-06



ROASTER OFF GAS
PRECIPITATOR, RHENIUM, AND SCRUBBING

by A. Hilshorst

Printed: 10-02-06



1. THE PLANT PRODUCTION RATE IS 40,000,000 POUNDS PER YEAR OF COPPER SULFATE PENTAHYDRATE CRYSTALS ($CuSO_4 \cdot 5H_2O$)
2. PLANT OPERATION IS SCHEDULED FOR 24 HOURS PER DAY, 365 DAYS PER YEAR, WITH A PLANT AVAILABILITY OF 90%.

Stream Number		1	3	4	5	7	8	11	12	14	17	23	24	25	28	32	38	41	43
Stream Medium		AQ	AQ+Sol	AQ+Sol	AQ+Sol	AQ+Sol	AQ+Sol	AQ+Sol	AQ+Sol	AQ+Sol	AQ+Sol	AQ+Sol	AQ	AQ+Sol	AQ+Sol	AQ+Sol	AQ	Sol	AQ
Specific Gravity		1.21	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.21	1.21	1.21	1.20	1.36	1.20	1.57	1.00	2.17	1.20
Flow rate	TPD Solids	-	73	66	7	74	67	96	72	47	45	66	-	66	11	68	0	68	-
	TPD Liquid	1,941	2,375	2,137	237	2,374	2,137	2,842	2,132	2,414	1,382	2,002	1,802	197	1,348	68	13	4	1,882
	TPD Total	1,941	2,448	2,203	245	2,448	2,203	2,938	2,203	2,461	1,428	2,068	1,805	262	1,360	136	13	72	1,882
	% Moisture	-	97.0	97.0	97.0	97.0	97.0	96.7	96.7	98.1	96.8	96.8	-	75.0	99.2	50.0	-	5.0	-
	GPM Liquid	267.0	332.0	299.0	33.0	332.3	299.1	398.6	299.0	337.9	195.6	283.3	251.1	32.1	188.4	14.4	2.2	-	262.1
Copper Content	gpl	55.0	54.0	54.0	54.0	54.0	54.0	53.3	53.3	48.8	45.3	45.3	45.3	45.3	45.3	45.3	-	-	45.0
	TPD	88.2	124.9	112.0	12.5	124.9	112.4	149.8	112.4	110.1	63.9	92.5	68.4	24.1	54.0	19.9	-	17.3	70.9
Acid Content	gpl	180.6	180.4	180.4	180.4	180.5	180.5	180.8	180.8	182.8	184.4	184.4	184.4	184.4	184.4	184.4	-	-	183.3
	TPD	288.8	354.6	319.1	35.5	354.6	319.1	425.5	319.1	367.4	213.1	308.6	278.3	30.3	207.9	10.5	-	-	288.7

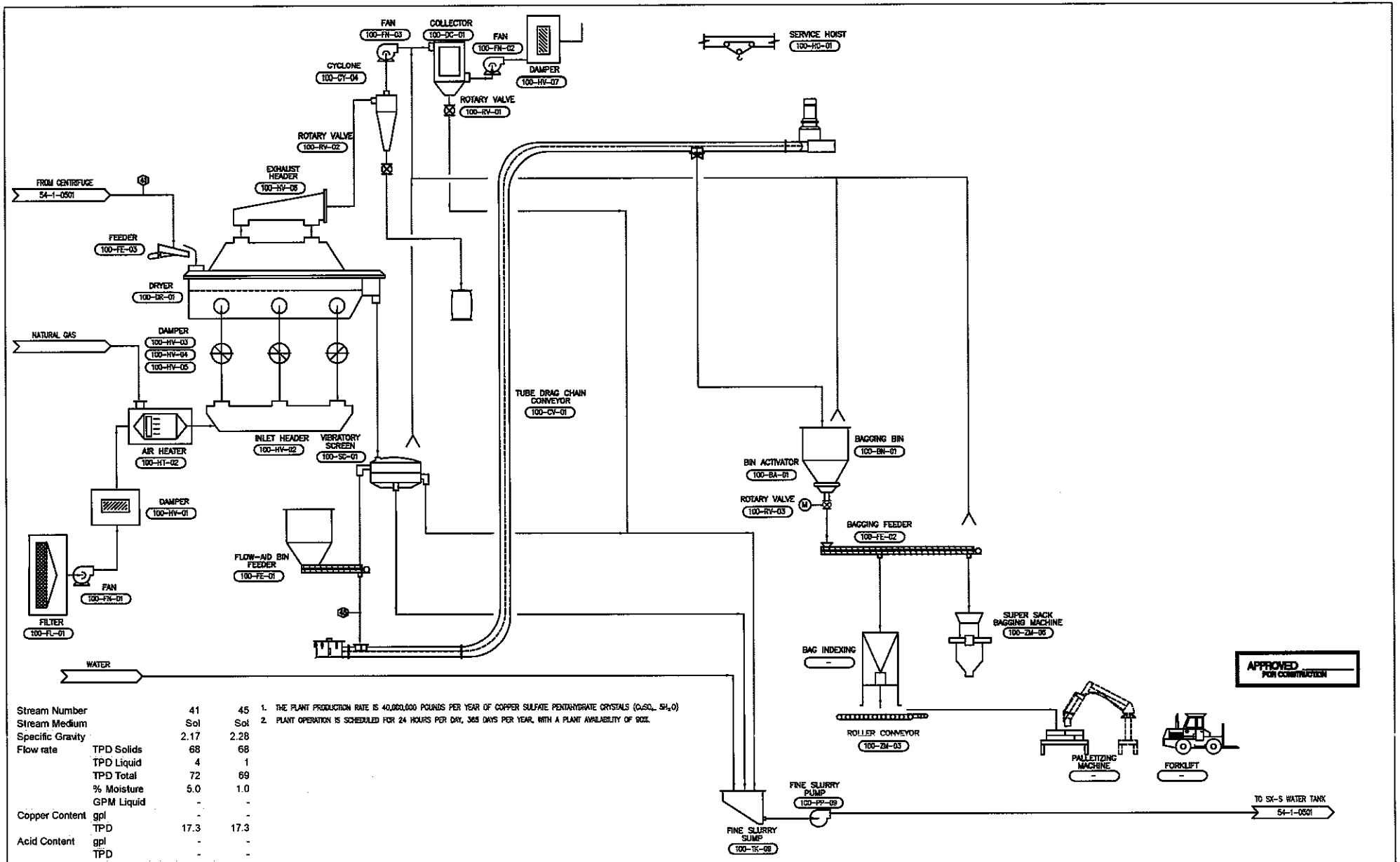
REFERENCES			REFERENCES			REVISIONS			REVISIONS		
DWG. NO.	TITLE		DWG. NO.	TITLE		NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
									0	6/14/04	ISSUED FOR CONSTRUCTION

SCALE	NONE	SIZE	D
DRAWN BY	A.C.	DATE	MAY '03
CHECKED BY	T.D.	DATE	4/04
ENGINEER	T.D.	DATE	4/04
APPROVED BY	T.D.	DATE	6/14/04

jacobs sierra

PROJECT	SIERRITA
AREA	COPPER SULFATE PLANT
TITLE	FLOW DIAGRAM CRYSTALLIZATION
JOB NO.	M3-PM03060
DWG. NO.	54-1-0501
REV. NO.	0
REV.	0
SHT.	2 OF 2

6/15/04



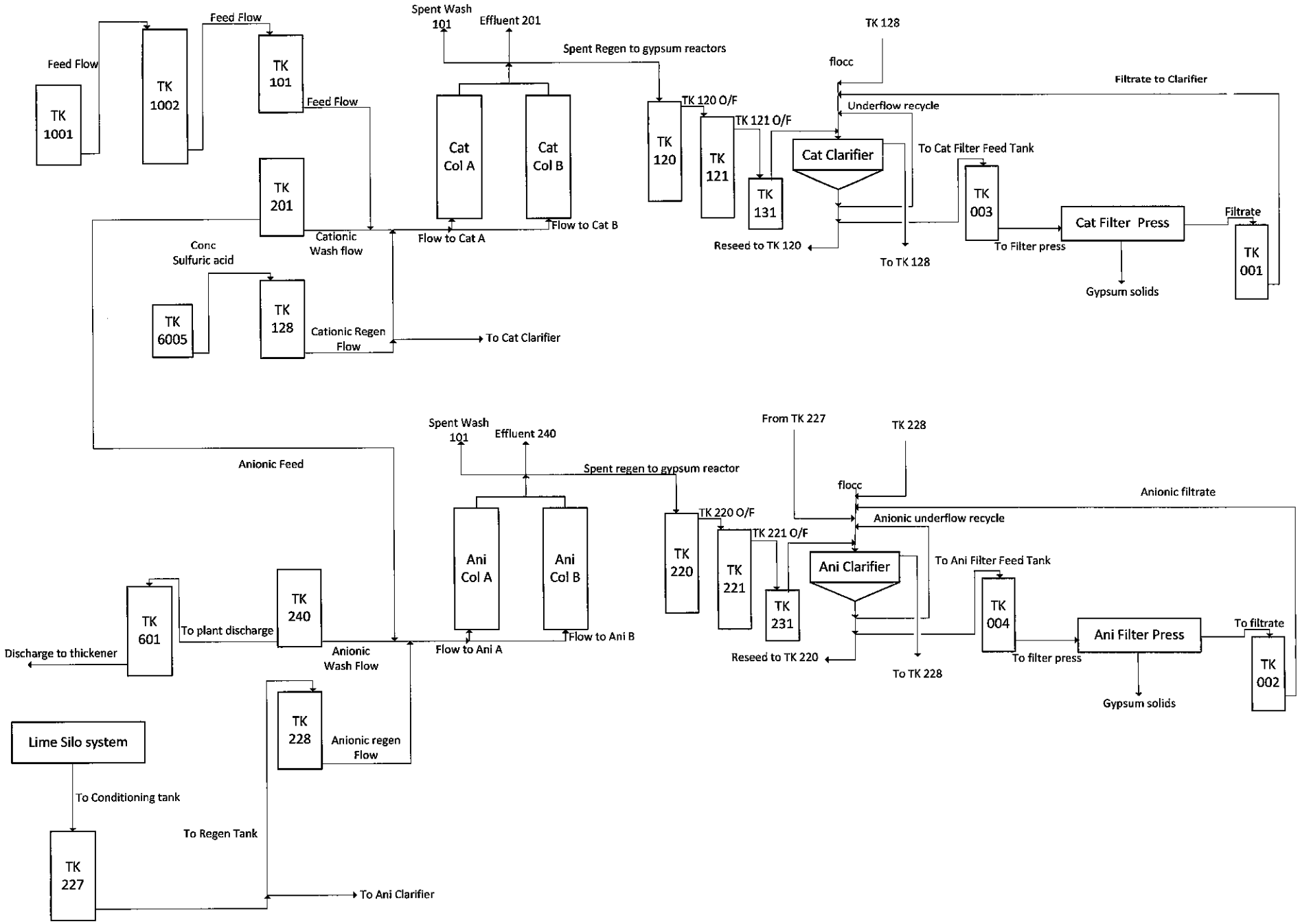
Stream Number		41	45
Stream Medium		Sol	Sol
Specific Gravity		2.17	2.28
Flow rate	TPD Solids	68	68
	TPD Liquid	4	1
	TPD Total	72	69
	% Moisture	5.0	1.0
	GPM Liquid	-	-
Copper Content	gpl	-	-
	TPD	17.3	17.3
Acid Content	gpl	-	-
	TPD	-	-

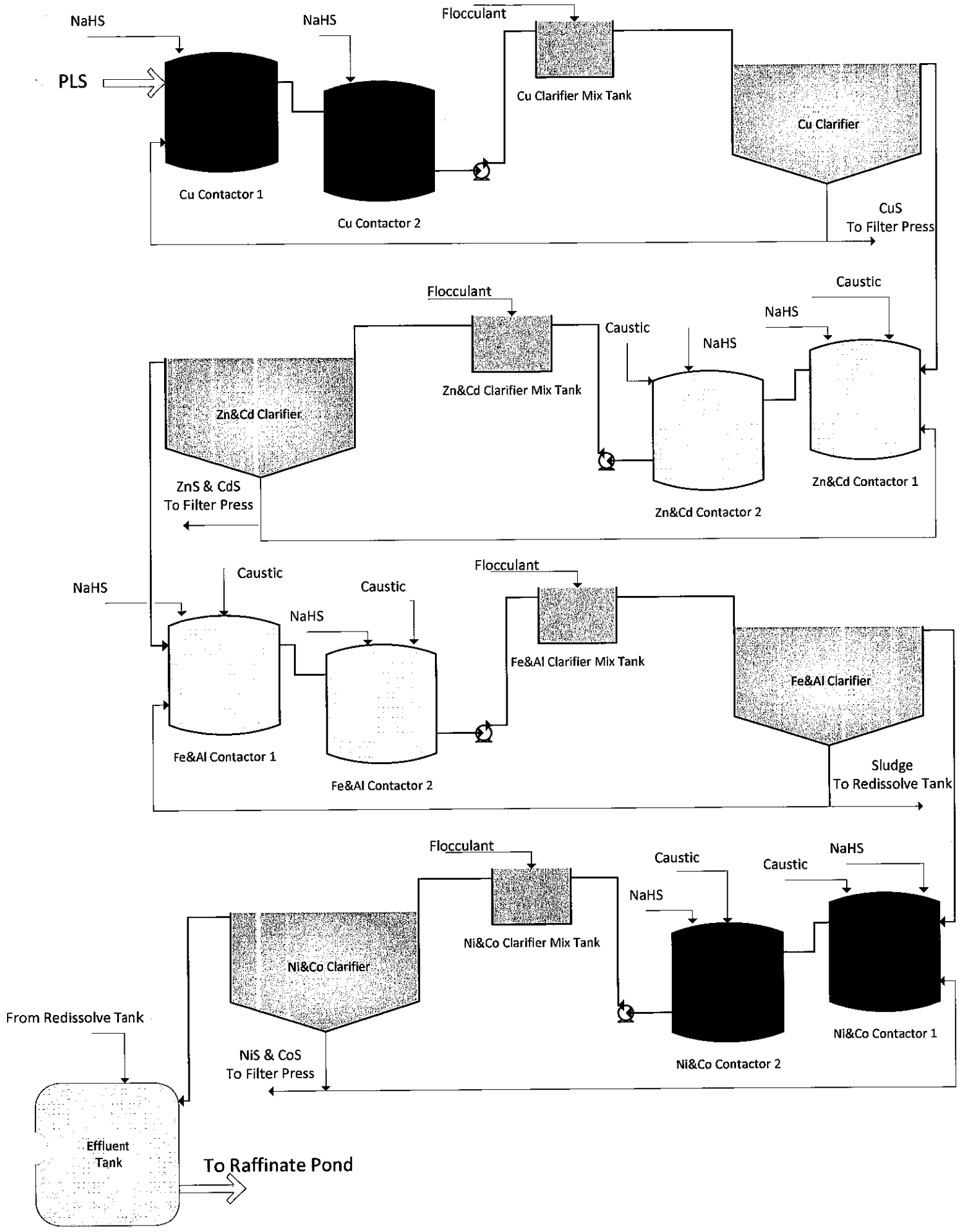
1. THE PLANT PRODUCTION RATE IS 40,000,000 POUNDS PER YEAR OF COPPER SULFATE PENTAHYDRATE CRYSTALS ($CuSO_4 \cdot 5H_2O$)
2. PLANT OPERATION IS SCHEDULED FOR 24 HOURS PER DAY, 365 DAYS PER YEAR, WITH A PLANT AVAILABILITY OF 90%.

REFERENCES | REFERENCES | REVISIONS | REVISIONS

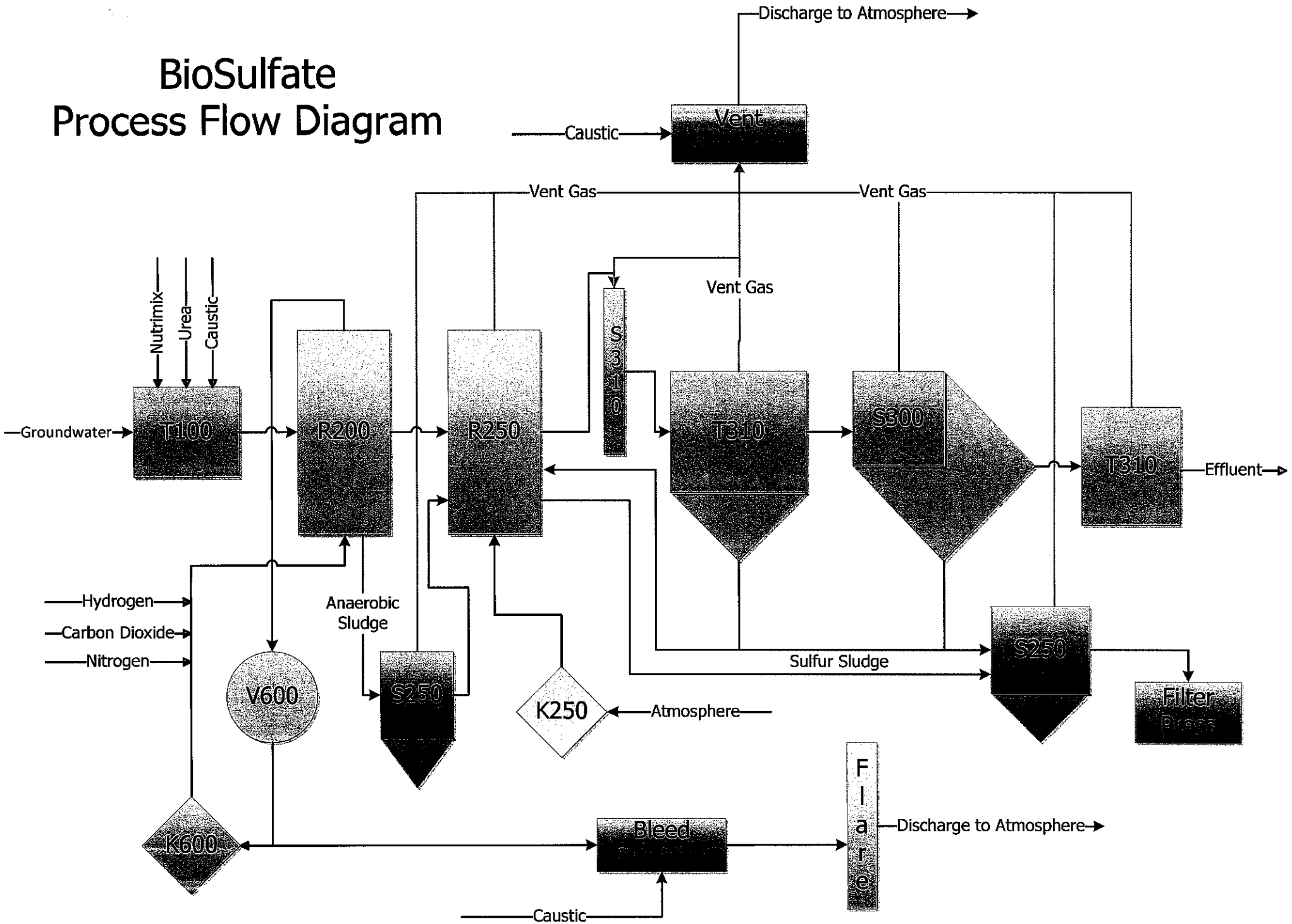
SCALE	NONE	D
DRAWN	A.C.	MAY '03
ENGINEER	T.D.	4/04
CHECKED	T.D.	4/04
APPROVED	T.D.	6/14/04

SIERRITA
COPPER SULFATE PLANT
FLOW DIAGRAM
DRYING AND PACKING
54-1-0502
0
2 OF 2
6/15/04


Feed Flow
TK 1001
TK 1002
Feed Flow
TK 101
Feed Flow
TK 201
Spent Wash 101
Effluent 201
Spent Regen to gypsum reactors
Cat Col A
Cat Col B
Flow to Cat A
Flow to Cat B
Cationic Wash flow
Conc Sulfuric acid
TK 6005
TK 128
Cationic Regen Flow
To Cat Clarifier
TK 120
TK 120 O/F
TK 121
TK 121 O/F
TK 131
TK 128
flocc
Filtrate to Clarifier
Underflow recycle
Cat Clarifier
To Cat Filter Feed Tank
TK 003
Cat Filter Press
Filtrate
TK 001
Reseed to TK 120
To TK 128
To Filter press
Gypsum solids
Anionic Feed
Spent Wash 101
Effluent 240
Spent regen to gypsum reactor
Ani Col A
Ani Col B
Flow to Ani A
Flow to Ani B
Anionic Wash Flow
TK 240
TK 601
To plant discharge
Discharge to thickener
TK 220
TK 220 O/F
TK 221
TK 221 O/F
TK 231
From TK 227
TK 228
flocc
Anionic filtrate
Anionic underflow recycle
Ani Clarifier
To Ani Filter Feed Tank
TK 004
Ani Filter Press
To filtrate
TK 002
Reseed to TK 220
To TK 228
To filter press
Gypsum solids
Lime Silo system
To Conditioning tank
TK 227
To Regen Tank
TK 228
Anionic regen Flow
To Ani Clarifier


NaHS
NaHS
Flocculant
PLS
Cu Clarifier Mix Tank
Cu Clarifier
Cu Contactor 1
Cu Contactor 2
CuS
To Filter Press
Flocculant
Caustic
NaHS
Caustic
NaHS
Zn&Cd Clarifier
Zn&Cd Clarifier Mix Tank
Zn&Cd Contactor 1
ZnS & CdS
To Filter Press
Zn&Cd Contactor 2
NaHS
Caustic
Caustic
NaHS
Flocculant
Fe&Al Clarifier Mix Tank
Fe&Al Clarifier
Fe&Al Contactor 1
Fe&Al Contactor 2
Sludge
To Redissolve Tank
Flocculant
Caustic
Caustic
NaHS
NaHS
Ni&Co Clarifier Mix Tank
Ni&Co Clarifier
From Redissolve Tank
Ni&Co Contactor 1
NiS & CoS
To Filter Press
Ni&Co Contactor 2
Effluent
Tank
To Raffinate Pond

BioSulfate Process Flow Diagram



APPENDIX C

COMPLIANCE PLAN

COMPLIANCE PLAN

This Compliance Plan is included in this Title V renewal permit pursuant to the requirements in PCC 17.12.160(B), which requires submittal of all information required by "Filing Instructions" as shown in Appendix 1 of A.A.C. Title 18. Appendix 1 of Title 18 includes a requirement that a Compliance Plan be supplied with the application. The Compliance Plan must include:

- A description of the compliance status of the source with respect to all applicable requirements;
- A compliance schedule; and
- A schedule for submission of certified progress reports no less frequently than every 6 months for sources required to have a schedule of compliance to remedy a violation.

Freeport-McMoRan Sierrita, Inc. (Sierrita) operates under Class I Air Quality Permit No. 6067 issued by the Arizona Department of Environmental Quality (ADEQ) in 2009. This permit has been amended by the permit revisions in the table below and supplemented by changes authorized without permit revision under PCC 17.12.230.

Revision No.	Description of Appplication	Status	Issue Date
6067-7P	Minor Revision – Modifications to the Compliance Assurance Monitoring Plan	Issued	06/21/11
6067-9P	Minor Revision – Changes to the Generator List and Installation of a Biosulfate Pilot Plant	Issued	06/21/11
6067-16P	Minor Revision – Replacement of the Road Rock Crushing and Screening Plant	Issued	11/21/13
6067-18P	Minor Revision – Installation of Copper Sulfate Plant Baghouse	Issued	11/21/13
6067-20P	Minor Revision – Installation of an emergency generator at the Sierrita Health Clinic and Ventilation Modifications for Secondary Crushing FARR Units	Issued	11/21/13
6067-21P	Minor Revision – Installation of an emergency generator at the Mobile Tower Radio Station	Issued	11/21/13
6067-22P	Minor Revision – Installation of an emergency generator at the Administration Communications Room	Issued	11/21/13

C.1 Compliance Status

Freeport-McMoRan Sierrita, Inc. (Sierrita) operates all emission units in compliance with applicable regulations and will continue to comply with all applicable requirements under the existing operating permit 6067 and all revisions (issued and pending) to this permit. In addition, Sierrita will comply, on a timely basis, with all applicable requirements that become effective during the permit term.

C.2 Compliance Schedule

The compliance schedule, required as part of the Compliance Plan, must contain the following elements:

- For applicable requirements with which the source is in compliance, a statement that the source will continue to comply with such requirements.
- For applicable requirements that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis.
- A schedule of compliance for sources that are not in compliance with all applicable requirements at the time of permit issuance. Such a schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirements for which the source will be in noncompliance at the time of permit issuance.

C.2.1 Statements of Compliance

Sierrita is currently in compliance with all applicable requirements identified in Section II of this application and contained in the permits listed above. The methods used to determine compliance, including monitoring, recordkeeping, reporting, and test methods are identified in the permits listed above and supplemented by the methods identified in Sierrita's semi-annual compliance certification reports. Existing permit requirements require submission of compliance certification twice per year, May 15th and November 15th.

C.2.2 Compliance Schedule

Sierrita is in compliance with applicable requirements and therefore no compliance schedule is required.

C.3 Progress Report Schedule

Because Sierrita is in compliance with applicable requirements, this application contains no compliance schedule and no progress reports are required.

APPENDIX D

EMISSION CALCULATIONS SPREADSHEETS

Sierrita I.D.	Description	Potential to Emit								Notes
		TSP	PM10	PM2.5	SOx	NOx	VOC	HAP	CO	
113A	Primary Crusher 6A	0.08	0.08	0.08	0.00	0.00	0.00	0.00	0.00	Source Test Factors
113B	Primary Crusher 6B	0.08	0.08	0.08						Source Test Factors
069	A2 to A3 Transfer	1.95	0.64	0.18						AP-42 Emission Factor
	A3 Conveyor to pile									
095	B2 to B3 Transfer	1.95	0.64	0.18						AP-42 Emission Factor
096	B3 to B4 Transfer	1.95	0.64	0.18						AP-42 Emission Factor
	B4 Stacker									
312	F.O. Trans. Tower	0.11	0.11	0.02	0.00	0.00	0.00	0.00	0.00	Source Test Factors
201	#1 Secondary Crusher	0.76	0.76	0.11						VENTED INDOORS
202	#2 Secondary Crusher	0.76	0.76	0.11						VENTED INDOORS
203	#3 Secondary Crusher	1.53	1.53	0.23						Source Test Factors
204	#4 Secondary Crusher	1.53	1.53	0.23						Source Test Factors
301	#1 Tertiary Crusher	1.50	1.50	0.22						VENTED INDOORS
302	#2 Tertiary Crusher	3.00	3.00	0.45						Source Test Factors
303	#3 Tertiary Crusher	1.50	1.50	0.22						VENTED INDOORS
304	#4 Tertiary Crusher	3.00	3.00	0.45						Source Test Factors
305	#5 Tertiary Crusher	1.50	1.50	0.22						VENTED INDOORS
306	#6 Tertiary Crusher	3.00	3.00	0.45						Source Test Factors
307	#7 Tertiary Crusher	1.50	1.50	0.22						VENTED INDOORS
308	#8 Tertiary Crusher	3.00	3.00	0.45						Source Test Factors
309	#9Tertiary Crusher	1.50	1.50	0.22						VENTED INDOORS
310	#10 Tertiary Crusher	3.00	3.00	0.45						Source Test Factors
311	CTP FARR	0.56	0.56	0.08						Source Test Factors
009	F.O. Bin FARR1 & 8B/8C CTP	0.32	0.32	0.05	0.00	0.00	0.00	0.00	0.00	Source Test Factors
010	F.O. Bin FARR2	0.07	0.07	0.01	0.00	0.00	0.00	0.00	0.00	Source Test Factors
011	F.O. Bin FARR3	0.07	0.07	0.01	0.00	0.00	0.00	0.00	0.00	Source Test Factors
012	F.O. Bin FARR4	0.07	0.07	0.01	0.00	0.00	0.00	0.00	0.00	Source Test Factors
013	F.O. Bin FARR5	0.07	0.07	0.01	0.00	0.00	0.00	0.00	0.00	Source Test Factors
014	F.O. Bin FARR6	0.07	0.07	0.01	0.00	0.00	0.00	0.00	0.00	Source Test Factors
015	F.O. Bin FARR7	0.07	0.07	0.01	0.00	0.00	0.00	0.00	0.00	Source Test Factors
016	F.O. Bin FARR8	0.07	0.07	0.01	0.00	0.00	0.00	0.00	0.00	Source Test Factors
017	F.O. Bin FARR9	0.07	0.07	0.01	0.00	0.00	0.00	0.00	0.00	Source Test Factors
018	Mill Feeder Belt DC0	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
019	Mill Feeder Belt DC1	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
020	Mill Feeder Belt DC2	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
021	Mill Feeder Belt DC3	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
022	Mill Feeder Belt DC4	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
023	Mill Feeder Belt DC5	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
024	Mill Feeder Belt DC6	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	

Sierrita I.D.	Description	Potential to Emit								Notes
		TSP	PM10	PM2.5	SOx	NOx	VOC	HAP	CO	
025	Mill Feeder Belt DC7	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	Source Test Factors
026	Mill Feeder Belt DC8	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
027	Mill Feeder Belt DC9	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
028	Mill Feeder Belt DC10	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
029	Mill Feeder Belt DC11	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
030	Mill Feeder Belt DC12	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
031	Mill Feeder Belt DC13	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
032	Mill Feeder Belt DC14	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
033	Mill Feeder Belt DC15	0.91	0.91	0.14	0.00	0.00	0.00	0.00	0.00	
041	Mo Unl. Dry. Scrubber	2.52	0.47	0.76	0.00	0.00	22.25	0.00	0.00	AP-42/ Source Test Factors
	Sierrita Tailings									
	Cu Conc. Stockpile									
042	Mo Sulfide Bins	0.16	0.06		--	--	--	0.00	--	AP-42 Emission Factors
053	Mo Lcd Dryer 1	0.44	0.83	0.13	0.00	0.00	19.50	0.00	0.00	AP-42/ Source Test Factors
054	Mo Lcd Dryer 2	0.44	0.83	0.13	0.00	0.00	19.50	0.00	0.00	AP-42/ Source Test Factors
048	Mo Oxide Bins	1.36	1.36	0.20	--	--	--	0.00	--	Source Test 2007
058	Roasting (Main)	18.8	18.8		70.7	14.9	0.8	0.0000	12.5	Voluntary Limit (PM and PM10 = 7 PPH)
059	Cannery	0.06	0.03	0.01	-	-	-	0.0000	-	AP-42 Emission Factors
	SX - 1,2,3									Tanks Program
	Twin Buttes Electrowin									
063	Lime Handling-Wet Scrubber #1	0.1	0.1	0.016	-	-	-	0.0000	-	AP-42 Emission Factor
063A	Lime Handling-Wet Scrubber #2	0.1	0.1	0.016						
	Gasoline Storage Tanks									
093	Road Rock Crusher	1.746	0.574	0.162						ADEQ Emission Factors
097	Truck Load/Dump									
045	MoS2 Loadout									
117	MoS2 Loadout									
044A	MoS2 Dump Hopper	0.004	0.001	0.001						AP-42 Emission Factors
088	Drilling Operations									
089	Ammonium Nitrate Storage									
118	Moly Leach Plant	-	-	-			1.7	0.6220		Source Test
119	Rhenium Recovery									
120	Misc. Screeens and Gizzlies									
	Misc. Natural Gas Sources	0.3	0.3	0.3	0.020	3.3	0.2	0.0628	2.8	AP-42 Emission Factors
062	East Parker Boiler	0.3	0.3	0.3	0.022	3.6	0.2	0.0686	3.1	AP-42 Emission Factors
062-064	East Hot-oil Heater	0.2	0.2	0.2	0.016	2.7	0.2	0.0517	2.3	AP-42 Emission Factors
062-065	West Hot-oil Heater	0.2	0.2	0.2	0.016	2.7	0.2	0.0517	2.3	AP-42 Emission Factors
062-080	Rh Plant Heater	0.0	0.0	0.0	0.003	0.5	0.0	0.0099	0.4	AP-42 Emission Factors

Sierrita I.D.	Description	Potential to Emit								Notes
		TSP	PM10	PM2.5	SOx	NOx	VOC	HAP	CO	
062-081	Change Room Boiler	0.1	0.1	0.1	0.005	0.9	0.0	0.0165	0.7	AP-42 Emission Factors
062-082	SX-1 Parker Boiler	0.1	0.1	0.1	0.007	1.1	0.1	0.0215	1.0	AP-42 Emission Factors
062-084	W Parker Boiler	0.2	0.2	0.2	0.016	2.7	0.1	0.0506	2.3	AP-42 Emission Factors
062-091	Twin Buttes Boiler	0.3	0.3	0.3	0.026	4.4	0.2	0.0827	3.7	AP-42 Emission Factors
062-098	Auto/Rh Plant Boiler	0.1	0.1	0.1	0.007	1.2	0.1	0.0232	1.0	AP-42 Emission Factors
062-099	TB Parker Boiler	0.1	0.1	0.1	0.008	1.3	0.1	0.0248	1.1	AP-42 Emission Factors
062-122	Copper Sulfate Boiler	0.1	0.1	0.1	0.009	1.6	0.1	0.0	1.3	AP-42 Emission Factors
062-129	Biosulfate Plant Boiler	0.01	0.01	0.01	0.012	0.22	0.02	0.0298	0.1	AP-42 Emission Factors
Subtotal Boilers		2.0	2.0	2.0	0.2	26.4	1.5	0.5	22.1	
122A	Copper Sulfate Cartridge Collector	0.0036	0.0009	0.0003	-	-	-	-	-	AP-42 Emission Factors
122B	Copper Sulfate Baghouse	0.15	0.09	0.02	0.1	0.4	0.1	-	6.6	AP-42 Emission Factors
123	Decant Solids Handling									
124	Portable Screen Plant	1.5	1.5		1.4	21.7	1.7	-	4.7	AP-42 Emission Factors
125	Magnetic Steel Recovery	5.4	3.5		1.5	22.8	1.8	-	4.9	AP-42 Emission Factors
126	Stationary Engines	-	2.2	-	11.9	26.8	3.4		13.3	AP-42 Emission Factors
128	IX Plant	0.0005	0.0003	0.0001	-	-	-	-	-	
Other	Potassium Amyl Xanthate Use	-	-	-	-	-	-	2.5	-	

TOTALS	Potential to Emit							
	TSP	PM10	PM2.5	SOx	NOx	VOC	HAP	CO
	84.0	77.6	10.5	85.8	113.1	72.3	3.564	62.7

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 201 - 204
SCC: 3-03-024-02/03

Operation description:

Secondary Crushing: Emissions from each Secondary Crushing line collected by a separate FARR Cartridge-Type Dust Collector
OPERATION 207, PROCESS 496, SOURCE 201 - 204

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	FARR Cartridge-type Dust Collector	Water sprays on material transfer	n/c	**0.000219 lb/ton**	13,961,250 tons rock/yr	1.53	PTE based on 5 performance tests performed on ID201 & 203 since issuance of Permit #6067
PM-10	Point Source			n/c	**0.000219 lb/ton**	13,961,250 tons rock/yr	1.53	Assume PM = PM10
PM 2.5					**0.00003285 lb/ton**	13,961,250 tons rock/yr	0.23	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					1.23077E-03		1.88155E-05	
Arsenic Compounds					1.20000E-03		1.83451E-05	
Beryllium Compounds					1.00000E-04		1.52876E-06	
Cadmium Compounds					5.00000E-05		7.64378E-07	
Chromium Compounds					1.45769E-02		2.22846E-04	
Cobalt Compounds					6.23077E-04		9.52533E-06	
Lead Compounds					3.00000E-03		4.58627E-05	
Manganese Compounds					2.32385E-02		3.55260E-04	
Mercury Compounds					1.84286E-06		2.81728E-08	
Nickel Compounds					1.07692E-03		1.64635E-05	
Selenium Compounds					0.00000E+00 (%)		0.00000E+00	
Total HAPs							0.0007	

Notes:
n/c : Since the emission estimates are based on performance test data, control efficiencies not incorporated.
(1) Max throughput based on total secondary crushing throughput limit divided by 4 secondary crushing lines for PTE purposes. Each individual crushing line will be capable of 1/3 total secondary crushing throughput.
(2) PTE Based on average emission factors gathered during performance testing since issuance of Permit #6067, includes 5 tests performed on ID 201 & 203 since 6/2009
(3) For sources ducted indoors it is assumed that at least 50% of emissions will be controlled by the fine crushing building.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA TERTIARY CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 301 - 310
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: Emissions from each Tertiary Crushing Line collected by a separate FARR Cartridge-Type Dust Collector.
OPERATION 207, PROCESS 496, SOURCE 301 - 310

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	FARR Cartridge-Type Dust Collector	Water sprays on material transfer	n/c	**0.001074**	5,584,500 tons rock/yr	3.00	PTE based on 10 source tests performed on ID302, 304, 306, 308 & 310 since issuance of Permit #6067
PM-10	Point Source			n/c	**0.001074**	5,584,500 tons rock/yr	3.00	Assume PM = PM10
PM 2.5					**0.0001611 lb/ton**	5,584,500 tons rock/yr	0.45	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					1.23077E-03		3.69092E-05	
Arsenic Compounds					1.20000E-03		3.59865E-05	
Beryllium Compounds					1.00000E-04		2.99888E-06	
Cadmium Compounds					5.00000E-05		1.49944E-06	
Chromium Compounds					1.45769E-02		4.37144E-04	
Cobalt Compounds					6.23077E-04		1.86853E-05	
Lead Compounds					3.00000E-03		8.99663E-05	
Manganese Compounds					2.32385E-02		6.96893E-04	
Mercury Compounds					1.84286E-06		5.52650E-08	
Nickel Compounds					1.07692E-03		3.22956E-05	
Selenium Compounds					0.00000E+00		0.00000E+00	
Total HAPs					(%)		0.0014	

Notes:
n/c : Since the emission estimates are based on performance test data, control efficiencies not incorporated.
1. Max annual throughput based on tertiary crushing throughput limit divided by 10 tertiary crushers.
For PTE purposes assume 1/10 of total throughput limit to each crushing line. Each crushing line individually will be capable of approximately 1/7 of total throughput limit.
(2) PTE Based on average emission factors gathered during performance testing since issuance of Permit #6067, includes 10 tests performed on IDs 302, 304, 306, 308 & 310 since 6/2009
(3) For sources ducted indoors it is assumed that at least 50% of emissions will be controlled by the fine crushing building.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 311
SCC: 3-03-024-02/03

Operation description:

Sierrita fine crushing operations. Emissions from three conveyor transfer points collected by FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 311

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	**Cntr. Emission** Factor (1)	Max. Annual Thruput (2)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	FARR Cartridge-Type Dust Collector	Water sprays on material transfer	n/c	**0.00002**	55,845,000 tons rock/yr	0.56	PTE based on performance tests performed on ID311 since issuance of Permit #6067
PM-10	Point Source			n/c	**0.00002**	55,845,000 tons rock/yr	0.56	Assume PM = **PM10**
PM 2.5					**0.000003 lb/ton**	55,845,000 tons rock/yr	0.08	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					1.23077E-03		6.87323E-06	
Arsenic Compounds					1.20000E-03		6.70140E-06	
Beryllium Compounds					1.00000E-04		5.58450E-07	
Cadmium Compounds					5.00000E-05		2.79225E-07	
Chromium Compounds					1.45769E-02		8.14048E-05	
Cobalt Compounds					6.23077E-04		3.47957E-06	
Lead Compounds					3.00000E-03		1.67535E-05	
Manganese Compounds					2.32385E-02		1.29775E-04	
Mercury Compounds					1.84286E-06		1.02914E-08	
Nickel Compounds					1.07692E-03		6.01408E-06	
Selenium Compounds					0.00000E+00		0.00000E+00	
Total HAPs					(%)		*0.0003*	

Notes:
n/c : Since the emission estimates are based on source test data, control efficiencies not incorporated.
1. Maximum throughput rate based tertiary crushing limit.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 312
SCC: 3-03-024-02/03

Operation description:
Sierrita fine crushing operations. Emissions from 7B/7C Transfer
FARR Cartridge-Type Dust Collector
OPERATION 207, PROCESS 496, SOURCE 311

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	**Cntr. Emission** Factor (1)	Max. Annual Thruput (2)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	FARR Cartridge-Type Dust Collector	Water sprays on material transfer	n/c	**0.000004**	55,845,000 tons rock/yr	0.11	PTE based on performance tests performed on ID312 since issuance of Permit #6067
PM-10	Point Source			n/c	**0.000004**	55,845,000 tons rock/yr	0.11	Assume PM = PM10
PM 2.5					**0.0000006 lb/ton**	55,845,000 tons rock/yr	0.02	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					1.23077E-03		1.37465E-06	
Arsenic Compounds					1.20000E-03		1.34028E-06	
Beryllium Compounds					1.00000E-04		1.11690E-07	
Cadmium Compounds					5.00000E-05		5.58450E-08	
Chromium Compounds					1.45769E-02		1.62810E-05	
Cobalt Compounds					6.23077E-04		6.95915E-07	
Lead Compounds					3.00000E-03		3.35070E-06	
Manganese Compounds					2.32385E-02		2.59550E-05	
Mercury Compounds					1.84286E-06		2.05829E-09	
Nickel Compounds					1.07692E-03		1.20282E-06	
Selenium Compounds					0.00000E+00 (%)		0.00000E+00	
Total HAPs							*0.0001*	

Notes:
n/c : Since the emission estimates are based on source test data, control efficiencies not incorporated.
1. Maximum throughput rate based tertiary crushing limit.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 009
SCC: 3-03-024-04

Operation description:

8B/8C Conveyor Transfer Point and Sierrita fine ore storage bin/tripper conveyor transfer point.
This operation is exhausted by 9 dust collectors: 1 at 10,500 CFM and 8 at 3,000 CFM each (ID 010-017).
OPERATION 208, PROCESS 421, SOURCE 009 - 017

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	FARR Cartridge-Type Dust Collectors #1 cartridge - 10,500 acfm	–	99.00%	**0.00001** lb/ton	55,845,000 tpy	0.32	PTE based on 2 source tests performed on ID009 since issuance of Permit #6067
PM-10	Point Source	Remaining 8 - 3000 acfm SN 26530-1		99.00%	**0.00001** lb/ton	55,845,000 tpy	0.32	Assume PM = PM10
PM 2.5					**1.7175E-06 lb/ton**	55,845,000 tpy	0.05	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					1.23077E-03		3.93492E-06	
Arsenic Compounds					1.20000E-03		3.83655E-06	
Beryllium Compounds					1.00000E-04		3.19713E-07	
Cadmium Compounds					5.00000E-05		1.59856E-07	
Chromium Compounds					1.45769E-02		4.66043E-05	
Cobalt Compounds					6.23077E-04		1.99206E-06	
Lead Compounds					3.00000E-03		9.59138E-06	
Manganese Compounds					2.32385E-02		7.42963E-05	
Mercury Compounds					1.84286E-06		5.89185E-09	
Nickel Compounds					1.07692E-03		3.44306E-06	
Selenium Compounds					0.00000E+00		0.00000E+00	
Total HAPs					(%)		0.000144184	

Notes:
1.Max thruput based on total crushing throughput limit because this dust collector collects emissions from 8B/8C CTP which will carry total crusher throughput
2. PTE Based on average emission factors gathered during performance testing since issuance of Permit #6067, includes 2 tests performed on ID009 since 6/2009

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 010 - 017
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin/tripper conveyor transfer point. Operation controlled by 9 dust collectors: Source ID 009 at 10,500 CFM and 8 identical dust collectors at 3,000 CFM each (ID 010-017)
OPERATION 208, PROCESS 421, SOURCE 010 - 017

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	FARR Cartridge-Type Dust collectors	--	99.00%	**0.00002** lb/ton rock	6,205,000 tons rock/yr	0.07	PTE based on 9 source tests performed on ID 010-017 since issuance of Permit #6067
PM-10	Point Source	3000 acfm each SN 26530-1		99.00%	**0.00002** lb/ton rock	6,205,000 tons rock/yr	0.07	Assume PM = PM10
PM 2.5					**0.0000033 lb/ton**	6,205,000 tons rock/yr	0.01	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					1.23077E-03		8.40062E-07	
Arsenic Compounds					1.20000E-03		8.19060E-07	
Beryllium Compounds					1.00000E-04		6.82550E-08	
Cadmium Compounds					5.00000E-05		3.41275E-08	
Chromium Compounds					1.45769E-02		9.94948E-06	
Cobalt Compounds					6.23077E-04		4.25281E-07	
Lead Compounds					3.00000E-03		2.04765E-06	
Manganese Compounds					2.32385E-02		1.58614E-05	
Mercury Compounds					1.84286E-06		1.25784E-09	
Nickel Compounds					1.07692E-03		7.35054E-07	
Selenium Compounds					0.00000E+00		0.00000E+00	
Total HAPs					(%)		3.07816E-05	

Notes:
1.Max thruput based on Fine Crushing Plant Capacity divided by 9 (9 baghouses control emissions from one fine ore bin).
2. PTE Based on average emission factors gathered during performance testing since issuance of Permit #6067, includes 9 tests performed on ID 010-017 since 6/2009

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 018 - 033
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. Each mill feed belt controlled by Ducon wet dust collector.

OPERATION 208, PROCESS 422, SOURCE 018 - 033

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	Ducon wet dust collectors UW4,Model III, 60	--	95%	**0.00052** lb/ton rock	3,490,313 tons rock/yr	0.91	PTE based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Point Source	SI 50 265 4000 -50 265 4015 (16 units)		95%	**0.0005** lb/ton rock	3,490,313 tons rock/yr	0.91	Assume PM = PM10
PM 2.5					**0.00007845 lb/ton**	3,490,313 tons rock/yr	0.14	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					1.23077E-03		1.12334E-05	
Arsenic Compounds					1.20000E-03		1.09526E-05	
Beryllium Compounds					1.00000E-04		9.12717E-07	
Cadmium Compounds					5.00000E-05		4.56358E-07	
Chromium Compounds					1.45769E-02		1.33046E-04	
Cobalt Compounds					6.23077E-04		5.68693E-06	
Lead Compounds					3.00000E-03		2.73815E-05	
Manganese Compounds					2.32385E-02		2.12101E-04	
Mercury Compounds					1.84286E-06		1.68201E-08	
Nickel Compounds					1.07692E-03		9.82926E-06	
Selenium Compounds					0.00000E+00		0.00000E+00	
Total HAPs					(%)		0.000411617	

Notes:
1. PTE Based on average emission factors gathered during performance testing since issuance of Permit #6067, includes 9 tests performed on ID 010-017 since 6/2009
2. Max capacity determined by crushing throughput limit divided by 16 mills/scrubbers.

ESTIMATED AIR POLLUTANT EMISSIONS FROM UNLEACHED MOLYBDENUM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 041
SCC: 3-03-024-04

Operation description:
Unleached Molybdenum plant - three dryers. This part of operation is exhausted by 1 Ducon wet dust collector.
OPERATION 209, PROCESS 426, SOURCE 041

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	Ducon wet dust collectors SI 60 621 40 (1 unit)	--	n/c	**0.5760** lbs/hour	8760 Hours/Year	2.52	Emission Factors & Source Tests
PM-10	Point Source			n/c	**0.1065** lbs/hour	8760 Hours/Year	0.47	Emission Factors & Source Tests
PM 2.5					– 0.17280 Lbs/hour	8,760 Hous	0.76 From 2 stacks	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC	Point Source	Ducon wet dust collectors	--	--	**5.08** lbs/hr	8760 hrs/yr	22.25	Based on source test dated 1/13&17, 1997
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.003014		0.00760396	
Arsenic Compounds					0.002802		0.00706911	
Cadmium Compounds					0.001285		0.003240639	
Chromium Compounds					0.004000		0.01009152	
Cobalt Compounds					0.006156		0.015530849	
Lead Compounds					0.070000		0.1766016	
Manganese Compounds					0.002128		0.005367427	
Mercury Compounds					0.0000500		0.000126144	
Nickel Compounds					0.004300		0.010848384	
Selenium Compounds					0.005825		0.014695776	
Total HAPs							0.25117541	

Notes:
Emission Factor is average of available representative test data including 3 source tests on ID 041 performed since issuance of Permit #6067

1. HAPs Source: Tim Fisher (TRI RY 2002 Files). For Sulfide, used 2001 data where 2002 data not available

ESTIMATED AIR POLLUTANT EMISSIONS FROM UNLEACHED MOLYBDENUM OPERATIONS

FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 042
SCC: 3-03-024-04

Operation description:

Unleached and Leached Molybdenum plant - three unleached and 2 leached moly sulfide concentrate bins. This part of operations is exhausted by 1 Micropulsaire fabric filter baghouse.
OPERATION 209, PROCESS 427, SOURCE 042

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	Mikro Pulseaire fabric filters SI 60 266 30,	--	99%	0.1 **0.0010** lb/ton	315,360 tons unl Mo conc/yr	0.158	AP-42 11.24-2
PM-10	Point Source			99%	0.04 **0.0004** lb/ton	315,360 tons unl Mo conc/yr	0.063	AP-42 11.24-2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.003014		4.7525E-06	
Arsenic Compounds					0.002802		4.4182E-06	
Cadmium Compounds					0.001285		2.0254E-06	
Chromium Compounds					0.004000		6.3072E-06	
Cobalt Compounds					0.006156		9.7068E-06	
Lead Compounds					0.070000		0.00011038	
Manganese Compounds					0.002128		3.3546E-06	
Mercury Compounds					0.0000500		7.884E-08	
Nickel Compounds					0.004300		6.7802E-06	
Selenium Compounds					0.005825		9.1849E-06	
Total HAPs							0.00015698	

Notes:

1. Maximum throughput: 36 tons/hr
2. AP-42 11.24-2 Emission Factor of 0.01 lb/ton x 5 storage bins x 2 (transfer into and out of bin) = 0.1 lb/ton PM. 99% Control Efficiency for use of Baghouse
2. HAPs Source: Tim Fisher (TRI RY 2002 Files). For Sulfide, used 2001 data where 2002 data not available.

ESTIMATED AIR POLLUTANT EMISSIONS FROM MOLY SULFIDE DUMP HOPPER
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

Stack: S 044
SCC: 3-05-024-99

Operation Description:

Moly Sulfide Dump Hopper

OPERATION , PROCESS , SOURCE 044

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C EF **Controlled EF**	Max Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Process Fugitive	Baghouse 99% Control	0.01000 **0.00010** lb/ton	73584 tons/yr	0.004	AP-42, Section 11.24-2 1/95 - High Moisture
PM-10	Process Fugitive	Baghouse 99% Control	0.00400 **0.00004** lb/ton	73584 tons/yr	0.001	AP-42, Section 11.24-2 1/95 - High Moisture
PM-2.5			0.000015 lb/ton	73,584 tons/yr	0.0006	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:						
Antimony Compounds			0.003014		1.10891E-07	
Arsenic Compounds			0.002802		1.03091E-07	
Cadmium Compounds			0.001285		4.72593E-08	
Chromium Compounds			0.004000		1.47168E-07	
Cobalt Compounds			0.006156		2.26492E-07	
Lead Compounds			0.070000		2.57544E-06	
Manganese Compounds			0.002128		7.8275E-08	
Mercury Compounds			0.0000500		1.8396E-09	
Nickel Compounds			0.004300		1.58206E-07	
Selenium Compounds			0.005825		2.14313E-07	
			(%)			
Total HAPs					0.00000	

Notes:

1. Source ID 044 includes 4 dump hoppers. Three (3) of these hoppers are uncontrolled and emissions are reflected in the fugitive emissions estimates.
The MoS Dump Hopper accepts only toll MoS (no Sierrita MoS) however max throughput is conservatively estimated as the total potential throughput of downstream processes (FeCl Leach and Roasting) at 8.4 tph.
2. MoS concentrate averages 6% moisture, therfore high moisture ore emissions factors were used.
3. HAPs Source: Tim Fisher (TRI RY 2002 Files). For Sulfide, used 2001 data where 2002 data not available

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MOLYDENUM SULFIDE ROASTING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 048
SCC: 3-03-024-04

Operation description:
Sierrita moly oxide storage, screening and handling. This part of operations are exhausted by 1 Mikro Pulseaire fabric filter.
OPERATION 211, PROCESS 433, SOURCE 048

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	Mikro Pulseaire fabric filters SI 60 266 00.	--	Included	NA **0.3100** **lb/hr**	73,584 8760 tons Mo oxide/yr hours of operation/yr	1.358	Source Test 6/13/07
PM-10	Point Source			Included	NA **0.3100** **lb/hr**	73,584 8760 tons Mo oxide/yr hours of operation/yr	1.358	Source Test 6/13/07
PM-2.5					**0.0465** **lb/hr**	73,584 8760 tons Mo oxide/yr hours of operation/yr	0.204	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs	--	--	--	--	--	--	--	--
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.004500		0.000061101	
Arsenic Compounds					0.003400		4.61652E-05	
Cadmium Compounds					0.005100		6.92478E-05	
Chromium Compounds					0.001500		0.000020367	
Cobalt Compounds					0.007000		0.000095046	
Lead Compounds					0.023000		0.000312294	
Manganese Compounds					0.004600		6.24588E-05	
Mercury Compounds					0.0001000		1.3578E-06	
Nickel Compounds					0.005000		0.00006789	
Selenium Compounds					0.000225		3.05505E-06	
Total HAPs							0.00074	

Notes:
1. Maximum throughput 12tph but limited on roaster max throughput of 8.4tph
2. HAPs Source: Tim Fisher (TRI RY 2002 Files). For Sulfide, used 2001 data where 2002 data not available

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MOLYBDENUM LEACH OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 053
SCC: 3-03-024-11

Operation description:

Sierrita leached moly operations - Three sets of 2 dryers. This part of operations are exhausted by 2 Ducon wet dust collectors.
Maximum Throughput: 12 tons/hr, 4 tons/hr per each set of dryers
OPERATION 210, PROCESS 430, SOURCE 053

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	Ducon wet dust collectors SI 60 621 3001 and 3002 (2 units)	--	Included	**0.2008** Lbs/hour	4,380 Hours	0.44 From 2 stacks	Emission factors & source tests
PM-10	Point Source			Included	**0.3802** lbs/hour	4,380 Hours	0.83 From 2 stacks	Emission factors & source tests
PM 2.5					-- 0.06024 Lbs/hour	4,380 Hous	0.13 From 2 stacks	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC	Point Source	Ducon wet dust collectors	--	--	**0.53** lbs/ton	73584	19.50	Based on source test dated 1/13&17, 1997
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.003014		1.32541E-05	
Arsenic Compounds					0.002802		1.23219E-05	
Cadmium Compounds					0.001285		5.64861E-06	
Chromium Compounds					0.004000		1.75901E-05	
Cobalt Compounds					0.006156		2.70711E-05	
Lead Compounds					0.070000		0.000307826	
Manganese Compounds					0.002128		9.35572E-06	
Mercury Compounds					0.0000500		2.19876E-07	
Nickel Compounds					0.004300		1.89093E-05	
Selenium Compounds					0.005825		2.56156E-05	
Total HAPs					(%)			

Notes:
Emission Factor is average of available representative test data including 6 source tests on ID 053 & 054 performed since issuance of Permit #6067

1. Hours of Operationt from the three sets of dryers is divided by 2. Half is apportioned to Source ID 053. Half is apportioned to Source ID 054. Only one scrubber can operate at a time.

2. HAPs Source: Tim Fisher (TRI RY 2002 Files). For Sulfide, used 2001 data where 2002 data not available

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MOLYBDENUM LEACH OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 054
SCC: 3-03-024-11

Operation description:

Sierrita leached moly operations - Three sets of 2 dryers. This part of operations are exhausted by 2 Ducon wet dust collectors.
Maximum Throughput: 12 tons/hr, 4 tons/hr per each set of dryers
OPERATION 210, PROCESS 430, SOURCE 054

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	Ducon wet dust collectors SI 60 621 3001 and 3002 (2 units)	--	96.00%	**0.2008** Lbs/hour	4,380 Hours	0.44 From 2 stacks	Emission Factors & Source Tests
PM-10	Point Source			96.00%	**0.3802** Lbs/hour	4,380 Hous	0.83 From 2 stacks	Emission Factors & Source Tests
PM 2.5					-- 0.06024 Lbs/hour	4,380 Hous	0.13 From 2 stacks	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC	Point Source	Ducon wet dust collectors	--	--	**0.53** lbs/ton	73584	19.50	Based on source test dated 1/13&17, 1997
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.003014		1.32541E-05	
Arsenic Compounds					0.002802		1.23219E-05	
Cadmium Compounds					0.001285		5.64861E-06	
Chromium Compounds					0.004000		1.75901E-05	
Cobalt Compounds					0.006156		2.70711E-05	
Lead Compounds					0.070000		0.000307826	
Manganese Compounds					0.002128		9.35572E-06	
Mercury Compounds					0.0000500		2.19876E-07	
Nickel Compounds					0.004300		1.89093E-05	
Selenium Compounds					0.005825		2.56156E-05	
Total HAPs					(%)			

Notes:
Emission Factor is average of available representative test data including 6 source tests on ID 053 & 054 performed since issuance of Permit #6067

1. The thruput from the three sets of dryers is divided by 2. Half is apportioned to Source ID 053. Half is apportioned to Source ID 054.

2. HAPs Source: Tim Fisher (TRI RY 2002 Files). For Sulfide, used 2001 data where 2002 data not available

ESTIMATED AIR POLLUTANT EMISSIONS FROM MOLYBDENUM SULFIDE ROASTING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 058
SCC: 3-03-011-99

Operation description:

Sierrita moly sulfide roasting operations - roasters 1 and 2. During operations the roaster offgas is routed thru the pollution control equipment then out the main stack.
OPERATION 211, PROCESS 452, SOURCE 058

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Throughput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM) Two multiple hearth roasters Combustion-derived emissions from 2 roasters	Point Source	Cyclones (Buell) and Electrost.Precip.	--	n/c	**0.5115** lb/ton	73,584 Hours	18.82	PTE based on 4 performance tests performed on ID058 since issuance of Permit #6067
PM-10 Two multiple hearth roasters Combustion-derived emissions from 2 roasters	Point Source	Cyclones (Buell) and Electrost.Precip.		n/c	**0.5115** PPH	73,584 Hours	18.82	PM10 assumed 100%PM
Sulfur Dioxide Two multiple hearth roasters Excess Emission Reports Combustion-derived emissions from 2 roasters *Total*	Point Source	2 SCRUBBER (UOP Model 500) + Mist Elimin. (Monsanto)		n/c	**16.1400** PPH per CEMS (Past 12 months)	8,760 Hours/Year	70.69 70.69	Actual Emissions - See note below Controlled Emission Factor from CEMS 12 Month Average PPH - Updated 2012
Carbon Monoxide Two multiple hearth roasters Combustion-derived emissions from 2 roasters	Point Source	--	--	N/A	-- 0.000084 lbs/cft	-- 298,577,600 cft/yr	-- 12.54	 AP-42, Table 1.4-2, 7/98
Nitrogen Oxides (NOx) Two multiple hearth roasters Combustion-derived emissions from 2 roasters	Point Source	--	--	N/A	-- 0.0001 lbs/cft	-- 298,577,600 cft/yr	-- 14.93	 AP-42, Table 1.4-2, 7/98
Non-Methane VOC Two multiple hearth roasters Combustion-derived emissions from 2 roasters	Point Source	--	--	N/A	-- 0.0000055 lbs/cft	-- 298,577,600 cft/yr	-- 0.82	 AP-42, Table 1.4-3, 7/98

Stack ID 058 Continued

HAPs								
Combustion-derived emissions from 2 roasters								
2-Methylnapthalene					2.4E-11	0	0.000E+00	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene					1.8E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene					1.6E-11	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Acenapthene					1.8E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Acenapthylene					1.8E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Anthracene					2.4E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene					1.8E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Benzene					2.1E-09	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene					1.2E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene					1.8E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene					1.2E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene					1.8E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Chrysene					1.8E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene					1.2E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Dichlorobenzene					1.2E-09	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Fluoranthene					3.0E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Fluorene					2.8E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Formaldehyde					7.5E-08	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Hexane					1.8E-06	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene					1.8E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Napthalene					6.1E-10	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Phenanthrene					1.7E-11	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Pyrene					5.0E-12	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Toluene					3.4E-09	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Arsenic					2.0E-10	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Beryllium					1.2E-11	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Cadmium					1.1E-09	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Chromium					1.4E-09	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Cobalt					8.4E-11	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Manganese					3.8E-10	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Mercury					2.6E-10	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Nickel					2.1E-09	0	0.000E+00	AP-42, Table 1.4-3, 7/98
Selenium					2.4E-11	0	0.000E+00	AP-42, Table 1.4-3, 7/98
					lbs/cft	cft/yr		
Subtotal (Natural Gas HAPs)							***0.00***	
HAP metals as % of PM								
Antimony Compounds					0.003757		0.00071	
Arsenic Compounds					0.003101		0.00058	
Cadmium Compounds					0.00319225		0.00060	
Chromium Compounds					0.00275		0.00052	
Cobalt Compounds					0.006578		0.00124	
Lead Compounds					0.0465		0.00875	
Manganese Compounds					0.00336375		0.00063	
Mercury Compounds					0.000075		0.00001	
Nickel Compounds					0.00465		0.00088	
Selenium Compounds					0.003025		0.00057	
					(%)			
HAPs Total							*0.00*	

Notse:

1. Actual SO2 emissions from CEMS Data 1/1/12 - 1/1/13
2. Emission Factors for PM from roaster are based on 4 source compliance tests performed since issuance of Permit #6067
3. Maximum capacity is 298,577,600 cft/year. Assume a natural gas heating value of 1020 BTU/scf

Maximum Heat Input Capacity = 34.77 MMBtu/hr

Therefore, use EF 1.4 for small boilers (<100 MMBtu/hr heat input)

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA CANNERY OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 059
SCC: 3-03-024-04

Operation description:
Sierrita cannery operations. This part of operations is exhausted by 1 FARR Cartridge Dust Collector
OPERATION 214, PROCESS 436, SOURCE 059

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	FARR Cartridge-Type Dust Collector	–	99.00%	0.12 **0.0012** lb/ton Moly	105,120 tons MoO/MoS/yr	0.063	AP-42 Table 11.24-2, 1/95 - Low Moisture
PM-10	Point Source	(1 unit)		99.00%	0.06 **0.0006** lb/ton Moly	105,120 tons MoO/MoS/yr	0.032	AP-42 Table 11.24-2, 1/95 - Low Moisture
PM 2.5					**0.00018 lb/ton**	105,120 tons MoO/MoS/yr	0.01	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	–	--	–	–	--	--	--	--
Carbon Monoxide (not anticipated)	–	--	–	–	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs	–	--	--	--	--	--	--	--
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.004500		2.83824E-06	
Arsenic Compounds					0.003400		0	
Cadmium Compounds					0.005100		0	
Chromium Compounds					0.001500		0	
Cobalt Compounds					0.007000		0	
Lead Compounds					0.023000		0	
Manganese Compounds					0.004600		0	
Mercury Compounds					0.0001000		0	
Nickel Compounds					0.005000		0	
Selenium Compounds					0.000225		0	
Total HAPs								

Notes:
AP-42 11.24 provides 99% control efficiency for the use of a baghouse.

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-Misc
SCC: 1-02-006-03

Operation description:
Remaining natural gas fired equipment (heaters, etc.)

OPERATION 223, PROCESS 448, SOURCE 062-Misc

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.000008 lbs/cft	66,576,000 cft/yr	0.25	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	--	0.000008 lbs/cft	66,576,000 cft/yr	0.25	AP-42 Table 1.4-2, 7/98
PM-2.5	Point Source	--	0.000008 lbs/cft	66,576,000 cft/yr	0.25	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	--	0.0000006 lbs/cft	66,576,000 cft/yr	0.020	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	--	0.000084 lbs/cft	66,576,000 cft/yr	2.80	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	--	0.000100 lbs/cft	66,576,000 cft/yr	3.33	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	--	0.00000550 lbs/cft	66,576,000 cft/yr	0.18	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	66,576,000	7.9891E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	66,576,000	5.9918E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)anthracene			1.6E-11	66,576,000	5.3261E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	66,576,000	5.9918E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	66,576,000	5.9918E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	66,576,000	7.9891E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	66,576,000	5.9918E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	66,576,000	6.9905E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	66,576,000	3.9946E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	66,576,000	5.9918E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	66,576,000	3.9946E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	66,576,000	5.9918E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	66,576,000	5.9918E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	66,576,000	3.9946E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	66,576,000	3.9946E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	66,576,000	9.9864E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	66,576,000	9.3206E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	66,576,000	2.4966E-03	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	66,576,000	5.9918E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	66,576,000	5.9918E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	66,576,000	2.0306E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	66,576,000	5.6590E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	66,576,000	1.6644E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	66,576,000	1.1318E-04	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	66,576,000	6.6576E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	66,576,000	3.9946E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	66,576,000	3.6617E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	66,576,000	4.6603E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	66,576,000	2.7962E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	66,576,000	1.2649E-05	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	66,576,000	8.6549E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	66,576,000	6.9905E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	66,576,000	7.9891E-07	AP-42, Table 1.4-3, 7/98
HAPs Total			lbs/cft	cft/yr	*0.06*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-062
SCC: 1-02-006-03

Operation description:
East boiler - Parker boiler Model 150, natural gas-fired, used for process steam operations.
Maximum rated heat input capacity: 8.3 MMBtu/hr.
OPERATION 217, PROCESS 442, SOURCE 062-062

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.000008 lbs/cft	72,708,000 cft/yr	0.28	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	--	0.000008 lbs/cft	72,708,000 cft/yr	0.28	AP-42 Table 1.4-2, 7/98
PM-2.5	Point Source	--	0.000008 lbs/cft	72,708,000 cft/yr	0.28	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	--	0.0000006 lbs/cft	72,708,000 cft/yr	0.02	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	--	0.000084 lbs/cft	72,708,000 cft/yr	3.05	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	--	0.000100 lbs/cft	72,708,000 cft/yr	3.64	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	--	0.00000550 lbs/cft	72,708,000 cft/yr	0.20	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	72,708,000	8.7250E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	72,708,000	6.5437E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	72,708,000	5.8166E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	72,708,000	6.5437E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	72,708,000	6.5437E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	72,708,000	8.7250E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	72,708,000	6.5437E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	72,708,000	7.6343E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	72,708,000	4.3625E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	72,708,000	6.5437E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	72,708,000	4.3625E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	72,708,000	6.5437E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	72,708,000	6.5437E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	72,708,000	4.3625E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	72,708,000	4.3625E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	72,708,000	1.0906E-07	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	72,708,000	1.0179E-07	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	72,708,000	2.7266E-03	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	72,708,000	6.5437E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	72,708,000	6.5437E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	72,708,000	2.2176E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	72,708,000	6.1802E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	72,708,000	1.8177E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	72,708,000	1.2360E-04	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	72,708,000	7.2708E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	72,708,000	4.3625E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	72,708,000	3.9989E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	72,708,000	5.0896E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	72,708,000	3.0537E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	72,708,000	1.3815E-05	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	72,708,000	9.4520E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	72,708,000	7.6343E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	72,708,000	8.7250E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.07*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-064
SCC: 1-02-006-03

Operation description:
East Therminol heater - American Hydrotherm 500- Make, natural gas-fired, used for heating recirculating o
Maximum rated heat input capacity: 6.25 MMBtu/hr.
OPERATION 210, PROCESS 454, SOURCE 062-064

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	–	0.000008 lbs/cft	54,750,000 cft/yr	0.21	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	–	0.000008 lbs/cft	54,750,000 cft/yr	0.21	I-STEPS AP-42 EF
PM-2.5	Point Source	–	0.000008 lbs/cft	54,750,000 cft/yr	0.21	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	–	0.0000006 lbs/cft	54,750,000 cft/yr	0.02	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	–	0.000084 lbs/cft	54,750,000 cft/yr	2.30	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	–	0.000100 lbs/cft	54,750,000 cft/yr	2.74	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	–	0.00000550 lbs/cft	54,750,000 cft/yr	0.15	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	54,750,000	6.5700E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)anthracene			1.6E-11	54,750,000	4.3800E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	54,750,000	6.5700E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	54,750,000	5.7488E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	54,750,000	3.2850E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	54,750,000	3.2850E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	54,750,000	3.2850E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	54,750,000	3.2850E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	54,750,000	8.2125E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	54,750,000	7.6650E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	54,750,000	2.0531E-03	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	54,750,000	4.9275E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	54,750,000	1.6699E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	54,750,000	4.6538E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	54,750,000	1.3688E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	54,750,000	9.3075E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	54,750,000	5.4750E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	54,750,000	3.2850E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	54,750,000	3.0113E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	54,750,000	3.8325E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	54,750,000	2.2995E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	54,750,000	1.0403E-05	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	54,750,000	7.1175E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	54,750,000	5.7488E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	54,750,000	6.5700E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.05*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-065
SCC: 1-02-006-03

Operation description:
West Hot-oil heater - American Hydrotherm 500- Make, natural gas-fired, used for heating recirculating oil.
Maximum rated heat input capacity: 6.25 MMBtu/hr.
OPERATION 209, PROCESS 453, SOURCE 062-065

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.000008 lbs/cft	54,750,000 cft/yr	0.21	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	--	0.000008 lbs/cft	54,750,000 cft/yr	0.21	I-STEPS AP-42 EF
PM-2.5	Point Source	--	0.000008 lbs/cft	54,750,000 cft/yr	0.21	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	--	0.0000006 lbs/cft	54,750,000 cft/yr	0.02	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	--	0.000084 lbs/cft	54,750,000 cft/yr	2.30	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	--	0.000100 lbs/cft	54,750,000 cft/yr	2.74	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	--	0.00000550 lbs/cft	54,750,000 cft/yr	0.15	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	54,750,000	6.5700E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	54,750,000	4.3800E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	54,750,000	6.5700E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	54,750,000	5.7488E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	54,750,000	3.2850E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	54,750,000	3.2850E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	54,750,000	3.2850E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	54,750,000	3.2850E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	54,750,000	8.2125E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	54,750,000	7.6650E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	54,750,000	2.0531E-03	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	54,750,000	4.9275E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	54,750,000	1.6699E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	54,750,000	4.6538E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	54,750,000	1.3688E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	54,750,000	9.3075E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	54,750,000	5.4750E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	54,750,000	3.2850E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	54,750,000	3.0113E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	54,750,000	3.8325E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	54,750,000	2.2995E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	54,750,000	1.0403E-05	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	54,750,000	7.1175E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	54,750,000	5.7488E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	54,750,000	6.5700E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					0.05	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-080
SCC: 1-02-006-03

Operation description:
Rhenium plant hot water heaters - natural gas-fired, used for process operations.
Total maximum rated heat input capacity: 1.2 MMBtu/hr.
OPERATION 212, PROCESS 434, SOURCE 062-080

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.000008 lbs/cft	10,512,000 cft/yr	0.04	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	--	0.000008 lbs/cft	10,512,000 cft/yr	0.04	i-STEPS AP-42 EF
PM-2.5	Point Source	--	0.000008 lbs/cft	10,512,000 cft/yr	0.04	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	--	0.0000006 lbs/cft	10,512,000 cft/yr	0.00	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	--	0.000084 lbs/cft	10,512,000 cft/yr	0.44	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	--	0.000100 lbs/cft	10,512,000 cft/yr	0.53	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	--	0.00000550 lbs/cft	10,512,000 cft/yr	0.03	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	10,512,000	1.2614E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	10,512,000	8.4096E-08	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	10,512,000	1.2614E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	10,512,000	1.1038E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	10,512,000	6.3072E-09	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	10,512,000	6.3072E-09	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	10,512,000	6.3072E-09	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	10,512,000	6.3072E-06	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	10,512,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	10,512,000	1.4717E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	10,512,000	3.9420E-04	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	10,512,000	9.4608E-03	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	10,512,000	3.2062E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	10,512,000	8.9352E-08	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	10,512,000	2.6280E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	10,512,000	1.7870E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	10,512,000	1.0512E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	10,512,000	6.3072E-08	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	10,512,000	5.7816E-06	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	10,512,000	7.3584E-06	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	10,512,000	4.4150E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	10,512,000	1.9973E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	10,512,000	1.3666E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	10,512,000	1.1038E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	10,512,000	1.2614E-07	AP-42, Table 1.4-3, 7/98
HAPs Total			lbs/cft	cft/yr	*0.01*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-081
SCC: 1-02-006-03

Operation description:
Change room - Parker boiler, natural gas fired, used for process steam operations.
Maximum rated heat input capacity: 2.0 MMBtu/hr
OPERATION 220, PROCESS 445, SOURCE 062-081

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.000008 lbs/cft	17,520,000 cft/yr	0.07	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	--	0.000008 lbs/cft	17,520,000 cft/yr	0.07	AP-42 Table 1.4-2, 7/98
PM-2.5	Point Source	--	0.000008 lbs/cft	17,520,000 cft/yr	0.07	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	--	0.0000006 lbs/cft	17,520,000 cft/yr	0.01	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	--	0.000084 lbs/cft	17,520,000 cft/yr	0.74	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	--	0.000100 lbs/cft	17,520,000 cft/yr	0.88	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	--	0.00000550 lbs/cft	17,520,000 cft/yr	0.05	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	17,520,000	2.1024E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	17,520,000	1.4016E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	17,520,000	2.1024E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	17,520,000	1.8396E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	17,520,000	1.0512E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	17,520,000	1.0512E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	17,520,000	1.0512E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	17,520,000	1.0512E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	17,520,000	2.6280E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	17,520,000	2.4528E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	17,520,000	6.5700E-04	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	17,520,000	1.5768E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	17,520,000	5.3436E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	17,520,000	1.4892E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	17,520,000	4.3800E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	17,520,000	2.9784E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	17,520,000	1.7520E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	17,520,000	1.0512E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	17,520,000	9.6360E-06	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	17,520,000	1.2264E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	17,520,000	7.3584E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	17,520,000	3.3288E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	17,520,000	2.2776E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	17,520,000	1.8396E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	17,520,000	2.1024E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.02*	

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-082
SCC: 1-02-006-03

Operation description:
SX1 - Parker boiler, natural gas fired, used for heating solutions. NOT IN USE
Maximum rated heat input capacity: 2.6 MMBtu/hr
OPERATION 215, PROCESS 439, SOURCE 062-082

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.000008 lbs/cft	22,776,000 cft/yr	0.09	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	--	0.000008 lbs/cft	22,776,000 cft/yr	0.09	AP-42 Table 1.4-2, 7/98
PM-2.5	Point Source	--	0.000008 lbs/cft	22,776,000 cft/yr	0.09	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	--	0.0000006 lbs/cft	22,776,000 cft/yr	0.01	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	--	0.000084 lbs/cft	22,776,000 cft/yr	0.96	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	--	0.000100 lbs/cft	22,776,000 cft/yr	1.14	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	--	0.00000550 lbs/cft	22,776,000 cft/yr	0.06	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	22,776,000	2.7331E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	22,776,000	2.0498E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)anthracene			1.6E-11	22,776,000	1.8221E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	22,776,000	2.0498E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	22,776,000	2.0498E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	22,776,000	2.7331E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	22,776,000	2.0498E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	22,776,000	2.3915E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	22,776,000	1.3666E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	22,776,000	2.0498E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	22,776,000	1.3666E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	22,776,000	2.0498E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	22,776,000	2.0498E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	22,776,000	1.3666E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	22,776,000	1.3666E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	22,776,000	3.4164E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	22,776,000	3.1886E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	22,776,000	8.5410E-04	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	22,776,000	2.0498E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	22,776,000	2.0498E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	22,776,000	6.9467E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	22,776,000	1.9360E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	22,776,000	5.6940E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	22,776,000	3.8719E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	22,776,000	2.2776E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	22,776,000	1.3666E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	22,776,000	1.2527E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	22,776,000	1.5943E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	22,776,000	9.5659E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	22,776,000	4.3274E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	22,776,000	2.9609E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	22,776,000	2.3915E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	22,776,000	2.7331E-07	AP-42, Table 1.4-3, 7/98
HAPs Total			lbs/cft	cft/yr	*0.02*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-083
SCC: 1-02-006-03

Operation description:
Zinc pot heaters, natural gas-fired, used for relining crusher components using zinc.
Maximum rated heat input capacity: 0.6 MMBtu/hr
OPERATION 221, PROCESS 446, SOURCE 062-083

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.000008 lbs/cft	5,256,000 cft/yr	0.02	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	--	0.000008 lbs/cft	5,256,000 cft/yr	0.02	AP-42 Table 1.4-2, 7/98
PM-2.5	Point Source	--	0.000008 lbs/cft	5,256,000 cft/yr	0.02	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	--	0.0000006 lbs/cft	5,256,000 cft/yr	0.00	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	--	0.000084 lbs/cft	5,256,000 cft/yr	0.22	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	--	0.000100 lbs/cft	5,256,000 cft/yr	0.26	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	--	0.00000550 lbs/cft	5,256,000 cft/yr	0.01	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	5,256,000	6.3072E-08	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)anthracene			1.6E-11	5,256,000	4.2048E-08	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	5,256,000	6.3072E-09	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	5,256,000	5.5188E-06	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	5,256,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	5,256,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	5,256,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	5,256,000	3.1536E-06	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	5,256,000	7.8840E-09	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	5,256,000	7.3584E-09	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	5,256,000	1.9710E-04	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	5,256,000	4.7304E-03	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	5,256,000	1.6031E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	5,256,000	4.4676E-08	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	5,256,000	1.3140E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	5,256,000	8.9352E-06	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	5,256,000	5.2560E-07	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	5,256,000	3.1536E-08	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	5,256,000	2.8908E-06	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	5,256,000	3.6792E-06	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	5,256,000	2.2075E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	5,256,000	9.9864E-07	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	5,256,000	6.8328E-07	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	5,256,000	5.5188E-06	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	5,256,000	6.3072E-08	AP-42, Table 1.4-3, 7/98
HAPs Total			lbs/cft	cft/yr	*0.00*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-084
SCC: 1-02-006-02

Operation description:
West boiler - Parker Model 150, natural gas-fired, used for process steam operations.
Maximum rated heat input capacity: 6.3 MMBtu/hr.
OPERATION 222, PROCESS 447, SOURCE 062-084 NOT IN USE

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.000008 lbs/cft	53,580,583 cft/yr	0.20	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	--	0.000008 lbs/cft	53,580,583 cft/yr	0.20	AP-42 Table 1.4-2, 7/98
PM-2.5	Point Source	--	0.000008 lbs/cft	53,580,583 cft/yr	0.20	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	--	0.0000006 lbs/cft	53,580,583 cft/yr	0.02	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	--	0.000084 lbs/cft	53,580,583 cft/yr	2.25	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	--	0.000100 lbs/cft	53,580,583 cft/yr	2.68	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	--	0.00000550 lbs/cft	53,580,583 cft/yr	0.15	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	53,580,583	6.4297E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	53,580,583	4.8223E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	53,580,583	4.2864E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	53,580,583	4.8223E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	53,580,583	4.8223E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	53,580,583	6.4297E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	53,580,583	4.8223E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	53,580,583	5.6260E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	53,580,583	3.2148E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	53,580,583	4.8223E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	53,580,583	3.2148E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	53,580,583	4.8223E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	53,580,583	4.8223E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	53,580,583	3.2148E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	53,580,583	3.2148E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	53,580,583	8.0371E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	53,580,583	7.5013E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	53,580,583	2.0093E-03	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	53,580,583	4.8223E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	53,580,583	4.8223E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	53,580,583	1.6342E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	53,580,583	4.5543E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	53,580,583	1.3395E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	53,580,583	9.1087E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	53,580,583	5.3581E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	53,580,583	3.2148E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	53,580,583	2.9469E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	53,580,583	3.7506E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	53,580,583	2.2504E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	53,580,583	1.0180E-05	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	53,580,583	6.9655E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	53,580,583	5.6260E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	53,580,583	6.4297E-07	AP-42, Table 1.4-3, 7/98
HAPs Total			lbs/cft	cft/yr	*0.05*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM TWIN BUTTES ELECTROWINNING BOILER
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

SOURCE NO. : 062-091
SCC: 1-02-006-02

Operation description:
Process Hot Water Boiler for Twin Buttes Electrowinning Plant - Natural Gas Fired
Cyclotherm Div., Oswego Package Boiler Co., Inc.; Model C-10500; S/N NB 5835; maximum rated capacity - 10
OPERATION 216, PROCESS 455, SOURCE 062-091

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Input Nat'l Gas	Potential Emissions [1] tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.000008 lbs/cft	87,600,000 cft/yr	0.33	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	--	0.000008 lbs/cft	87,600,000 cft/yr	0.33	AP-42 Table 1.4-2, 7/98
PM-2.5	Point Source	--	0.000008 lbs/cft	87,600,000 cft/yr	0.33	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	--	0.0000006 lbs/cft	87,600,000 cft/yr	0.03	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	--	0.000084 lbs/cft	87,600,000 cft/yr	3.68	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	--	0.000100 lbs/cft	87,600,000 cft/yr	4.38	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	--	0.00000550 lbs/cft	87,600,000 cft/yr	0.24	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	87,600,000	1.0512E-06	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	87,600,000	7.8840E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	87,600,000	7.0080E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	87,600,000	7.8840E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	87,600,000	7.8840E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	87,600,000	1.0512E-07	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	87,600,000	7.8840E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	87,600,000	9.1980E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	87,600,000	5.2560E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	87,600,000	7.8840E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	87,600,000	5.2560E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	87,600,000	7.8840E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	87,600,000	7.8840E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	87,600,000	5.2560E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	87,600,000	5.2560E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	87,600,000	1.3140E-07	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	87,600,000	1.2264E-07	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	87,600,000	3.2850E-03	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	87,600,000	7.8840E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	87,600,000	7.8840E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	87,600,000	2.6718E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	87,600,000	7.4460E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	87,600,000	2.1900E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	87,600,000	1.4892E-04	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	87,600,000	8.7600E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	87,600,000	5.2560E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	87,600,000	4.8180E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	87,600,000	6.1320E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	87,600,000	3.6792E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	87,600,000	1.6644E-05	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	87,600,000	1.1388E-05	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	87,600,000	9.1980E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	87,600,000	1.0512E-06	AP-42, Table 1.4-3, 7/98
HAPs Total			lbs/cft	cft/yr	*0.08*	

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-098
SCC: 1-02-006-03

Operation description:
Autoclave Process boiler - natural gas-fired, used for rhenium process operations.
Total maximum rated heat input capacity: 2.80 MMBtu/hr.
OPERATION 212, PROCESS 434, SOURCE 062-098

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.000008 lbs/cft	24,528,000 cft/yr	0.09	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	--	0.000008 lbs/cft	24,528,000 cft/yr	0.09	AP-42 Table 1.4-2, 7/98
PM-2.5	Point Source	--	0.000008 lbs/cft	24,528,000 cft/yr	0.09	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	--	0.0000006 lbs/cft	24,528,000 cft/yr	0.01	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	--	0.000084 lbs/cft	24,528,000 cft/yr	1.03	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	--	0.000100 lbs/cft	24,528,000 cft/yr	1.23	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	--	0.00000550 lbs/cft	24,528,000 cft/yr	0.07	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	24,528,000	2.9434E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	24,528,000	2.2075E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	24,528,000	1.9622E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	24,528,000	2.2075E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	24,528,000	2.2075E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	24,528,000	2.9434E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	24,528,000	2.2075E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	24,528,000	2.5754E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	24,528,000	1.4717E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	24,528,000	2.2075E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	24,528,000	1.4717E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	24,528,000	2.2075E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	24,528,000	2.2075E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	24,528,000	1.4717E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	24,528,000	1.4717E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	24,528,000	3.6792E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	24,528,000	3.4339E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	24,528,000	9.1980E-04	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	24,528,000	2.2075E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	24,528,000	2.2075E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	24,528,000	7.4810E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	24,528,000	2.0849E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	24,528,000	6.1320E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	24,528,000	4.1698E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	24,528,000	2.4528E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	24,528,000	1.4717E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	24,528,000	1.3490E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	24,528,000	1.7170E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	24,528,000	1.0302E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	24,528,000	4.6603E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	24,528,000	3.1886E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	24,528,000	2.5754E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	24,528,000	2.9434E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.02*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-099
SCC: 1-02-006-03

Operation description:
Twin Buttes EW Boiler - natural gas-fired, used for process operations.
Maximum rated heat input capacity: 3.0 MMBtu/hr
OPERATION 216, PROCESS 441, SOURCE 062-099

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	–	0.000008 lbs/cft	26,280,000 cft/yr	0.10	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	–	0.000008 lbs/cft	26,280,000 cft/yr	0.10	AP-42 Table 1.4-2, 7/98
PM-2.5	Point Source	–	0.000008 lbs/cft	26,280,000 cft/yr	0.10	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	–	0.0000006 lbs/cft	26,280,000 cft/yr	0.01	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	–	0.000084 lbs/cft	26,280,000 cft/yr	1.10	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	–	0.000100 lbs/cft	26,280,000 cft/yr	1.31	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	–	0.00000550 lbs/cft	26,280,000 cft/yr	0.07	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	26,280,000	3.1536E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	26,280,000	2.3652E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	26,280,000	2.1024E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	26,280,000	2.3652E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	26,280,000	2.3652E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	26,280,000	3.1536E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	26,280,000	2.3652E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	26,280,000	2.7594E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	26,280,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	26,280,000	2.3652E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	26,280,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	26,280,000	2.3652E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	26,280,000	2.3652E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	26,280,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	26,280,000	1.5768E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	26,280,000	3.9420E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	26,280,000	3.6792E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	26,280,000	9.8550E-04	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	26,280,000	2.3652E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	26,280,000	2.3652E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	26,280,000	8.0154E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	26,280,000	2.2338E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	26,280,000	6.5700E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	26,280,000	4.4676E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	26,280,000	2.6280E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	26,280,000	1.5768E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	26,280,000	1.4454E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	26,280,000	1.8396E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	26,280,000	1.1038E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	26,280,000	4.9932E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	26,280,000	3.4164E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	26,280,000	2.7594E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	26,280,000	3.1536E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.02*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-099
SCC: 1-02-006-03

Operation description:
Copper Sulfate Plant Boiler - Natural Gas Fired
Total maximum rated heat input capacity: 3.6 MMBtu/hr.
OPERATION 216, PROCESS 441, SOURCE 062-099

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.000008 lbs/cft	31,536,000 cft/yr	0.12	AP-42 Table 1.4-2, 7/98
PM-10	Point Source	--	0.000008 lbs/cft	31,536,000 cft/yr	0.12	AP-42 Table 1.4-2, 7/98
PM-2.5	Point Source	--	0.000008 lbs/cft	31,536,000 cft/yr	0.12	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Point Source	--	0.0000006 lbs/cft	31,536,000 cft/yr	0.01	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Point Source	--	0.000084 lbs/cft	31,536,000 cft/yr	1.32	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Point Source	--	0.000100 lbs/cft	31,536,000 cft/yr	1.58	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Point Source	--	0.00000550 lbs/cft	31,536,000 cft/yr	0.09	AP-42 Table 1.4-2, 7/98
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	31,536,000	3.7843E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)anthracene			1.6E-11	31,536,000	2.5229E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	31,536,000	3.7843E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	31,536,000	3.3113E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	31,536,000	1.8922E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	31,536,000	1.8922E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	31,536,000	1.8922E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	31,536,000	1.8922E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	31,536,000	4.7304E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	31,536,000	4.4150E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	31,536,000	1.1826E-03	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	31,536,000	2.8382E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-od)pyrene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	31,536,000	9.6185E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	31,536,000	2.6806E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	31,536,000	7.8840E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	31,536,000	5.3611E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	31,536,000	3.1536E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	31,536,000	1.8922E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	31,536,000	1.7345E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	31,536,000	2.2075E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	31,536,000	1.3245E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	31,536,000	5.9918E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	31,536,000	4.0997E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	31,536,000	3.3113E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	31,536,000	3.7843E-07	AP-42, Table 1.4-3, 7/98
HAPs Total			lbs/cft	cft/yr	*0.03*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 062-129
SCC: 1-02-010-02

Operation description:
Biosulfate Plant Boiler - propane-fired, used for process operations.
Maximum rated heat input capacity: 3.6 MMBtu/hr
OPERATION 216, PROCESS 441, SOURCE 062-129

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	--	0.700000 lbs/10^3 gal	34 10^3 gal/year	0.01	AP-42 Table 1.5-1, 7/08
PM-10	Point Source	--	0.700000 lbs/10^3 gal	34 10^3 gal/year	0.01	AP-42 Table 1.5-1, 7/08
PM-2.5	Point Source	--	0.700000 lbs/10^3 gal	34 10^3 gal/year	0.01	AP-42 Table 1.5-1, 7/08
Sulfur Dioxide	Point Source	--	0.7060000 lbs/10^3 gal	34 10^3 gal/year	0.01	AP-42 Table 1.5-1, 7/08
Carbon Monoxide	Point Source	--	7.500000 lbs/10^3 gal	34 10^3 gal/year	0.13	AP-42 Table 1.5-1, 7/08
Nitrogen Oxides (NOx)	Point Source	--	13.000000 lbs/10^3 gal	34 10^3 gal/year	0.22	AP-42 Table 1.5-1, 7/08
Non-Methane VOC	Point Source	--	1.00000000 lbs/10^3 gal	34 10^3 gal/year	0.02	AP-42 Table 1.5-1, 7/08
HAPs	Point Source					
2-Methylnapthalene			2.4E-11	31,536,000	3.7843E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	31,536,000	2.5229E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	31,536,000	3.7843E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	31,536,000	3.3113E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	31,536,000	1.8922E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	31,536,000	1.8922E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	31,536,000	1.8922E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	31,536,000	1.8922E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3.0E-12	31,536,000	4.7304E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	31,536,000	4.4150E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			7.5E-08	31,536,000	1.1826E-03	AP-42, Table 1.4-3, 7/98
Hexane			1.8E-06	31,536,000	2.8382E-02	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	31,536,000	2.8382E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	31,536,000	9.6185E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	31,536,000	2.6806E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5.0E-12	31,536,000	7.8840E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	31,536,000	5.3611E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2.0E-10	31,536,000	3.1536E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	31,536,000	1.8922E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	31,536,000	1.7345E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	31,536,000	2.2075E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	31,536,000	1.3245E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	31,536,000	5.9918E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	31,536,000	4.0997E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	31,536,000	3.3113E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	31,536,000	3.7843E-07	AP-42, Table 1.4-3, 7/98
HAPs Total			lbs/cft	cft/yr	*0.03*	

Notes:
3.6 MM BTU / hr * 1 gal / 91500 BTU = 39.3 gal / hr * 8760 = 34.46 10^3 gal propane / year

ESTIMATED AIR POLLUTANT EMISSIONS FROM LIME HANDLING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 063
SCC: 3-03-011-99

Operation description:

Sierrita lime handling operations. Particulate emissions controlled by one Ducon Dynamic wet dust collector at a time. - Wet Scrubber #1
OPERATION 218, PROCESS 443, SOURCE 063

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point	Ducon wet dust collector UW-3 Model II Size 48 SI 502674001	--	96.00%	0.12 **0.0048** lb/ton lime	43,800 tons lime/yr	0.11	AP-42 Table 11.24-2, 1/95 Emission factor for material handling and transfer
PM-10	Point			96.00%	0.06 **0.0024** lb/ton lime	43,800 tons lime/yr	0.05	AP-42 Table 11.24-2, 1/95 Emission factor for material handling and transfer
PM 2.5					**0.00072 lb/ton**	43,800 tons lime/yr	0.02	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs (not anticipated)	--	--	--	--	--	--	--	--

Notes:

1. Maximum product throughput is based on the maximum capacity of slaked lime handling system of 10 tons/hr.
2. The moisture content of the Lime delivered is 0% per Chemical Lime.
3. Assume #1 Scrubber is used half the time, Throughput is divided by 2 to accomplish this.

ESTIMATED AIR POLLUTANT EMISSIONS FROM LIME HANDLING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 063
SCC: 3-03-011-99

Operation description:

Sierrita lime handling operations. Particulate emissions controlled by one Ducon Dynamic wet dust collector at a time. - Wet Scrubber #2
OPERATION 218, PROCESS 443, SOURCE 063

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point	Ducon wet dust collector UW-3 Model II Size 48 SI 502674001	--	96.00%	0.12 **0.0048** lb/ton lime	43,800 tons lime/yr	0.11	AP-42 Table 11.24-2, 1/95 Emission factor for material handling and transfer
PM-10	Point			96.00%	0.06 **0.0024** lb/ton lime	43,800 tons lime/yr	0.05	AP-42 Table 11.24-2, 1/95 Emission factor for material handling and transfer
PM 2.5					**0.00072 lb/ton**	43,800 tons lime/yr	0.02	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs (not anticipated)	--	--	--	--	--	--	--	--

Notes:

1. Maximum product throughput is based on the maximum capacity of slaked lime handling system of 10 tons/hr.
2. The moisture content of the Lime delivered is 0% per Chemical Lime.
3. Assume #2 Scrubber is used half the time, Throughput is divided by 2 to accomplish this.

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 069
SCC: 3-03-024-04

Operation description:

6A/6B Overland Ore Conveyor Transfer from A2 to A3

OPERATION 204, PROCESS 410, SOURCE 069

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Process Fugitive	–	Water sprays & Enclosed Transfer Points		0.0001400 lb/ton rock/point	27,922,500 tons rock/yr	1.95	AP-42, Section 11.19.2
PM-10	Process Fugitive				0.0000460 lb/ton rock/point	27,922,500 tons rock/yr	0.64	AP-42 11.19.2
PM-2.5	Process Fugitive				0.0000130 lb/ton rock/point	27,922,500	0.18	AP-42 11.19.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	–	–	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	–	–	--
Nitrogen Oxides (NOx) (not anticipated)	–	--	--	--	--	–	--	--
Non-Methane VOC (not anticipated)	–	--	--	--	--	--	–	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					1.23077E-03		2.40563E-05	
Arsenic Compounds					1.20000E-03		2.34549E-05	
Beryllium Compounds					1.00000E-04		1.95458E-06	
Cadmium Compounds					5.00000E-05		9.77288E-07	
Chromium Compounds					1.45769E-02		2.84917E-04	
Cobalt Compounds					6.23077E-04		1.21785E-05	
Lead Compounds					3.00000E-03		5.86373E-05	
Manganese Compounds					2.32385E-02		4.54213E-04	
Mercury Compounds					1.84286E-06		3.60200E-08	
Nickel Compounds					1.07692E-03		2.10493E-05	
Selenium Compounds					0.00000E+00 (%)		0.00000E+00	
Total HAPs							0.000881474	

Notes:
1. Maximum Throughput based on total primary crushing limit divided by 2. Ore is split between "A" and "B" Belts.

ESTIMATED AIR POLLUTANT EMISSIONS FROM EL JAY PORTABLE CRUSHED STONE PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

SOURCE NO.: 093
SSC:3-05-020-02/06
Process Fugitive

Operation Description:
El Jay Crushing Plant for Haul Road surfacing material
OPERATION 224, PROCESS 449, SOURCE 093

I.D.	Description	Pollutant	Process Rate T/Hr	Process Rate T/Yr.	Control Efficiency %	Emission Factor Lb/T	Controlled Emissions Lb/Hr	Controlled Emissions T/Yr	ADEQ General Crushing & Screening Permit Application
1	Truck/Loader transfer and feed material	PM	500	4,380,000	Included in emission factor	0.00200	1.00	4.38	Form 2 Table 1
		PM10				*0.00048*	*0.24*	*1.05*	
		PM2.5						*0.00*	AP-42 Table 11.19.2-2
2	Grizzly Feeder [35"x20']	PM	500	4,380,000	Included in emission factor	0.00200	1.00	4.38	Form 2 Table 2
		PM10				*0.00048*	*0.24*	*1.05*	
		PM2.5						*0.00*	AP-42 Table 11.19.2-2
3	Grizzly Feeder [35"x20'] to Screen Feed Conveyor [36"x60']	PM	500	4,380,000	Included in emission factor	0.00014	0.07	0.31	Form 2 Table 5
		PM10				*0.00005*	*0.02*	*0.10*	
		PM2.5				*0.00001*		*0.03*	AP-42 Table 11.19.2-2
4	Screen Feed Conveyor [36"x60'] to Three Deck Screen [5'x16']	PM	675	5,913,000	Included in emission factor	0.00014	0.09	0.41	Form 2 Table 5
		PM10				*0.00005*	*0.03*	*0.14*	
		PM2.5				*0.00001*		*0.04*	AP-42 Table 11.19.2-2
5	Three Deck Screen [5'x16']	PM	675	5,913,000	Included in emission factor	0.00220	1.49	6.50	Form 2 Table 4
		PM10				*0.00074*	*0.50*	*2.19*	
		PM2.5				*0.00005*		*0.13*	AP-42 Table 11.19.2-2
6	Three Deck Screen [5'x16'] to Crusher Conveyor [30"x40']	PM	175	1,533,000	Included in emission factor	0.00014	0.02	0.11	Form 2 Table 5
		PM10				*0.00005*	*0.01*	*0.04*	
		PM2.5				*0.00001*		*0.01*	AP-42 Table 11.19.2-2
7	Crusher Conveyor [30"x40'] to Cone Crusher [54"]	PM	175	1,533,000	Included in emission factor	0.00014	0.02	0.11	Form 2 Table 5
		PM10				*0.00005*	*0.01*	*0.04*	
		PM2.5				*0.00001*		*0.01*	AP-42 Table 11.19.2-2
8	Cone Crusher [54"]	PM	175	1,533,000	Included in emission factor	0.00120	0.21	0.92	Form 2 Table 3
		PM10				*0.00054*	*0.09*	*0.41*	
		PM2.5				*0.00016*		*0.08*	Table 4
9	Cone Crusher [54"] to Recirculating Conveyor [30"x60']	PM	175	1,533,000	Included in emission factor	0.00014	0.02	0.11	Form 2 Table 5
		PM10				*0.00005*	*0.01*	*0.04*	
		PM2.5				*0.00001*		*0.01*	AP-42 Table 11.19.2-2
10	Recirculating Conveyor [30"x60'] to Feed Conveyor [36"x60']	PM	175	1,533,000	Included in emission factor	0.00014	0.02	0.11	Form 2 Table 5B
		PM10				*0.00005*	*0.01*	*0.04*	
						0.00001		*0.01*	AP-42 Table 11.19.2-2
11	Three Deck Screen [5'x16'] to Product Conveyor [30"x20']	PM	236	2,067,360	Included in emission factor	0.00014	0.03	0.14	Form 2 Table 5
		PM10				*0.00005*	*0.01*	*0.05*	
		PM2.5				*0.00001*		*0.01*	AP-42 Table 11.19.2-2
12	Product Conveyor [30"x20'] to Scale Belt	PM	236	2,067,360	Included in emission factor	0.00014	0.03	0.14	Form 2 Table 5
		PM10				*0.00005*	*0.01*	*0.05*	
		PM2.5				*0.00001*		*0.01*	AP-42 Table 11.19.2-2
13	Radial Stacker [30"x70'] to Product Stockpile	PM	236	2,067,360	Included in emission factor	0.00200	0.47	2.07	Form 2 Table 5A
		PM10				*0.00048*	*0.11*	*0.50*	
		PM2.5						*0.00*	AP-42 Table 11.19.2-2
14	Truck/Loader Handling of Product from Stockpile	PM	236	2,067,360	Included in emission factor	0.00200	0.47	2.07	Form 2 Table 1
		PM10				*0.00048*	*0.11*	*0.50*	
		PM2.5						*0.00*	AP-42 Table 11.19.2-2
15	Three Deck Screen [5'x16'] to Fines Conveyor [30"x60']	PM	264	2,312,640	Included in emission factor	0.00014	0.04	0.16	Form 2 Table 5
		PM10				*0.00005*	*0.01*	*0.05*	
		PM2.5				*0.00001*		*0.02*	AP-42 Table 11.19.2-2
16	Stacker [30"x60'] to Fine Product Stockpile	PM	264	2,312,640	Included in emission factor	0.00200	0.53	2.31	Form 2 Table 5
		PM10				*0.00048*	*0.13*	*0.56*	
		PM2.5						*0.00*	AP-42 Table 11.19.2-2
17	Truck/Loader Handling of Product from Fine Stockpile	PM	264	2,312,640	Included in emission factor	0.00200	0.53	2.31	Form 2 Table 1
		PM10				*0.00048*	*0.13*	*0.56*	
		PM2.5						*0.00*	AP-42 Table 11.19.2-2
18	Scale Belt to Radial Stacker [30"x70']	PM	236	2,067,360	Included in emission factor	0.00014	0.03	0.14	Form 2 Table 5
		PM10				*0.00005*	*0.01*	*0.05*	
		PM2.5				*0.00001*		*0.01*	AP-42 Table 11.19.2-2
19	Feed, Product and Fines Storage piles		500	4,380,000	Included in emission factor	Not Anticipated	0.00	0.00	Form 2 Table 12
		PM10				*0.00023*	*0.12*	*0.51*	
		PM2.5						*0.00*	AP-42 Table 11.19.2-2
	TOTAL EMISSIONS - Process Fugitive	PM	500	4,380,000			5.70	24.94	
		PM10					1.67	7.32	
		PM2.5						0.22	
	TOTAL EMISSIONS - Conveyor Transfer Points	PM					0.40	1.75	
		PM10					0.13	0.57	
		PM2.5						0.16	
	Annual Operation (Hours per Year)	8,760							
	Feed Rate (Tons per Hour)	500							

Notes: PM10 EF from general crushing and screening permit. PM emission factors are not determined under the general crushing and screening permit calculations from Form 2 for rock products sources.
PM factor are based on the ratio of metallic mineral emission factors (PM:PM10) times the non-metallic minerals PM10 factors.

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK: S 095
SCC: 3-03-024-04

Operation description:
The 6A/6B Overland Conveyor transfer point B2 to B3. Single transfer point.

OPERATION 204, PROCESS 470, SOURCE 095

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy.	U/C Emission **Cntr. Emission** Factor	Max. Annual Throughput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Process Fugitive	--	Water sprays & Enclosed Transfer Points		0.0001400 lb/ton rock/point	27,922,500 tons rock/yr	1.95	AP-42 11.19.2
PM-10	Process Fugitive				0.0000460 lb/ton rock/point	27,922,500 tons rock/yr	0.64	AP-42.11.19.2
PM-2.5	Process Fugitive		Transfer Points		0.0000130 lb/ton rock/point	27,922,500 tons rock/yr	0.18	AP42 11.19.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					1.23077E-03		2.40563E-05	
Arsenic Compounds					1.20000E-03		2.34549E-05	
Beryllium Compounds					1.00000E-04		1.95458E-06	
Cadmium Compounds					5.00000E-05		9.77288E-07	
Chromium Compounds					1.45769E-02		2.84917E-04	
Cobalt Compounds					6.23077E-04		1.21785E-05	
Lead Compounds					3.00000E-03		5.86373E-05	
Manganese Compounds					2.32385E-02		4.54213E-04	
Mercury Compounds					1.84286E-06		3.60200E-08	
Nickel Compounds					1.07692E-03		2.10493E-05	
Selenium Compounds					0.00000E+00 (%)		0.00000E+00	
Total HAPs							*0.0009*	

Notes:
1. Maximum throughput is maximum fine crushing plant throughput divided by 2. Ore is split between "A" and "B" belts

Potential

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

STACK: S 096
SCC: 3-03-024-04

Operation description:

The 6A/6B Overland Conveyor transfer point B3 to B4 Stacker. Single transfer point.
TB-E (007) conveyor relocated from Twin Buttes. Maximun Capacity = 7,000 tph
OPERATION 204, PROCESS 471, SOURCE 096

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy.	U/C Emission **Cntr. Emission** Factor	Max. Annual Throughput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Process Fugitive	--	Water sprays & Enclosed Transfer Points		0.0001400 lb/ton rock/point	27,922,500 tons rock/yr	1.95	AP-42 11.19.2
PM-10	Process Fugitive				0.0000460 lb/ton rock/point	27,922,500 tons rock/yr	0.64	AP-42 11.19.2
PM-2.5	Process Fugitive		Transfer Points		0.0000130 lb/ton rock/point	27,922,500 tons rock/yr	0.18	AP-42 11.19.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		2.40563E-05	
Arsenic Compounds					0.001200		2.34549E-05	
Beryllium Compounds					0.000100		1.95458E-06	
Cadmium Compounds					0.000050		9.77288E-07	
Chromium Compounds					0.014577		2.84917E-04	
Cobalt Compounds					0.000623		1.21785E-05	
Lead Compounds					0.003000		5.86373E-05	
Manganese Compounds					0.023238		4.54213E-04	
Mercury Compounds					0.0000018		3.60200E-08	
Nickel Compounds					0.001077		2.10493E-05	
Selenium Compounds					0.000000		0.00000E+00	
Total HAPs					(%)		*0.0009*	

Notes:
1. Maximum throughput is based on primary crushing throughput limit divided by 2. Ore is split between "A" and "B" belts

ESTIMATED AIR POLLUTANT EMISSIONS FROM MINING OPERATIONS - ESPERANZA AND SIERRITA PRIMARY CRUSHERS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 113
SCC: 3-03-024-01

Operation description:

6A/6B Primary Crusher: Primary crushing of sulfide ore in Sierrita pit by 2 stationary primary crushers.
OPERATION 204, PROCESS 407, SOURCE 113

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy (1)(2)	**Voluntary Limit** Cntr. Emission Factor (3)(4)	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	FARR Collector A FARR Collector B	Water sprays		**0.00001** **0.00001** lb/ton rock	27,922,500 27,922,500 tons rock/yr	0.08 0.08	PTE based on 2 source tests performed on ID113A & B since issuance of Permit #6067
PM-10	Point Source	FARR Collector A FARR Collector B	Water sprays		**0.00001** **0.00001** lb/ton rock	27,922,500 27,922,500 tons rock/yr	0.08 0.08	Assume PM = PM10
PM-2.5	Point Source	FARR Collector A FARR Collector B	Water sprays		**0.00001** **0.00001** lb/ton rock	27,922,500 27,922,500 tons rock/yr	0.08 0.08	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					1.23077E-03		9.45069E-07	
Arsenic Compounds					1.20000E-03		9.21443E-07	
Beryllium Compounds					1.00000E-04		7.67869E-08	
Cadmium Compounds					5.00000E-05		3.83934E-08	
Chromium Compounds					1.45769E-02		1.11932E-05	
Cobalt Compounds					6.23077E-04		4.78441E-07	
Lead Compounds					3.00000E-03		2.30361E-06	
Manganese Compounds					2.32385E-02		1.78441E-05	
Mercury Compounds					1.84286E-06		1.41507E-09	
Nickel Compounds					1.07692E-03		8.26936E-07	
Selenium Compounds					0.00000E+00		0.00000E+00	
					(%)			
Total HAPs							3.46293E-05	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM MOLY LEACH PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

Stack: S 118
SCC: 3-03-024-11

Operation Description:

Moly Leach Plant Production - Wet Process

OPERATION , PROCESS , SOURCE 118

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Actual Annual Production	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Process Fugitive	Wet Process	0.00000 lb/ton	73584 tons/yr	Wet Process tons/yr	0.00	0.00	
PM-10	Process Fugitive	Wet Process	0.00000 lb/ton	73584 tons/yr	Wet Process tons/yr	0.00	0.00	
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC	Point Source	Fume Scrubber	0.391 lb/hour	8760 Hours/Year	--	1.71258	--	--
HAPs HCl Cl2 **Total HAPS**	--	Fume Scrubber	-- 0.03200 0.11000	Hours/Year 8760	--	-- 0.14 0.48 0.62196	--	--

Notes:
A fume Scrubber was added to this process for Industrial Hygiene purposes in December, 2006. A performance test was conducted in April, 2007 to determine emissions.
VOC emissions measured by FID as methane - this is over estimate of methane emissions.

ESTIMATED AIR POLLUTANT EMISSIONS FROM THE COPPER SULFATE PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 122A
SCC: 3-03-024-11,
3-005-002-45 / 3-03-024-04&08

Operation Description:

Copper Sulfate Plant: Vibratory Screen, Dryer, Boiler, Conveyor Transfer Points and Material Handling
Copper Sulfate Plant Cartridge Filter (Dry Side)
OPERATION , PROCESS , SOURCE 122A

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	U/C Controlled Emission Factor lbs/ton	Max Annual Production tons/yr	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	**Non-Fugitive - Point Source** CTPs (2)	Cartridge Filter	0.999	0.00012	30,310.00	**0.0036372**	AP-42, Section 11.24-2 1/95
PM-10	**Non-Fugitive - Point Source** CTPs (2)	Cartridge Filter	0.999	0.00006	30,310.00	**0.0009093**	AP-42, Section 11.24-2 1/95
PM-2.5	**Non-Fugitive - Point Source** CTPs (2)	Cartridge Filter	0.999	0.000018	30,310.00	**0.00027279**	AP-42 App B, B.2.2
HAPs (not anticipated)	--	--	--	--	--	--	--

Notes:

1. This source was added to the Emission Inventory in 2006 (for 2005 emissions reporting). Start-up 1/3/05.
2. HAPS Source: No HAPs Data Available.
3. Potential Throughput based on plant design. See MPR No. 32531 Application.
4. Control Efficiency of dryer includes 47% control of emissions from dryer by product recovery cyclone and 99.9% control of emissions from product recovery cyclone by cartridge collector.
5. Natural Gas Dryer Emission Factors from AP-42 11.1-5&6 divided by 0.92 to reflect the amount of material dried.
6. Currently, oversize is not manually loaded - it is redissolved and sent back to the SX in solution via the tails line - wet process.

2012

ESTIMATED AIR POLLUTANT EMISSIONS FROM THE COPPER SULFATE PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Stack: S 122B
SCC: 3-03-024-11,
3-005-002-45 / 3-03-024-04&08

Operation Description:
Copper Sulfate Plant: Vibratory Screen, Dryer, Boiler, Conveyor Transfer Points and Material Handling
Copper Sulfate Plant Baghouse (Wet Side)
OPERATION , PROCESS , SOURCE 122B

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	Uncontrolled **Controlled** Emission Factor lbs/ton	Max Annual Production tons/yr	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	**Non-Fugitive - Point Source**	Baghouse		0.01			AP-42, Section 11.24-2 1/95
	Vibratory Screen		0.999	**0.00001**	30,310.00	0.00015	
	CTPs (3)		0.999	**0.00001**	30,310.00	0.00045	
	Dryer		0.9995	**0.00985**	30,310.00	0.1493	
	Total					**0.14988**	
PM-10	**Non-Fugitive - Point Source**	Baghouse		0.004			AP-42, Section 11.24-2 1/95
	Vibratory Screen		0.999	**0.000004**	30,310.00	0.00006	
	CTPs (3)		0.999	**0.000004**	30,310.00	0.00018	
	Dryer		0.9995	**0.006**	30,310.00	0.0909	
	Total					**0.09117**	
PM-2.5	**Non-Fugitive - Point Source**	Baghouse					AP-42 App B, B.2.2
	Vibratory Screen			**0.0000015**	30,310.00	0.00002	
	CTPs (3)			**0.0000015**	30,310.00	0.00007	
	Dryer			**0.0014775**	30,310.00	0.0224	
	Total					**0.02248**	
Sulfur Dioxide	Dryer	Cartridge Filter		0.005	30,309.60	0.075774	AP-42, Section 11.1-5
Carbon Monoxide	Dryer	Cartridge Filter		0.434783	30,309.60	6.589049408	AP-42, Section 11.1-5
Nitrogen Oxides (NOx)	Dryer	Cartridge Filter		0.027174	30,309.60	0.411816535	AP-42, Section 11.1-5
Non-Methane VOC	Dryer	Cartridge Filter		0.008913	30,309.60	0.135074732	AP-42, Section 11.1-6
HAPs (not anticipated)	--	--	--	--	--	--	--

Notes:
1. This source was added to the Emission Inventory in 2006 (for 2005 emissions reporting). Start-up 1/3/05.
2. HAPS Source: No HAPs Data Available.
3. Potential Throughput based on plant design.
4. Control Efficiency of dryer includes 47% control of emissions from dryer by product recovery cyclone and 99.9% control of emissions from product recovery cyclone by cartridge collector.
5. Natural Gas Dryer Emission Factors from AP-42 11.1-5&6 divided by 0.92 to reflect the amount of material dried.
6. Currently, oversize is not manually loaded - it is redissolved and sent back to the SX in solution via the tails line - wet process.

ESTIMATED AIR POLLUTANT EMISSIONS FROM DECANT SOLIDS HANDLING FACILITY
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2005

Stack: S 124
SCC: 3-03-024-04

Operation Description:
Portable Screen Plant
Minor Permit Revision Application Submitted 11/12/2004. Started Production 11/11/2005
OPERATION , PROCESS , SOURCE 124

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	U/C Emission **Controlled** Emission Factor	Max Annual Production tpy / hpy	Potential Emissions tons/yr	Remarks
				lbs/ton & lbs/hp-hr			
Particulate Matter (PM)	**Process Fugitive**				11,388,000		Emissions Factors from the Application for Crushing / Screening General Permit, ADEQ, 12/19/02
	Feed Hopper Loadir	Water Sprays		**0.00011**		0.6263	
	Screening			**0.00168**		9.5659	
	Stacking			**0.000110**		0.6263	
	Combined					**10.8186**	
PM-10	**Process Fugitive**				11,388,000		Emissions Factors from the Application for Crushing / Screening General Permit, ADEQ, 12/19/02
	Feed Hopper Loadir	Water Sprays		**0.00006**		0.3132	
	Screening			**0.00084**		4.7830	
	Stacking			**0.000055**		0.3132	
	Combined					**5.4093**	
	Point Sources						
Particulate Matter (PM)	IC Engine			0.002200	8760	1.5418	AP-42 3.3-1, 160hp Engine
PM-10	IC Engine			0.002200	8760	1.5418	AP-42 3.3-1, 160hp Engine
Sulfur Dioxide	IC Engine			0.00205	8760	1.4366	AP-42 3.3-1, 160hp Engine
Carbon Monoxide	IC Engine			0.00668	8760	4.6813	AP-42 3.3-1, 160hp Engine
Nitrogen Oxides (NOx)	IC Engine			0.03100	8760	21.7248	AP-42 3.3-1, 160hp Engine
Non-Methane VOC	IC Engine			0.00247	8760	1.7310	AP-42 3.3-1, 160hp Engine
HAPs Hazardous Air Pollutants found in Particulate Matter: *Total HAPs*							

Notes:

1. Emission Factors for the IC Engine from AP-42 3.3-1 are in lbs/hp-hr. Engine is 160 hp.

ESTIMATED AIR POLLUTANT EMISSIONS FROM DECANT SOLIDS HANDLING FACILITY
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2005

Stack: S 125
SCC: 3-03-024-04

Operation Description:
Magnetic Steele Recovery System
Minor Permit Revision Application Submitted 11/12/2004. Started Production 11/11/2005
OPERATION , PROCESS , SOURCE 125

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	U/C Emission **Controlled** Emission Factor	Max Annual Production tpy / hpy	Potential Emissions tons/yr	Remarks
				lbs/ton & lbs/hp-hr			
Particulate Matter (PM)	**Process Fugitive**				11,388,000		Emissions Factors from the Application for Crushing / Screening General Permit, ADEQ, 12/19/02
	Stacker			**0.000110**		0.6263	
	Combined					**0.6263**	
PM-10	**Process Fugitive**				11,388,000		Emissions Factors from the Application for Crushing / Screening General Permit, ADEQ, 12/19/02
	Stacker			**0.000055**		0.3132	
	Combined					**0.3132**	
	Point Sources						
Particulate Matter (PM)	CTPs (7)	Water Sprays		**0.0000960**	11388000	3.8264	Crushing/Screening General Permit
	IC Engine			**0.002200**	8760	1.6188	AP-42 3.3-1, 160hp Engine
Total PM						**5.4452**	
PM-10	CTPs (7)			**0.000048**	11,388,000	1.9132	Crushing/Screening General Permit
	IC Engine			0.002200	8760	1.6188	AP-42 3.3-1, 160hp Engine
Total PM10						**3.5320**	
Sulfur Dioxide	IC Engine			0.00205	8760	1.5085	AP-42 3.3-1, 168hp Engine
Carbon Monoxide	IC Engine			0.00668	8760	4.9154	AP-42 3.3-1, 168hp Engine
Nitrogen Oxides (NOx)	IC Engine			0.03100	8760	22.8110	AP-42 3.3-1, 168hp Engine
Non-Methane VOC	IC Engine			0.00247	8760	1.8175	AP-42 3.3-1, 168hp Engine
HAPs Hazardous Air Pollutants found in Particulate Matter: *Total HAPs*							

Notes:

1. Emission Factors for the IC Engine from AP-42 3.3-1 are in lbs/hp-hr. Engine is 168 hp.

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY ENGINES
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 126

Operation description:
Various Stationary Engines

Dept.	Horespower Rating	Fuel Used	Max Allowed Operating Hours	PM10 (tons)	NOx (tons)	SOx (tons)	CO (tons)	TOC (tons)	Notes
Diesel Internal Combustion Engines (<600 bhp)									
Tailing Thickener Generator	375	Diesel	1000	0.413	5.813	0.384	1.253	0.471	
Twin Buttes Emergency Fire Water Back-Up	280	Diesel	1000	0.308	0.336	1.019	0.770	0.099	
Mine Truck Shop Emergency Fire Water Back-Up	67	Diesel	1,000	0.074	0.080	0.244	0.184	0.024	
Taillings Dam Pumping Station Generator	268	Diesel	1,000	0.295	0.322	0.976	0.737	0.094	
Sierrita Health Clinic Generator	145	Diesel	1,000	0.160	0.174	0.528	0.399	0.051	
Sierrita Mobile Radio Tower Generator	12.5	Diesel	1,000	0.014	0.015	0.046	0.034	0.004	
Diesel Internal Combustion Engines (>600 bhp)									
#3 Headwall Generator	1600	Diesel	1500	0.840	2.880	8.737	6.600	0.846	
Natural Gas Fired Engines									
Mill Reservoir Fire Water Pump	130	Natural Gas	1000	0.000	2.250	0.000	0.175	0.065	
Moly Roaster Generator	168	Natural Gas	1000	0.000	2.907	0.000	0.226	0.084	
CEMS Emergency Generator	20	Natural Gas	1000	0.000	0.346	0.000	0.027	0.010	
Administration Building Generator	200	Natural Gas	1000	0.000	3.461	0.000	0.269	0.100	
SCC Emergency Generator	137	Natural Gas	1000	0.000	2.371	0.000	0.184	0.069	
Administration Communications Generator	200	Natural Gas	1000	0.000	3.461	0.000	0.269	0.100	
Propane Fired Engines									
Radio Hill Generator	23	Propane	1000	0.005	0.150	0.000	0.139	0.089	
Love Shack Generator - Removed	10	Propane		0.000	0.000	0.000	0.000	0.000	
Dispatch Tower Generator	57	Propane	1000	0.013	0.371	0.001	0.345	0.222	
Dispatch Tower #2 Generator	63	Propane	1000	0.015	0.410	0.001	0.381	0.245	
Mine Engineering Generator	10	Propane	1000	0.002	0.065	0.000	0.060	0.039	
Primary Crusher Generator	134	Propane	1000	0.031	0.873	0.002	0.810	0.521	
West Robo Shack Generator - Removed	10	Propane		0.000	0.000	0.000	0.000	0.000	
Truck Shop Generator - Removed	10	Propane		0.000	0.000	0.000	0.000	0.000	
Twin Buttes Radio Hill Generator	39.5	Propane	1000	0.009	0.257	0.001	0.239	0.154	
Twin Buttes Sandcastle Generator	39.5	Propane	1000	0.009	0.257	0.001	0.239	0.154	
			Totals:	**2.188**	**26.801**	**11.942**	**13.339**	**3.441**	

Note:
1. Emissions are calculated using the following emission factors. = Horsepower * operating hours * Emission Factor

2. The calculations above are organized based on the emission factors found below.

Diesel Internal Combustion Engine Emisison Factors (<600 bhp) Section 3.3 Gasoline and Diesel Industrial Engines

Pollutant	#/hp-hr
PM10	0.0022
Nox	0.031
Sox	0.00205
CO	0.00668
TOC	0.0025141

Diesel Internal Combustion Engine Emisison Factors (>600 bhp) Section 3.4 Large Stationary Diesel and All Stationary Dual-fuel Engines

Pollutant	#/hp-hr
PM10	0.0007
Nox	0.0024
Sox	0.007281
CO	0.0055
TOC	0.000705

Per Arizona Administrative Code R18 -2- 719(H) generators will be not be allowed to use high sulfur oill. Per AAC R18-2-701(14) high sulfur oil is fuel with 0.9% sulfur or more. Thus SOx emission factor based on 0.9% sulfur

Natural Gas Emission Factors AP-42 3.2-2

	lb/MMBtu	lbs/bhp-hr = EF Lbs/MMBtu X 2545 Btu/Bhp-hrX MMBtu/1,000,000 Btu X 1/(30% efficiency)
PM10	0.0000771	6.54065E-07
Nox	4.08	0.034612
Sox	0.000588	4.9882E-06
CO	0.317	0.002689217
VOC	0.118	0.001001033

SCAQMD General Instruction Book for the AQMD 2005-2006 AER, Internal Combustion Engines (LPG, Propane, Butane)

		PM-10	NOx	SOx	CO	TOC
Propane (fuel input) (lb/1000-gal)		5	139	0.35	129	83
Propane (power output) (lb/hp-hr)1		0.000468692	0.01302965	3.28085E-05	0.012092265	0.007780295

Assume 100% load factor and 30% engine efficiency

lb/bhp - hr EF =EF lbs/(1000) gallon X (1000 gallons)/1000 gallons X 100% load efficiency * 1 gal/90,500 Btu X 2545 Btu-bhp X 1/.30

Heating Value 90,500 Btu/gallon typical heating value for commercial grade and HD-5 Propane per AP-42 Section 1.5 Liquified Petroleum Gas Combustion

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA ION EXCHANGE PILOT PLANT OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Potential

STACK : S 059
SCC: 3-03-024-04

Operation description:
Sierrita Ion Exchange Pilot Plant operations. This part of operations is exhausted by 1 bin vent baghouse
OPERATION 214, PROCESS 436, SOURCE 059

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission **Cntr. Emission** Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Point Source	FARR Cartridge-Type Dust Collector	--	99.00%	0.12 **0.0012** lb/ton Moly	285 tons MoO/MoS/yr	0.00051	AP-42 Table 11.24-2, 1/95 - Low Moisture
PM-10	Point Source	(1 unit)		99.00%	0.06 **0.0006** lb/ton Moly	285 tons MoO/MoS/yr	0.00026	AP-42 Table 11.24-2, 1/95 - Low Moisture
PM 2.5					**0.00018** **lb/ton**	285 tons MoO/MoS/yr	0.0001	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs	--	--	--	--	--	--	--	--
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.004500		2.31198E-08	
Arsenic Compounds					0.003400		0	
Cadmium Compounds					0.005100		0	
Chromium Compounds					0.001500		0	
Cobalt Compounds					0.007000		0	
Lead Compounds					0.023000		0	
Manganese Compounds					0.004600		0	
Mercury Compounds					0.0001000		0	
Nickel Compounds					0.005000		0	
Selenium Compounds					0.000225		0	
Total HAPs								

Notes:
AP-42 11.24 provides 99% control efficiency for the use of a baghouse.
System contains three transfer points
Dry reagent addition is trivial, and wet gypsum handling is fugitive and high moisture.

ESTIMATED AIR POLLUTANT EMISSIONS FI
FREEPORT-MCMORAN SIERRITA INC., GRI

Potential

STACK :

Operation description:

Potassium Amyl Xanthate (PAX) use in Milling.

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	U/C Emission Cntr. Emission Factor (1)	Max. Annual PAX Use	Potential Emissions tons/yr
HAPs				1,200	
Carbon Disulfide			**4.1305** lb CS2-days	lbs PAX/day	2.4783

Notes:

1. Source added to Emission Inventory in 2010 (Reporting Year 2009). PAX Use restarted in the Sierrita Mill in Jan 2009.
2. Emission Calculation:

Total PAX (lbs)	Time Period (days)	Daily Rate (lbs/day)	PAX Lost per day (lbs/day)	Ratio of CS2 to PAX	CS2 Equivalent (lbs/day)
438,000.00	366	1196.721311	11.96721311	0.376185771	4.501895289

Molecular Weight

CS2 76.14

PAX 202.4

3. Emission Factor above is presented to make the final calculation easier to see:

EF = 0.01 * 3 * 0.376185771 * time period = 4.1192 lb CS2-day (2009)

4. A decomposition rate of 1% per day is assumed for PAX according to manufacturers data as well as average water temperature.
5. Average hold times of PAX in mixing tanks is up to three days.
6. PAX weight in pounds refers to dry PAX, not mixed solution used.
7. In order to account for loss of PAX per day, the Process input for calculation shall be in lbs/day
8. MAX Annual PAX use based on 0.005 lb PAX/ton ore @ 42,591,120 tpy crusher throughput

ROM SIERRITA PAX USE
EEN VALLEY AZ PLANT

Remarks
CS2 = PAX/day * 0.01 * 3 * ratio (CS2/PAX) * 365 1% loss per day, average hold time is 3 days. EF = 0.01 * ratio CS2/PAX *3 * 365

CS2 Equivalent (lbs/year)
4943.081028

Freeport-McMoRan Sierrita Inc - CO2-e Potential To Emit

Instructions:

(1) Enter the maximum capacity of each stationary combustion source or the enforceable permit limit (fuel usage limit) if applicable in the table below.
(2) Enter the maximum fuel usage in the units specified.

	Stationary Combustion Units										
	Coal	Nat. Gas	Propane	Diesel/FO	Gasoline	Coke	Total Stationary Combustion				
Sources (i.e. boiler)	Ton	MMBtu	Gal	Gal	Gal	Ton	Tonnes CO2	Tonnes CH4	Tonnes N2O	**Tons CO2-e**	**Tons GHG Mass Basis**
East Parker Boiler	0.0	72708.0	0.0	0.0	0.0	0.0	3,857.89	0.0727	0.0073	4,256.94	4,252.64
East Hot-oil Heater	0.0	54750.0	0.0	0.0	0.0	0.0	2,905.04	0.0548	0.0055	3,205.53	3,202.29
West Hot-oil Heater	0.0	54750.0	0.0	0.0	0.0	0.0	2,905.04	0.05	0.01	3,205.53	3,202.29
Rh Plant Heater	0.0	10512.0	0.0	0.0	0.0	0.0	557.77	0.01	0.00	615.46	614.84
Change Room Boiler	0.0	17520.0	0.0	0.0	0.0	0.0	929.61	0.02	0.00	1,025.77	1,024.73
SX-1 Parker Boiler	0.0	22776.0	0.0	0.0	0.0	0.0	1,208.49	0.02	0.00	1,333.50	1,332.15
W Parker Boiler	0.0	55188.0	0.0	0.0	0.0	0.0	2,928.28	0.06	0.01	3,231.17	3,227.90
Twin Buttes Boiler	0.0	87600.0	0.0	0.0	0.0	0.0	4,648.06	0.09	0.01	5,128.84	5,123.66
Auto/Rh Plant Boiler	0.0	24528.0	0.0	0.0	0.0	0.0	1,301.46	0.02	0.00	1,436.08	1,434.62
TB Parker Boiler	0.0	26280.0	0.0	0.0	0.0	0.0	1,394.42	0.03	0.00	1,538.65	1,537.10
Copper Sulfate Boiler	0.0	31536.0	0.0	0.0	0.0	0.0	1,673.30	0.03	0.00	1,846.38	1,844.52
Biosulfate Plant Boiler	0.0	0.0	34460.0	0.0	0.0	0.0	197.15	0.01	0.00	218.20	217.33
Molybednum Roasters	0.0	304585.2	0.0	0.0	0.0	0.0	16,161.29	0.30	0.03	17,832.99	17,814.96
	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00
	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00
Total										**44,875.04**	**44,829.03**

*Natural Gas calculation based on Tier I Method using mmBtu value from billing records and no HHV.

MRR Calculation CO2, N2O or CH4 (metric tons) = 1*10^-3 (tonnes/kg) x Fuel x HHV (MMBtu/ton or scf or gal) x EF (kg/MMBtu)
MRR Calculaiton for NG when using mmBtu = 1*10^-3 (tonnes/kg) x Fuel (mmBtu) x EF (kg/MMBtu)
MRR Calculation CO2e = SUM (GHGi x GWPi) using GWP from Table A-1
HHV and EF from Tables C-1 and C-2. Fuel in units specified above.

2013 MRR Table C-1 and C2	HHV		CO2 EF		CH4 EF	N2O EF
Anthracite Coal	25.09		103.69		0.011	0.0016
Bituminous Coal	24.93		93.28		0.011	0.0016
Subbit. Coal	17.25		97.17		0.011	0.0016
Coke	24.8		113.67		0.011	0.0016
Distillate Fuel Oil No. 2	0.138		73.96		0.003	0.0006
LPG	0.092		61.71		0.003	0.0006
Propane (gal)*	0.091		62.87		0.003	0.0006
Natual Gas	0.001026		53.06		0.001	0.0001
Motor Gasoline	0.125		70.22		0.003	0.0006

40 CFR Part 98
2013 Revisions to the GHG Reporting Rule

GHG	GWP
CO2	1
CH4	25
N20	298

Propane = 35.79 scf/gal
Kg to Tons 0.001102 kg/ton
Kg to Tonnes 0.001 kg/tonne
Tonnes to Tons 1 ton = 0.907 mt or 1 mt = 1.1023 tons
*MRR is in metric tonnes. PSD rules are short tons. Mulitplied tonnes CO2-e by 1.1023 to get short tons.

Revised: 12/23/13

APPENDIX E

EMISSIONS INVENTORY

	PROC.	ADEQ			Non-Fugitive Emissions								Fugitive Emissions							
OP ID	ID	ID	Sierrita ID	Description	TSP (PM)	PM10	PM2.5	SOx	NOx	VOC	HAP	CO	TSP (PM)	PM10	PM2.5	SOx	NOx	VOC	HAP	CO	H2SO4
201	401		066	Blasting Ops.									1.1321	0.5887	0.0340	7.9453	67.5351	--	--	266.1679	AP-
203	406		077	Unpaved									235.5702	54.6517	9.3191						AP-
			113A	Prim. Crush.	0.1441	0.1441	0.0216	0.0000	--	--	0.0001	--									
			113B	Prim. Crush.	0.1350	0.1350	0.0202	0.0000	0.0000	0.0000	0.0001	0.0000									
204	410		069	B2 to B3	1.4409	0.4734	0.1338	--	--	--	0.0006	--				0.0000	0.0000	0.0000	0.0000	0.0000	AP-
204	472		072	A3 Conveyor to									20.6126	9.7492	1.4763	--	--	--	0.0093	--	AP-
204	470		095	A2 to A3	1.3501	0.4436	0.1254	--	--	--	0.0006	--				0.0000	0.0000	0.0000	0.0000	0.0000	AP-
204	471		096	B3 to B4	1.3495	0.4434	0.1253	--	--	--	0.0006	--				0.0000	0.0000	0.0000	0.0000	0.0000	AP-
204	491		102	B4 Stacker									19.2979	9.1274	1.3821	--	--	--	0.0087	--	AP-
			201	#1 Secondary	0.4174	0.4174	0.0626	--	--	--	0.0002	--									Sour
207	496	202	202	#2 Secondary	0.9385	0.9385	0.1408	--	--	--	0.0004	--									Based o
			203	#3 Secondary	1.3986	1.3986	0.2098	--	--	--	0.0006	--									Sourc
			204	#4 Secondary	0.9303	0.9303	0.1395	--	0.0000	0.0000	0.0004	0.0000									
			301	#1 Tertiary	0.6542	0.6542	0.0981	--	--	0.0000	0.0003	--									
			302	#2 Tertiary	0.6210	0.6210	0.0932	--	0.0000	0.0000	0.0003	0.0000									
			303	#3 Tertiary	0.6689	0.6689	0.1003	--	0.0000	0.0000	0.0003	--									
			304	#4 Tertiary	0.4666	0.4666	0.0700	--	0.0000	0.0000	0.0002	0.0000									
			305	#5 Tertiary	0.6524	0.6524	0.0979	--	0.0000	0.0000	0.0003	0.0000									
			306	#6 Tertiary	0.9826	0.9826	0.1474	--	0.0000	0.0000	0.0004	0.0000									
			307	#7 Tertiary	0.6266	0.6266	0.0940	--	0.0000	0.0002	0.0003	0.0000									
			308	#8 Tertiary	0.7096	0.7096	0.1064	--	0.0000	0.0000	0.0003	0.0000									
			309	#9 Tertiary	0.5999	0.5999	0.0900	--	0.0002	0.0000	0.0003	0.0000									
			310	#10 Tertiary	0.5025	0.5025	0.0754	--	0.0000	0.0003	0.0002	0.0000									
			311	8D/8B Transfer	2.3354	2.3354	0.3503	--	--	--	0.0011	--									
			312	Transfer Tower	0.5402	0.5402	0.0810	--	--	--	0.0002	--									
			009	F.O. Bin FARR	0.1884	0.1884	0.0283	--	--	--	0.0001	--									
			010	F.O. Bin FARR	0.0537	0.0537	0.0081	--	--	0.0000	0.0000	0.0000									
			011	F.O. Bin FARR	0.0344	0.0344	0.0052	--	0.0000	0.0000	0.0000	0.0000									
			012	F.O. Bin FARR	0.0751	0.0751	0.0113	--	0.0000	0.0000	0.0000	0.0000									
			013	F.O. Bin FARR	0.0236	0.0236	0.0035	0.0000	0.0000	0.0000	0.0000	0.0000									
			014	F.O. Bin FARR	0.0623	0.0623	0.0093	0.0000	0.0000	0.0000	0.0000	0.0000									
			015	F.O. Bin FARR	0.0064	0.0064	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000									
			016	F.O. Bin FARR	0.0494	0.0494	0.0074	0.0000	0.0000	0.0000	0.0000	0.0000									
			017	F.O. Bin FARR	0.0623	0.0623	0.0093	0.0000	0.0000	0.0001	0.0000	0.0000									
208	422	018	018	Sier. F.O. Bin	0.6495	0.0187	0.0974				0.0003	0.0000									One Representative S
208	422	019	019	Sier. F.O. Bin	0.6564	0.3282	0.0985	0.0000	0.0001	0.0000	0.0003	0.0000									
208	422	020	020	Sier. F.O. Bin	0.6509	0.3254	0.0976	--	--	--	0.0003	--									
208	422	021	021	Sier. F.O. Bin	0.6556	0.3278	0.0983	--	--	--	0.0003	--									
208	422	022	022	Sier. F.O. Bin	0.6400	0.3200	0.0960	--	--	--	0.0003	--									
208	422	023	023	Sier. F.O. Bin	0.6535	0.3268	0.0980	--	--	--	0.0003	--									
208	422	024	024	Sier. F.O. Bin	0.6599	0.3300	0.0990	--	--	--	0.0003	--									
208	422	025	025	Sier. F.O. Bin	0.6576	0.3288	0.0986	--	--	--	0.0003	--									
208	422	026	026	Sier. F.O. Bin	0.6585	0.3293	0.0988	--	--	--	0.0003	--									
208	422	027	027	Sier. F.O. Bin	0.6607	0.3303	0.0991	--	--	--	0.0003	--									
208	422	028	028	Sier. F.O. Bin	0.6465	0.3232	0.0970	--	--	--	0.0003	--									
208	422	029	029	Sier. F.O. Bin	0.6112	0.3056	0.0917	--	--	--	0.0003	--									
208	422	030	030	Sier. F.O. Bin	0.6498	0.3249	0.0975	--	--	--	0.0003	--									
208	422	031	031	Sier. F.O. Bin	0.6007	0.3003	0.0901	--	--	--	0.0003	--									
208	422	032	032	Sier. F.O. Bin	0.6471	0.3235	0.0971	--	--	--	0.0003	--									
208	422	033	033	Sier. F.O. Bin	0.6429	0.3214	0.0964	--	--	--	0.0003	--									
209	426	041	041	Mo Unl. Dry.	0.0455	0.1326	0.0137	--	--	21.9690	0.0000	--									S
209	428		067	Sierrita Tailings									237.0259	118.5129		--	--	--	--	--	A
209	450		073	Cu Conc.									0.0540	0.0255		--	--	--	0.0318	--	AP
209/210	427/431	042	042	Mo Sulfide Bins	0.0585	0.0585	0.0035	--	--	--	0.0001	--									S
210	430	053	053	Mo Lcd Dryer 1	0.2093	0.4461	0.0628	--	--	5.8391	0.0002	--									So
210	430	054	054	Mo Lcd Dryer 2	0.0687	0.2810	0.0206	--	--	5.8391	0.0001	--									So
211	433	046	046	Mo Oxide Bins	0.0629	0.0629	0.0189	--	--	--	0.0000	--									S
211	452	058	058	Roasting (Main)	4.7151	4.7151		70.8000	5.6589	0.3112	0.1105	4.7535									S
214	436	059	059	Cannery	0.0000	0.0000		--	--	--	0.0000	--									Sour
			059-FARR	Cannery FARR	0.0653	0.0653	--	--	--	--	0.0000	--									
215	438		076	SX - 1,2,3														0.3630			
216	440		105	Electrowinning Tankhouse									0.0000	0.0000		0.0000	--	--	0.0001	--	1.1697
218	443	063	063	Wet Scrubber #1	0.4487	0.4487	0.0673	--	--	--	--	--									AP
			063A	Wet Scrubber #2	0.0899	0.0899	0.0135	--	--	--	--	--									
219	444		078	Gasoline														2.6243	0.4592		
224	449	093	093	Road Rock	0.8259	0.5893															ADEQ Crushin
280	490	097	097	Truck									94.6296	44.7572	6.7775				0.0004		AP
209	461	045	045	MoS2 Loadout	0.0699	0.0280	0.0210	--	--	--	0.0001	--									AP
209	462	117	117	MoS2 Loadout	0.0000	0.0000	0.0000	--	--	--	0.0000	--									AP
209	460	044	044	MoS2 Dump	0.1439	0.0720	0.0432	--	--	--	0.0001	--									AP
			044A	Hopper - Baghouse	0.3843	0.1922	0.1153	--	--	--	0.0003	--									
201	402	088	088	Drilling									0.3854	0.1927		--	--	--	--	--	AP
201	403	089	089	Ammonium									1.9264	0.9632		--	--	--	--	--	AP
210	420	118	118	Moly Leach						1.7173	0.7326		0.0000	0.0000							So
212	433	119	119	Rhenium									0.0000	0.0000		--	--	--	--	--	AP-
209	463	120	120	and Gizzlies	0.0000	0.0000	0.0000	--	--	--	--	--									AP-
223	448		062-Misc	Gas Sources	0.1640	0.1640	0.1640	0.0129	2.1576	0.1187	0.0407	1.8124									AP-

OP ID	PROC. ID	ADEQ ID	Sierrita ID	Description	Non-Fugitive Emissions								Fugitive Emissions							
					TSP (PM)	PM10	PM2.5	SOx	NOx	VOC	HAP	CO	TSP (PM)	PM10	PM2.5	SOx	NOx	VOC	HAP	CO	H2SO4
217	442	062	062-062	East Parker	0.0020	0.0020	0.0020	0.0002	0.0265	0.0015	0.0005	0.0223									AP-
210	454	064	062-064	East Hot-oil	0.0004	0.0004	0.0004	0.0000	0.0053	0.0003	0.0001	0.0045									AP-
209	453	065	062-065	West Hot-oil	0.0013	0.0013	0.0013	0.0001	0.0172	0.0009	0.0003	0.0144									AP-
212	434	080	062-080	Rh Plant	0.0002	0.0002	0.0002	0.0000	0.0023	0.0001	0.0000	0.0020									AP-
220	445	081	062-081	Change Room	0.0333	0.0333	0.0333	0.0026	0.4380	0.0241	0.0083	0.3679									AP-
215	439	082	062-082	SX-1 Parker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000									AP-
221	446	083	062-083	Zinc Pot	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000									AP-
222	447	084	062-084	West-Parker	0.0001	0.0001	0.0001	0.0000	0.0014	0.0001	0.0000	0.0012									AP-
216	455	091	062-091	Twin Buttes	0.1471	0.1471	0.1471	0.0116	1.9349	0.1064	0.0365	1.6253									AP-
212	434	098	062-098	Auto/Rh Plant	0.0499	0.0499	0.0499	0.0039	0.6570	0.0361	0.0124	0.5519									AP-
216	441	099	062-099	TB Parker	0.0490	0.0490	0.0490	0.0039	0.6450	0.0355	0.0122	0.5418									AP-
225			062-122	CuSO4 Plant	0.0588	0.0588	0.0588	0.0046	0.7740	0.0426	0.0146	0.6502									AP-
225			062-127	Hot Water Heater	0.0110	0.0110	0.0110	0.0009	0.1451	0.0080	0.0027	0.1219									AP-
225			062-128	Hot Water Heater	0.0037	0.0037	0.0037	0.0003	0.0484	0.0027	0.0009	0.0406									AP-
total Boilers			Boiler Subtotals		0.5208	0.5208	0.5208	0.0411	6.8527	0.3769	0.1294	5.7563									
225		122	122A	Cartridge Collector	0.0010	0.0005	0.0002				--										Source Test - 5/
			122B	Copper Sulfate	0.0418	0.0254	0.0063	0.0211	0.1148	0.0376	--	1.8360									
209		123	123	Decant Solids	0.0000	0.0000	0.0000						0.0000	0.0000							AP-
224		124	124	Portable	0.0076	0.0038					0.0000										ADEQ Crushing
224		125	125	Recovery	0.0045	0.0015	0.0004				0.0000										ADEQ Crushing
			126	Engines		0.0845		0.2825	1.3410	0.1434		0.4444									
			Other	Milling							2.2790										
					36.1244	27.9224	4.9248	71.1448	13.9678	36.2343	3.2653	12.7903	610.6340	238.5685	18.9891	7.9453	67.5351	2.9873	0.5096	266.1679	1.1697

	TSP (PM)	PM10	PM2.5	SOx	NOx	VOC	HAP	CO	H2SO4
Totals	646.7584	266.4909	23.9139	79.0901	81.5029	39.2215	3.7748	278.9581	1.1697

2012 Emmisions Inventory

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
General Data Input					
		2012			
	# days in the reporting period	**366**	days		
	Total "Dumped" to Leach, Waste, Fines, and Ore rehandled (Includes Ore delivered to Primary Crusher)	86,888,763	Tons	Blast/Dump Reconcilliation Report	Chad Hoops / Charlie Orr - Mining Dept.
	Total "Dumped" to Leach, Waste, Fines, and Ore rehandled (Does not include Ore delivered to Primary Crusher)	48,244,445	Tons	Blast/Dump Reconcilliation Report	Chad Hoops / Charlie Orr - Mining Dept.
	Total material loaded.	86,888,230	Tons	Blast/Dump Reconcilliation Report	Chad Hoops / Charlie Orr - Mining Dept.
	Total "Loaded" Above 3850 Elevation	4,817,023	Tons	Blast/Dump Reconcilliation Report - Pit Lip is 4050 Elevation. Emissions below 50 ft. below pit lip do not escape the pit. Use 3850 elevation as conservative estimate.	Chad Hoops / Charlie Orr - Mining Dept.
	% Loaded below pit lip (=%haul truck traffic below 3850 elevation)	0.94	%	Blast/Dump Reconcilliation Report	Chad Hoops / Charlie Orr - Mining Dept.
	Circulating Load on 7B Belt		%	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Circulating Load on 7B %)	ELW
	Crushing and Conveying Total Production	38,644,318	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (8-B Belt Tons)	ELW
	Mean Annual Windspeed	6.80	MPH	Met Data Mean Daily Windspeed - B. Macphee	ELW
	Windspeed at enclosed areas	0.25	MPH	PDSI Historical Emission Inventory Value	ELW
	Ave. % Moisture in Ore at Primary Crusher	2	%	L. Thompsen Email	C&C - L. Thompsen
	Ave. % Moisture in Ore at Secondary Crusher	4	%	Morning Report & Goal of 4%	C&C - L. Thompsen
	Amount of SO2 released from Roaster during upsets	0	lbs	Excess Emissions Reports	ELW
	# days in year with at least 0.01 inches of rain	53	days	EDMS Weather Data	ELW
Specific Source Data Input					
002-007	Fine Crush DC1 thru Fine Crush DC7	0	Tons	Six-Pack off-line 11/3/11	ELW
008	F.O. Trans. Tower (#6 Wet Scrubber)	26,650,716	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Transfer House Tons) - removed 10/18/12 with installation of #312 FARR	ELW
008	F.O. Trans. Tower (#312 FARR Unit)	7,202,734	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Transfer House Tons) - installed 10/18/12, replaces #6 Wet Scrubber	
009	Throughput for #1 Fine Ore Bin Baghouse	0	Tons	removed from service 3/16/10	ELW
009	Throughput for #1 Fine Ore Bin FARR	38,644,318	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Throughput for #1 FOB FARR) - installed 3/16/10	ELW
010	Throughput for #2 Fine Ore Bin FARR	4,293,813	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 5/24/12	ELW
011	Throughput for #3 Fine Ore Bin FARR	477,090	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 6/7/12	ELW

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
012	Throughput for #4 Fine Ore Bin FARR	53,010	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 6/13/12	ELW
013	Throughput for #5 Fine Ore Bin FARR	5,890	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 6/19/12	ELW
014	Throughput for #6 Fine Ore Bin FARR	654	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 6/22/12	ELW
015	Throughput for #7 Fine Ore Bin FARR	73	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 6/28/12	ELW
016	Throughput for #8 Fine Ore Bin FARR	8	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 7/24/12	ELW
017	Throughput for #9 Fine Ore Bin FARR	1	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 9/17/12	ELW
018	Sier. F.O. Bin DC0	2,497,987	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #0 Mill	ELW
019	Sier. F.O. Bin DC1	2,524,706	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #1 Mill	ELW
020	Sier. F.O. Bin DC2	2,503,341	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #2 Mill	ELW
021	Sier. F.O. Bin DC3	2,521,671	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #3 Mill	ELW
022	Sier. F.O. Bin DC4	2,461,616	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #4 Mill	ELW
023	Sier. F.O. Bin DC5	2,513,572	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #5 Mill	ELW
024	Sier. F.O. Bin DC6	2,538,165	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #6 Mill	ELW
025	Sier. F.O. Bin DC7	2,529,406	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #7 Mill	ELW
026	Sier. F.O. Bin DC8	2,532,733	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #8 Mill	ELW
027	Sier. F.O. Bin DC9	2,541,113	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #9 Mill	ELW
028	Sier. F.O. Bin DC10	2,486,512	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #10 Mill	ELW
029	Sier. F.O. Bin DC11	2,350,694	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #11 Mill	ELW
030	Sier. F.O. Bin DC12	2,499,334	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #12 Mill	ELW
031	Sier. F.O. Bin DC13	2,310,336	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #13 Mill	ELW
032	Sier. F.O. Bin DC14	2,488,691	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #14 Mill	ELW
033	Sier. F.O. Bin DC15	2,472,658	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #15 Mill	ELW

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
041	Mo Unl. Dry. Scrubber	9,492	tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Unleached Moly)	ELW
041	Mo Unl. Dry. Scrubber	8,649	Hours	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Unleached Moly Scrubber Runtime)	
042	Mo Sulfide Bins	44,069	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Leached Moly Tons)	ELW
042	Mo Sulfide Bins	8,784	Hours	Based on total potential operating hours (make sure to adjust for leap year in 2012)	
044	MoS Oversize Hopper & PDC Hopper	2,399	Tons	Oversize + PDC Throughput from monthly Title V Records (This changed in 2007, no longer includes MoS Dump Hopper)	Title V Records Binder - Moly
044A	MoS2 Dump Hopper	17,242	Tons	MoS Hopper Throughput from monthly Title V Records	Title V Records Binder - Moly
045	MoS2 Loadout	13,978	Tons	Moly Sulfide Loadout SC - #1 Throughput - Title V Monthly Records Spreadsheet	Title V Records Binder - Moly
048	Mo Oxide Bins	25,635	tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Roaster 1 & 2)	ELW
048	Mo Oxide Bins	8,784	Hours	Based on total potential operating hours (make sure to adjust for leap year in 2008)	
053	Mo Lcd Dryer 1	22,034	tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Leached Moly Tons / 2 dryers)	ELW
054	Mo Lcd Dryer 2	22,034	tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Leached Moly Tons / 2 dryers)	ELW
058	Roasting (Main)	25,635	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Roaster 1 & 2)	ELW
058	Roasting (Main) Natural Gas	113,177,529	Cubic Feet	Natural Gas Usage Summary - Sierrita (Roasting)	Accounting (R. Deming)
059	Cannery - throughput (Baghouse)	0	Tons	Baghouse Removed 10/9/11	Accounting (F. Brown)
059	Cannery - throughput (FARR)	33,824	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Moly Oxide Packaged + Moly Sulfide Packaged)	
	Total Natural Gas Usage	250,232,296	Cubic Feet	Natural Gas Usage Summary - Sierrita (Total Usage)	
062-Misc	Remaining Natural Gas Fired Sources	43,152,413	Cubic Feet	Sierrita Total Natural Gas Usage - all other sources (Moly Briquette Heater (3.5MM) Mine Truck Wash (1.0 MM)	Accounting (F. Brown)
062-062	East Parker Boiler - Moly Leach Heating (primary)	529,800	Cubic Feet	Monthly Gas Meter Readings (East Boiler)	EI
062-064	East Hot-oil Heater "Moly Dryer Oil Heating System 2"	106,300	Cubic Feet	Monthly Gas Meter Readings (East Therminol Heater)	EI
062-065	West Hot-oil Heater "Moly Dryer Oil Heating System 1"	343,800	Cubic Feet	Monthly Gas Meter Readings (West Therminal Heater)	EI
062-080	Rh Plant Heater	46,500	Cubic Feet	Monthly Gas Meter Readings (Rhenium Plant)	EI
062-081	Change Room Boiler (2.0 MM Btu/hr Capacity)	8,760,000	Cubic Feet	Estimated at 50% of Rated Capacity	
062-082	SX-1 Parker Boiler	0	Cubic Feet	Not in use	
062-083	Zinc Pot (0.6 MM Btu/hr Capacity)	0	Cubic Feet	Estimated at 25% of Rated Capacity - Not in Use	
062-084	W Parker Boiler (Moly Leach Heating Backup)	28,000	Cubic Feet	Monthly Gas Meter Readings (West Boiler)	EI
062-091	Twin Buttes SXEW Natural Gas Usage	51,598,054	Cubic Feet	Enter Monthly Values here from SW Gas Usage rate - Source ID 099	
062-091	Twin Buttes Boiler - EW Electrolyte Heater	38,698,541	Cubic Feet	75% of SW Gas Usage rate - Source ID 099 (1 therm = 100cf)	

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
062-098	Moly Autoclave Boiler (2.0 MM Btu/hr Capacity)	13,140,000	Cubic Feet	75% of capacity of boiler	
062-099	TB Parker Boiler (3MM Btu/hr Capacity) - EW Cathode Wash Heater	12,899,514	Cubic Feet	SW Gas Usage rate - Source ID 099 (1 therm = 100cf) Divide total TB SXEW by 4. 1/4 goes to boiler 099 and 3/4 goes to 091.	
062-122	Copper Sulfate Plant - Total Natural Gas Usage	19,349,900	Cubic Feet	Monthly Gas Meter Readings (Crystal Plant)	
063	Lime Handling	59,153	Tons	Lime Handling Monthly Environmental Reports	
066	Blasting Ops. # Blasts above 3850 Elevation	41	# Blasts	Total Blasts x % blasts above pit lip (3850 elevation)	
	Total # Blasts	738		Monthly Blasting Reports	Mine (Mark DeLaat)
	% Blasts above 3850 elevation	0.06		Blast/Dump Reconcilliation Rpt - % Loaded above 3850 Elevation	Barye Herndon - Mining Dept.
066	Blasting Ops.	7,945	Tons ANFO	Southwest Energy Letter (Total Ammonium Nitrate Products Blasted)	Southwest Energy - Jerry Harris
069	B2 to B3 Transfer	20,584,453	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (6A Primary Throughput)	ELW
072	A3 Conveyor to pile	20,584,453	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (6A Primary Throughput)	ELW
073	Cu Conc. Stockpile	290,961	Tons	December Monthly Operating Report (Moly Cost Summary Copper Concentrate)	Accounting (F. Brown)
075	Scalping Screens, DC#10		Tons	Unit shut down 9/23/11	ELW
076	SX 1,2,3	N/A		Flow is constant, no annual change in emissions.	
077	Unpaved Roads	See Spreadsheet 077			
077	Haul Truck Mileage	1,521,654	Miles	Haul Truck Mileage Report, Dispatch	Chad Hoops / Charlie Orr - Mining Dept.
077	Water Truck Mileage (190 Ton)	158,587	Miles	Large Vehicle Hour/Mileage Report	(S. Sprague) Mine Ops Assistant
077	Water Truck Mileage (40 Ton)	16,720	Miles	Large Vehicle Hour/Mileage Report	(S. Sprague) Mine Ops Assistant
077	Rubber Tire Dozer Mileage	154,410	Miles	Large Vehicle Hour/Mileage Report	(S. Sprague) Mine Ops Assistant
077	Motor Graders (2x16G)	53,540	Miles	Large Vehicle Hour/Mileage Report	(S. Sprague) Mine Ops Assistant
077	Motor Graders (2x14G)	0	Miles	Large Vehicle Hour/Mileage Report	(S. Sprague) Mine Ops Assistant
078	Gasoline Storage Tanks	218,707	Gallons	SAP Usage Information Report, Stock Code: 005579693	Ellipse
087	Sierrita Tailings	603	Active Drying Area	Total Acreage of Tailing Dam(Toe of Sierrita Tailings) /6	G. Pitts/ A. Velasco
088	Drilling Operations	4,817,023	Tons	Total amount "loaded" above 3850ft considered to be amount drilled above 3850ft as conservative estimate	
089	Ammonium Nitrate Storage	19,263,740	lbs	Ellipse Usage Information Report - Prill stock code: 005563861	
093	Road Rock Crusher	932	Hours	El Jay Crusher Monthly Environmental Reports	Mine
093	Road Rock Crusher	254,739	Tons	El Jay Crusher Monthly Environmental Reports	Mine
093	Road Rock Crusher	273	Feed Rate (Tons/Hour)	El Jay Crusher Monthly Environmental Reports - Total annual tons / total annual hours	Mine
095	A2 to A3 Transfer	19,279,042	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (6B Primary Throughput)	ELW

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
096	B3 to B4 Transfer	19,279,042	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (6B Primary Throughput)	ELW
102	B4 Stacker	19,279,042	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (6B Primary Throughput)	ELW
105	Twin Buttes Electrowinning		Gallons	SX PLS Flow to TB Tankhouse	SX/EW - Jody Beck
112	#8T & 6T Crushers		Tons	offline as of 10/6/11.	ELW
113	Primary Crushing. 6A/6B (Scrubber)	33,736,424	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Primary Crushing Total - removed from service 11/9/12, throughput is from 1/1/12 - 11/8/12	ELW
113A	Primary Crushing 6A	3,132,918		Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Primary Crushing 6A - A-Side FARR installed 11/9/12, throughput is from 11/9/12 - 12/31/12)	
113B	Primary Crushing 6B	2,994,153		Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Primary Crushing 6B -B-Side FARR installed 11/9/12, throughput is from 11/9/12 - 12/31/12)	
116	8B/8C Transfer - #11 Wet Scrubber	-	Tons	Removed from Service 3/16/10.	ELW
117	MoS2 Loadout	0	tons	Moly Sulfide Loadout SC - #2 Throughput - Title V Monthly Records Spreadsheet	Moly / Title V Records
118	Moly Leach Plant	Wet Process			
118	Moly Leach Plant - Trimer Run Time	8,784	Hours		
119	Rhenium Recovery	Wet Process			
119	Rhenium DE Hopper & Screw Conveyor	0.00	tons	Rhenium DE Hopper & SC Report - Title V Monthly Records Spreadsheet	Moly / Title V Records
120	Misc. Screeens and Grizzlies	0	lbs	Misc. Screen & Grizzlie Use for 2010	
121	Fine Crushing Plant - No. 12 Scrubber	15,289,964	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (8-B Belt Tons) - removed from service 5/24/12, throughput covers 1/1/12-5/23/12	ELW
122	Copper Sulfate Plant - tons material throughput	8,445.81	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Crystal Plant - Production)	ELW
122	Copper Sulfate Plant - cyclone hours of operation	6,350	Hours	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Crystal Plant - Operating Hours)	ELW
122	Copper Sulfate Plant - tons flow aid	3,238	Tons	17 lb/min x cyclone feed time (Hydromet daily reports)	Hydromet
123	Decant Handling Facility	0	Tons	Decant Summary Report (Title V Records)	ELW / Mill
124	Portable Screen Plant - tons material throughput	8,017	Tons	Magnetic Steel Recovery Plant Report (Title V Records)	CMP
124	Portable Screen Plant - hours of operation	58	Hours	Magnetic Steel Recovery Plant Report (Title V Records)	CMP
125	Magnetic Steel Recovery System	8,017	Tons	Magnetic Steel Recovery Plant Report (Title V Records)	CMP
126	Tailing Thickener Generator - Diesel, less than 600 HP	125.3	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Mill Reservoir Fire Water Pump - Natural Gas	1.4	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Moly Roaster Emergency Generator - Natural Gas	19.1	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	CEMS Emergency Generator - Natural Gas	35.9	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	#3 Headwall Generator - Subject to NSPS Subpart IIII	34.0	hours	Data from Monthly Title V Records - Generator Hours	ELW

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
126	Twin Buttes Emergency Fire Water Back-Up - Diesel, less than 600 HP	0.0	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Radio Hill Generator - Propane	49.7	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Love Shack Generator - Propane	0.3	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Dispatch Tower Generator #1 - Propane	24.7	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Dispatch Tower Generator #2 - Propane	0.0	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Mine Engineering Generator - Propane	24.8	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Administration Building Generator - Natural Gas	86.0	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Mine Truck Shop Fire Water Pump - Diesel, less than 600 HP	56.6	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Primary Crusher Generator - Propane	32.0	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	SCC Emergency Generator - Natural Gas	36.1	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Taillings Dam Pumping Station Generator - Diesel	22.8	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Twin Buttes Radio Hill Generator - Propane	85.5	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Twin Buttes Sandcastle Generator - Propane	50.5	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	West Robo Shack Generator - Propane	-	hours	Not in operation during this reporting year	
126	Truck Shop Generator - Propane	-	hours	Not in operation during this reporting year	
	Fine Crushing Plant Potential Throughput	42,591,120	Tons		
201	#1 Secondary Crusher Throughput	9,048,391	tons	Data from Monthly Title V Records - #1 Secondary Throughput	
202	#2 Secondary Crusher Throughput	10,096,226	tons	Data from Monthly Title V Records - #2 Secondary Throughput	
203	#3 Secondary Crusher Throughput	10,005,315	tons	Data from Monthly Title V Records - #3 Secondary Throughput	
204	#4 Secondary Crusher Throughput	10,007,667	tons	Data from Monthly Title V Records - #4 Secondary Throughput	
301	#1 Tertiary Crusher Throughput	1,978,549	tons	Data from Monthly Title V Records - #1 Tertiary Throughput	
302	#2 Tertiary Crusher Throughput	2,022,899	tons	Data from Monthly Title V Records - #2 Tertiary Throughput (#2T FARR installed: 7/16/11)	
303	#3 Tertiary Crusher Throughput	2,022,974	tons	Data from Monthly Title V Records - #3 Tertiary Throughput (#3T FARR installed: 6/13/11)	
304	#4 Tertiary Crusher Throughput	2,259,702	tons	Data from Monthly Title V Records - #4 Tertiary Throughput (#4T FARR installed: 9/2/11)	
305	#5 Tertiary Crusher Throughput	1,973,069	tons	Data from Monthly Title V Records - #5 Tertiary Throughput (#5T FARR installed: 8/24/11)	
306	#6 Tertiary Crusher Throughput	2,053,533	tons	Data from Monthly Title V Records - #6 Tertiary Throughput (#6T FARR installed: 9/23/11)	
307	#7 Tertiary Crusher Throughput	1,895,028	tons	Data from Monthly Title V Records - #7 Tertiary Throughput (#7T FARR installed: 9/19/11)	
308	#8 Tertiary Crusher Throughput	2,146,068	tons	Data from Monthly Title V Records - #8 Tertiary Throughput (#8T FARR installed: 9/29/11)	
309	#9 Tertiary Crusher Throughput	1,814,096	tons	Data from Monthly Title V Records - #9 Tertiary Throughput (#9T FARR installed: 10/20/11)	
310	#10 Tertiary Crusher Throughput	1,519,532	tons	Data from Monthly Title V Records - #10 Tertiary Throughput (#10T FARR installed: 10/27/11)	
311	8D/8B Transfer Point Throughput	23,354,354	tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (8-B Belt Tons) - unit installed 5/24/12, throughput covers 5/24/12-12/31/12	

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
058	CEMS - SO2 Emissions	70.80	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (SO2 from Roasting)	ELW
058	CEMS - Average SO2 Emission Rate	16.12	lb/hr	SO2 * 2000 / total possible Hours of operation	ELW
Other	PAX Usage	403,883.00	lbs	Sierrita Reagant Report	Mill
Other	PAX Usage per day of reporting period	1,103.51	lbs/day	Sierrita Reagant Report	Mill

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 009
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations, & Sierrita 8B to 8C conveyor transfer point. This part of operations is exhausted by 8 Mikro Pulseaire fabric filters and a FARR Cartridge-Type Dust Collector.
#1 Fine Ore Bin FARR unit - installed 3/16/10
OPERATION 208, PROCESS 421, SOURCE 010

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	–		**0.000010** lb/ton rock	55,845,000 tons rock/yr	38,644,318 tons rock/yr	0.1884	Average of Source Tests 7/13/10 & 10/24/2013
PM-10	Non-Fugitive Point Source				**0.000010** lb/ton rock	55,845,000 tons rock/yr	38,644,318 tons rock/yr	0.1884	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source				**0.00000** lb/ton rock	55,845,000 tons rock/yr	38,644,318 tons rock/yr	0.0283	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	–	–	–	–	--	--	--	--	--
Carbon Monoxide (not anticipated)	–	–	–	–	--	--	--	--	–
Nitrogen Oxides (NOx) (not anticipated)	–	–	–	–	--	--	–	–	–
Non-Methane VOC (not anticipated)	–	–	–	–	--	--	–	--	–
HAPs									
Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			2.31866E-06	
Arsenic Compounds					0.001200			2.26069E-06	
Beryllium Compounds					0.000100			1.88391E-07	
Cadmium Compounds					0.000050			9.41955E-08	
Chromium Compounds					0.014577			2.74616E-05	
Cobalt Compounds					0.000623			1.17382E-06	
Lead Compounds					0.003000			5.65173E-06	
Manganese Compounds					0.023238			4.37792E-05	
Mercury Compounds					0.000002			3.47178E-09	
Nickel Compounds					0.001077			2.02883E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0001*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2. Max thruput based on Fine Crushing Plant Capacity - this unit controls the 8B/8C Transfer Point as well as 1/9th of the Fine Ore Bin.
3. Controlled emission factor based on source test 7/13/10, 0.018 pph / 6180 tph
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage from 3/16/10 - 12/31/10.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 010
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors
#2 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 010

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	–	0.9935	**0.00003** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0537	Average of Source Tests 10/11/12 & 10/24/2013
PM-10	Non-Fugitive Point Source	SN 26530-1		0.9935	**0.00003** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0537	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.000004** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0081	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			6.60587E-07	
Arsenic Compounds					0.001200			6.44072E-07	
Beryllium Compounds					0.000100			5.36727E-08	
Cadmium Compounds					0.000050			2.68363E-08	
Chromium Compounds					0.014577			7.82382E-06	
Cobalt Compounds					0.000623			3.34422E-07	
Lead Compounds					0.003000			1.61018E-06	
Manganese Compounds					0.023238			1.24727E-05	
Mercury Compounds					0.000002			9.89111E-10	
Nickel Compounds					0.001077			5.78013E-07	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.000024*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2. Actual emissions accounts for 1/9 of total throughput .
3. Emissions calculations based on intial testing
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 011
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors
#3 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 011

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	–		**0.000016** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0344	Source Test 10/12/12
PM-10	Non-Fugitive Point Source	SN 26530-1			**0.000016** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0344	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source				-- **0.000002** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0052	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	–
Carbon Monoxide (not anticipated)	--	–	–	–	--	--	--	--	–
Nitrogen Oxides (NOx) (not anticipated)	--	–	–	--	--	--	--	--	–
Non-Methane VOC (not anticipated)	--	--	–	--	--	--	--	--	--
HAPs									
Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			4.22775E-07	
Arsenic Compounds					0.001200			4.12206E-07	
Beryllium Compounds					0.000100			3.43505E-08	
Cadmium Compounds					0.000050			1.71753E-08	
Chromium Compounds					0.014577			5.00725E-06	
Cobalt Compounds					0.000623			2.1403E-07	
Lead Compounds					0.003000			1.03052E-06	
Manganese Compounds					0.023238			7.98253E-06	
Mercury Compounds					0.000002			6.33031E-10	
Nickel Compounds					0.001077			3.69929E-07	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.000015*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2. Actual emissions accounts for 1/9 of total throughput .
3. emission factor based on source test
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 012
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors
#4 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 012

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--		**0.000035** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0751	Source Test 10/12/12
PM-10	Non-Fugitive Point Source	SN 26530-1			**0.000035** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0751	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source				– **0.00001** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0113	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	–	--	–	–	--	–	--	–	–
Carbon Monoxide (not anticipated)	–	--	–	–	--	–	--	–	–
Nitrogen Oxides (NOx) (not anticipated)	–	–	–	–	--	--	–	–	–
Non-Methane VOC (not anticipated)	–	--	–	--	--	--	–	--	–
HAPs									
Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			9.24821E-07	
Arsenic Compounds					0.001200			9.01701E-07	
Beryllium Compounds					0.000100			7.51417E-08	
Cadmium Compounds					0.000050			3.75709E-08	
Chromium Compounds					0.014577			1.09534E-05	
Cobalt Compounds					0.000623			4.68191E-07	
Lead Compounds					0.003000			2.25425E-06	
Manganese Compounds					0.023238			1.74618E-05	
Mercury Compounds					0.000002			1.38475E-09	
Nickel Compounds					0.001077			8.09219E-07	
Selenium Compounds					0.000000			0	
					(%)				
Total HAPs								*0.0000*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
It was assumed to be applicable to PM emissions as well.
2.Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #4 baghouse on 8/6/10.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 013
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors
#5 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 013

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--		**0.000011** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0236	Source Test 10/15/12
PM-10	Non-Fugitive Point Source	SN 26530-1			**0.000011** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0236	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source				-- **0.000002** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0035	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			2.90658E-07	
Arsenic Compounds					0.001200			2.83392E-07	
Beryllium Compounds					0.000100			2.3616E-08	
Cadmium Compounds					0.000050			1.1808E-08	
Chromium Compounds					0.014577			3.44248E-06	
Cobalt Compounds					0.000623			1.47146E-07	
Lead Compounds					0.003000			7.08479E-07	
Manganese Compounds					0.023238			5.48799E-06	
Mercury Compounds					0.000002			4.35209E-10	
Nickel Compounds					0.001077			2.54326E-07	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.000011*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2. Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #7 baghouse on 3/6/06. #7 Baghouse is identical to #2-6 and #8-9 Baghouses.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 014
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors
#6 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 014

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--		**0.000029** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0900	0.0623	Source Test 10/15/12
PM-10	Non-Fugitive Point Source	SN 26530-1			**0.000029** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0900	0.0623	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source				-- **0.0000044** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0135	0.0093	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231				7.6628E-07	
Arsenic Compounds					0.001200				7.47123E-07	
Beryllium Compounds					0.000100				6.22603E-08	
Cadmium Compounds					0.000050				3.11301E-08	
Chromium Compounds					0.014577				9.07563E-06	
Cobalt Compounds					0.000623				3.8793E-07	
Lead Compounds					0.003000				1.86781E-06	
Manganese Compounds					0.023238				1.44683E-05	
Mercury Compounds					0.000002				1.14737E-09	
Nickel Compounds					0.001077				6.70495E-07	
Selenium Compounds					0.000000				0	
					(%)					
Total HAPs									*0.0000*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2. Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #7 baghouse on 3/6/06. #7 Baghouse is identical to #2-6 and #8-9 Baghouses.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 015
SCC: 3-03-024-04

Operation description:
Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors
#7 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 015

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--		**0.000003** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0064	Source Test 10/19/12
PM-10	Non-Fugitive Point Source	SN 26530-1			**0.000003** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0064	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00000045** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0010	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			7.92704E-08	
Arsenic Compounds					0.001200			7.72886E-08	
Beryllium Compounds					0.000100			6.44072E-09	
Cadmium Compounds					0.000050			3.22036E-09	
Chromium Compounds					0.014577			9.38859E-07	
Cobalt Compounds					0.000623			4.01306E-08	
Lead Compounds					0.003000			1.93222E-07	
Manganese Compounds					0.023238			1.49672E-06	
Mercury Compounds					0.000002			1.18693E-10	
Nickel Compounds					0.001077			6.93616E-08	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0000*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2.Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #7 baghouse on 3/6/06. #7 Baghouse is identical to #2-6 and #8-9 Baghouses.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.
6. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B
7. Installed 6/28/12
8. Throughput: 6/28/12 - 12/31/12

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 016
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors
#8 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 016

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	–		**0.000023** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0494	Source Test 10/19/12
PM-10	Non-Fugitive Point Source	SN 26530-1			**0.000023** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0494	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			n/c	– **0.0000035** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0074	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	–	–	–	–	–	–	–	–	–
Carbon Monoxide (not anticipated)	–	–	–	–	–	–	–	–	–
Nitrogen Oxides (NOx) (not anticipated)	–	–	–	–	–	–	–	–	–
Non-Methane VOC (not anticipated)	–	–	–	–	–	–	–	–	–
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			6.0774E-07	
Arsenic Compounds					0.001200			5.92546E-07	
Beryllium Compounds					0.000100			4.93789E-08	
Cadmium Compounds					0.000050			2.46894E-08	
Chromium Compounds					0.014577			7.19792E-06	
Cobalt Compounds					0.000623			3.07668E-07	
Lead Compounds					0.003000			1.48137E-06	
Manganese Compounds					0.023238			1.14749E-05	
Mercury Compounds					0.000002			9.09982E-10	
Nickel Compounds					0.001077			5.31772E-07	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.000022*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2. Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #7 baghouse on 3/6/06. #7 Baghouse is identical to #2-6 and #8-9 Baghouses.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 017
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors
#9 Fine Ore Bin Baghouse
OPERATION 208, PROCESS 421, SOURCE 017

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--		**0.000029** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0623	Source Test 3/15/13
PM-10	Non-Fugitive Point Source	SN 26530-1			**0.000029** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0623	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0000044** lb/ton rock	6,205,000 tons rock/yr	4,293,813 tons rock/yr	0.0093	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			7.6628E-07	
Arsenic Compounds					0.001200			7.47123E-07	
Beryllium Compounds					0.000100			6.22603E-08	
Cadmium Compounds					0.000050			3.11301E-08	
Chromium Compounds					0.014577			9.07563E-06	
Cobalt Compounds					0.000623			3.8793E-07	
Lead Compounds					0.003000			1.86781E-06	
Manganese Compounds					0.023238			1.44683E-05	
Mercury Compounds					0.000002			1.14737E-09	
Nickel Compounds					0.001077			6.70495E-07	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0000*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2. Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #7 baghouse on 3/6/06. #7 Baghouse is identical to #2-6 and #8-9 Baghouses.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 018
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#0 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 018

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	–		**0.00052** lb/ton rock	3,490,313 tons rock/yr	2,497,987 tons rock/yr	0.9075	0.6495	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)			**0.00026** lb/ton rock	3,490,313 tons rock/yr	2,497,987 tons rock/yr	0.0262	0.0187	PM-10 assumed = 50% PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,497,987 tons rock/yr	0.1361	0.0974	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	–	–	--	--	--	--	--	–
Carbon Monoxide (not anticipated)	--	--	–	–	--	--	--	–	--	–
Nitrogen Oxides (NOx) (not anticipated)	--	--	–	–	--	--	--	--	--	–
Non-Methane VOC (not anticipated)	--	--	--	–	--	--	--	–	--	–
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231				7.99356E-06	
Arsenic Compounds					0.001200				7.79372E-06	
Beryllium Compounds					0.000100				6.49477E-07	
Cadmium Compounds					0.000050				3.24738E-07	
Chromium Compounds					0.014577				9.46737E-05	
Cobalt Compounds					0.000623				4.04674E-06	
Lead Compounds					0.003000				1.94843E-05	
Manganese Compounds					0.023238				0.000150928	
Mercury Compounds					0.000002				1.19689E-08	
Nickel Compounds					0.001077				6.99436E-06	
Selenium Compounds					0.000000				0	
Total HAPs					(%)				*0.0003*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.

5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #0 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 019
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#1 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 019

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--		**0.00052** lb/ton rock	3,490,313 tons rock/yr	2,524,706 tons rock/yr	0.6564	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)			**0.0003** lb/ton rock	3,490,313 tons rock/yr	2,524,706 tons rock/yr	0.3282	PM-10 assumed = 50% PM
PM-2.5	Non-Fugitive Point Source				-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,524,706 tons rock/yr	0.0985	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			8.07906E-06	
Arsenic Compounds					0.001200			7.87708E-06	
Beryllium Compounds					0.000100			6.56424E-07	
Cadmium Compounds					0.000050			3.28212E-07	
Chromium Compounds					0.014577			9.56864E-05	
Cobalt Compounds					0.000623			4.09002E-06	
Lead Compounds					0.003000			1.96927E-05	
Manganese Compounds					0.023238			0.000152543	
Mercury Compounds					0.000002			1.20969E-08	
Nickel Compounds					0.001077			7.06918E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 4/13/10. 0.24 PPH / 208 TPH = 0.00109 lbs/ton
5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #1 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 020
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#2 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 020

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	**0.00052** lb/ton rock	3,490,313 tons rock/yr	2,503,341 tons rock/yr	0.6509	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	**0.0003** lb/ton rock	3,490,313 tons rock/yr	2,503,341 tons rock/yr	0.3254	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,503,341 tons rock/yr	0.0976	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			8.01069E-06	
Arsenic Compounds					0.001200			7.81042E-06	
Beryllium Compounds					0.000100			6.50869E-07	
Cadmium Compounds					0.000050			3.25434E-07	
Chromium Compounds					0.014577			9.48766E-05	
Cobalt Compounds					0.000623			4.05541E-06	
Lead Compounds					0.003000			1.95261E-05	
Manganese Compounds					0.023238			0.000151252	
Mercury Compounds					0.000002			1.19946E-08	
Nickel Compounds					0.001077			7.00936E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput is total throughput for #2 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 021
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#3 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 021

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	**0.00052** lb/ton rock	3,490,313 tons rock/yr	2,521,671 tons rock/yr	0.6556	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	**0.0003** lb/ton rock	3,490,313 tons rock/yr	2,521,671 tons rock/yr	0.3278	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,521,671 tons rock/yr	0.0983	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			8.06935E-06	
Arsenic Compounds					0.001200			7.86761E-06	
Beryllium Compounds					0.000100			6.55635E-07	
Cadmium Compounds					0.000050			3.27817E-07	
Chromium Compounds					0.014577			9.55713E-05	
Cobalt Compounds					0.000623			4.08511E-06	
Lead Compounds					0.003000			1.9669E-05	
Manganese Compounds					0.023238			0.000152359	
Mercury Compounds					0.000002			1.20824E-08	
Nickel Compounds					0.001077			7.06068E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 10/20/09. 0.12 PPH / 264 TPH = 0.00047bs/ton
5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 022
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#4 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 022

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,461,616 tons rock/yr	0.6400	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,461,616 tons rock/yr	0.3200	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,461,616 tons rock/yr	0.0960	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			7.87717E-06	
Arsenic Compounds					0.001200			7.68024E-06	
Beryllium Compounds					0.000100			6.4002E-07	
Cadmium Compounds					0.000050			3.2001E-07	
Chromium Compounds					0.014577			9.32953E-05	
Cobalt Compounds					0.000623			3.98782E-06	
Lead Compounds					0.003000			1.92006E-05	
Manganese Compounds					0.023238			0.000148731	
Mercury Compounds					0.000002			1.17947E-08	
Nickel Compounds					0.001077			6.89253E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 10/20/09. 0.17 PPH / 276 TPH = 0.00060bs/ton
5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 023
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#5 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 023

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	–	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,513,572 tons rock/yr	0.6535	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,513,572 tons rock/yr	0.3268	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,513,572 tons rock/yr	0.0980	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	–	–	–	–	--	--	--	--	–
Carbon Monoxide (not anticipated)	–	–	–	–	--	--	--	--	–
Nitrogen Oxides (NOx) (not anticipated)	–	–	–	–	--	--	--	--	--
Non-Methane VOC (not anticipated)	–	–	–	–	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			8.04343E-06	
Arsenic Compounds					0.001200			7.84234E-06	
Beryllium Compounds					0.000100			6.53529E-07	
Cadmium Compounds					0.000050			3.26764E-07	
Chromium Compounds					0.014577			9.52644E-05	
Cobalt Compounds					0.000623			4.07199E-06	
Lead Compounds					0.003000			1.96059E-05	
Manganese Compounds					0.023238			0.00015187	
Mercury Compounds					0.000002			1.20436E-08	
Nickel Compounds					0.001077			7.038E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 8/13/10.
5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #5 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 024
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#6 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 024

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	–	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,538,165 tons rock/yr	0.6599	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,538,165 tons rock/yr	0.3300	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,538,165 tons rock/yr	0.0990	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	–	--	–	–	--	--	--	--	--
Carbon Monoxide (not anticipated)	–	--	–	–	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	–	–	--	--	--	--	--	–
Non-Methane VOC (not anticipated)	–	--	–	–	--	--	--	–	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			8.12213E-06	
Arsenic Compounds					0.001200			7.91907E-06	
Beryllium Compounds					0.000100			6.59923E-07	
Cadmium Compounds					0.000050			3.29961E-07	
Chromium Compounds					0.014577			9.61964E-05	
Cobalt Compounds					0.000623			4.11183E-06	
Lead Compounds					0.003000			1.97977E-05	
Manganese Compounds					0.023238			0.000153356	
Mercury Compounds					0.000002			1.21614E-08	
Nickel Compounds					0.001077			7.10686E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 11/3/10.
5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #6 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 025
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#7 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 025

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	–	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,529,406 tons rock/yr	0.6576	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,529,406 tons rock/yr	0.3288	 PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,529,406 tons rock/yr	0.0986	 AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			8.0941E-06	
Arsenic Compounds					0.001200			7.89175E-06	
Beryllium Compounds					0.000100			6.57646E-07	
Cadmium Compounds					0.000050			3.28823E-07	
Chromium Compounds					0.014577			9.58645E-05	
Cobalt Compounds					0.000623			4.09764E-06	
Lead Compounds					0.003000			1.97294E-05	
Manganese Compounds					0.023238			0.000152827	
Mercury Compounds					0.000002			1.21195E-08	
Nickel Compounds					0.001077			7.08234E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 8/12/10.
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #7 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 026
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#8 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 026

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,532,733 tons rock/yr	0.6585	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,532,733 tons rock/yr	0.3293	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,532,733 tons rock/yr	0.0988	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			8.10474E-06	
Arsenic Compounds					0.001200			7.90213E-06	
Beryllium Compounds					0.000100			6.5851E-07	
Cadmium Compounds					0.000050			3.29255E-07	
Chromium Compounds					0.014577			9.59906E-05	
Cobalt Compounds					0.000623			4.10303E-06	
Lead Compounds					0.003000			1.97553E-05	
Manganese Compounds					0.023238			0.000153028	
Mercury Compounds					0.000002			1.21354E-08	
Nickel Compounds					0.001077			7.09165E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 11/3/10.
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #8 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 027
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#9 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 027

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,541,113 tons rock/yr	0.6607	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,541,113 tons rock/yr	0.3303	 PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,541,113 tons rock/yr	0.0991	 AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			8.13156E-06	
Arsenic Compounds					0.001200			7.92827E-06	
Beryllium Compounds					0.000100			6.60689E-07	
Cadmium Compounds					0.000050			3.30345E-07	
Chromium Compounds					0.014577			9.63082E-05	
Cobalt Compounds					0.000623			4.1166E-06	
Lead Compounds					0.003000			1.98207E-05	
Manganese Compounds					0.023238			0.000153534	
Mercury Compounds					0.000002			1.21756E-08	
Nickel Compounds					0.001077			7.11512E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #9 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 028
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#10 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 028

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,486,512 tons rock/yr	0.6465	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,486,512 tons rock/yr	0.3232	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,486,512 tons rock/yr	0.0970	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			7.95684E-06	
Arsenic Compounds					0.001200			7.75792E-06	
Beryllium Compounds					0.000100			6.46493E-07	
Cadmium Compounds					0.000050			3.23247E-07	
Chromium Compounds					0.014577			9.42388E-05	
Cobalt Compounds					0.000623			4.02815E-06	
Lead Compounds					0.003000			1.93948E-05	
Manganese Compounds					0.023238			0.000150235	
Mercury Compounds					0.000002			1.19139E-08	
Nickel Compounds					0.001077			6.96223E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #10 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 029
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#11 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 029

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,350,694 tons rock/yr	0.6112	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,350,694 tons rock/yr	0.3056	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,350,694 tons rock/yr	0.0917	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			7.52222E-06	
Arsenic Compounds					0.001200			7.33417E-06	
Beryllium Compounds					0.000100			6.1118E-07	
Cadmium Compounds					0.000050			3.0559E-07	
Chromium Compounds					0.014577			8.90913E-05	
Cobalt Compounds					0.000623			3.80812E-06	
Lead Compounds					0.003000			1.83354E-05	
Manganese Compounds					0.023238			0.000142029	
Mercury Compounds					0.000002			1.12632E-08	
Nickel Compounds					0.001077			6.58194E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #11 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 030
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#12 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 030

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,499,334 tons rock/yr	0.6498	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,499,334 tons rock/yr	0.3249	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,499,334 tons rock/yr	0.0975	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			7.99787E-06	
Arsenic Compounds					0.001200			7.79792E-06	
Beryllium Compounds					0.000100			6.49827E-07	
Cadmium Compounds					0.000050			3.24913E-07	
Chromium Compounds					0.014577			9.47248E-05	
Cobalt Compounds					0.000623			4.04892E-06	
Lead Compounds					0.003000			1.94948E-05	
Manganese Compounds					0.023238			0.00015101	
Mercury Compounds					0.000002			1.19754E-08	
Nickel Compounds					0.001077			6.99813E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Note:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #12 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 031
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#13 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 031

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,310,336 tons rock/yr	0.6007	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,310,336 tons rock/yr	0.3003	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,310,336 tons rock/yr	0.0901	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			7.39308E-06	
Arsenic Compounds					0.001200			7.20825E-06	
Beryllium Compounds					0.000100			6.00687E-07	
Cadmium Compounds					0.000050			3.00344E-07	
Chromium Compounds					0.014577			8.75617E-05	
Cobalt Compounds					0.000623			3.74274E-06	
Lead Compounds					0.003000			1.80206E-05	
Manganese Compounds					0.023238			0.000139591	
Mercury Compounds					0.000002			1.10698E-08	
Nickel Compounds					0.001077			6.46894E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Note:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #13 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 032
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#14 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 032

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	–	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,488,691 tons rock/yr	0.6471	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,488,691 tons rock/yr	0.3235	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,488,691 tons rock/yr	0.0971	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	–	–	–	–	--	--	--	--	–
Carbon Monoxide (not anticipated)	–	–	–	–	--	–	–	–	–
Nitrogen Oxides (NOx) (not anticipated)	–	–	–	–	--	–	–	--	–
Non-Methane VOC (not anticipated)	–	–	–	–	--	–	–	–	–
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			7.96381E-06	
Arsenic Compounds					0.001200			7.76472E-06	
Beryllium Compounds					0.000100			6.4706E-07	
Cadmium Compounds					0.000050			3.2353E-07	
Chromium Compounds					0.014577			9.43214E-05	
Cobalt Compounds					0.000623			4.03168E-06	
Lead Compounds					0.003000			1.94118E-05	
Manganese Compounds					0.023238			0.000150367	
Mercury Compounds					0.000002			1.19244E-08	
Nickel Compounds					0.001077			6.96834E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #14 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 033
SCC: 3-03-024-04

Operation description:
Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#15 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 033

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Throughput	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.00052** lb/ton rock	3,490,313 tons rock/yr	2,472,658 tons rock/yr	0.6429	Factor based on 20 source tests performed on ID 018-033 since issuance of Permit #6067
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	3,490,313 tons rock/yr	2,472,658 tons rock/yr	0.3214	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	3,490,313 tons rock/yr	2,472,658 tons rock/yr	0.0964	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			7.91251E-06	
Arsenic Compounds					0.001200			7.71469E-06	
Beryllium Compounds					0.000100			6.42891E-07	
Cadmium Compounds					0.000050			3.21446E-07	
Chromium Compounds					0.014577			9.37137E-05	
Cobalt Compounds					0.000623			4.00571E-06	
Lead Compounds					0.003000			1.92867E-05	
Manganese Compounds					0.023238			0.000149398	
Mercury Compounds					0.000002			1.18476E-08	
Nickel Compounds					0.001077			6.92344E-06	
Selenium Compounds					0.000000			0	
Total HAPs					(%)			*0.0003*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #15 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM UNLEACHED MOLYBDENUM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 041
SCC: 3-03-024-04

Operation description:
Unleached Molybdenum plant - three dryers. This part of operation is exhausted by 1 Ducon wet dust collector.

OPERATION 209, PROCESS 426, SOURCE 041

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Annual Thru-put/runtime tons/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors	--	n/c	**0.0096** lb/ton unl Mo conc	98,550 tons unl Mo conc/yr	9,492 tons unl Mo conc/yr	0.4727	0.0455	Source Test: 2/7/12
PM-10	Non-Fugitive Point Source	SI 60 621 40 (1 unit)		n/c	**0.0279** lb/ton unl Mo conc	98,550 tons unl Mo conc/yr	9,492 tons unl Mo conc/yr	1.3766	0.1326	Source Test: 2/7/12
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00288** lb/ton unl Mo conc	98,550 tons unl Mo conc/yr	9,492 tons unl Mo conc/yr	0.1418	0.0137	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC	Non-Fugitive Point Source	Ducon wet dust collectors	--	--	**5.0800** lbs/hr	8,760 hrs/yr	8,649 hrs/yr	22.2504	21.9690	Based on source test dated 1/13&17, 1997
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.002300				1.0471E-06	
Arsenic Compounds					0.006500				2.9592E-06	
Cadmium Compounds					0.001285				5.84784E-07	
Chromium Compounds					0.001300				5.91841E-07	
Cobalt Compounds					0.002800				1.27473E-06	
Lead Compounds					0.034500				1.57065E-05	
Manganese Compounds					0.001000				4.55262E-07	
Mercury Compounds					0.000050				2.27631E-08	
Nickel Compounds					0.001000				4.55262E-07	
Selenium Compounds					0.038800				1.76642E-05	
Total HAPs					*(%)*				*0.0000*	

Notes:
1. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
2. Actual runtime of the wet scrubber used for VOC calculations

ESTIMATED AIR POLLUTANT EMISSIONS FROM UNLEACHED MOLYBDENUM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Operation description:

Unleached and Leached Molybdenum plant - three unleached and 2 leached moly sulfide concentrate bins. This part of operations is exhausted by 1 Micropulsaire fabric filter.

STACK : S 042
SCC: 3-03-024-04
OPERATION 209, PROCESS 427, SOURCE 042

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Annual Sulfide Thru-put tons/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filters SI 60 266 30,	–	Included	NA **0.0027** lb/ton	73,584 **8,760** tons unl Mo conc/yr hours of operation/yr	**44,069** 8,784 tons unl Mo conc/yr hours of operation/yr	0.0977	0.0585	Source Test Data - 5/3-4/10
PM-10	Non-Fugitive Point Source			Included	NA **0.0027** lb/ton	73,584 **8,760** tons unl Mo conc/yr hours of operation/yr	**44,069** 8,784 tons unl Mo conc/yr hours of operation/yr	0.0977	0.0585	Source Test Data - 5/3-4/10 Assume PM = PM10
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00080** lb/ton	8,760 tons unl Mo conc/yr	8,784 tons unl Mo conc/yr	0.0035	0.0035	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	–	–	–	–	--	--	--	--	--	–
Carbon Monoxide (not anticipated)	–	–	–	–	--	--	--	--	--	–
Nitrogen Oxides (NOx) (not anticipated)	–	–	–	–	--	--	--	--	--	–
Non-Methane VOC (not anticipated)	–	–	–	–	--	--	--	--	--	–
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.002300				1.34552E-06	
Arsenic Compounds					0.006500				3.80256E-06	
Cadmium Compounds					0.001285				7.51445E-07	
Chromium Compounds					0.001300				7.60512E-07	
Cobalt Compounds					0.002800				1.63803E-06	
Lead Compounds					0.034500				2.01828E-05	
Manganese Compounds					0.001000				5.85009E-07	
Mercury Compounds					0.000050				2.92505E-08	
Nickel Compounds					0.001000				5.85009E-07	
Selenium Compounds					0.038800				2.26984E-05	
Total HAPs					*(%)*				*5.23785E-05*	

Notes:

1. Maximum throughput limited to that of downstream sources: 8.4 tons/hr
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
3. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).
4. EF is average of source test data for main and alternate baghouses. 0.00151 + 0.0038 / 2

ESTIMATED AIR POLLUTANT EMISSIONS FROM MOLY SULFIDE DUMP HOPPER
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 044
SCC: 3-05-024-99

Operation Description:

Moly Sulfide Dump Hopper - 3 hoppers

OPERATION , PROCESS , SOURCE 044

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max Annual Production	Actual Annual Production tons/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source			0.12 lb/ton	73,584 tons/yr	2,399 tons thruput/yr	4.41504	0.14394	AP-42, Section 11.24-2 1/95 - Low Moisture
PM-10	Non-Fugitive Point Source			0.06 lb/ton	73,584 tons/yr	2,399 tons rock/yr	2.20752	0.07197	AP-42, Section 11.24-2 1/95 - Low Moisture
PM-2.5	Non-Fugitive Point Source			0.036 lb/ton	73,584 tons/yr	2,399 tons rock/yr	1.324512	0.043182	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--		--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--		--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--		--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--		--	--	--	--	--	--
HAPs									
Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds				0.002300				3.31062E-06	
Arsenic Compounds				0.006500				9.3561E-06	
Cadmium Compounds				0.001285				1.84891E-06	
Chromium Compounds				0.001300				1.87122E-06	
Cobalt Compounds				0.002800				4.03032E-06	
Lead Compounds				0.034500				4.96593E-05	
Manganese Compounds				0.001000				1.4394E-06	
Mercury Compounds				0.000050				7.197E-08	
Nickel Compounds				0.001000				1.4394E-06	
Selenium Compounds				0.038800				5.58487E-05	
Total HAPs				(%)				*0.000128876*	

Notes:

1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
3. Emission Factor based on AP-42, Section 11.24-2 1/95 - Low Moisture.
4. Baghouse was added in 2007 on one hopper. There are three other hoppers that are uncontrolled.
5. Throughput calculated based on total material dumped into the oversize and PDC hoppers.
6. PM 2.5 calculated as 30% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM MOLY SULFIDE DUMP HOPPER
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 044A
SCC: 3-05-024-99

Operation Description:

Moly Sulfide Dump Hopper - 1 hopper w/ baghouse

OPERATION , PROCESS , SOURCE 044A

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max Annual Production	Actual Annual Production tons/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	30,000 CFM Baghouse	0.99	0.12 **0.04458** lb/ton	73,584 tons/yr	17,242	1.64018736	0.38432418	Source Test - 6/15/10
PM-10	Non-Fugitive Point Source	30,000 CFM Baghouse	0.99	0.06 **0.02229** lb/ton	73,584 tons/yr	17,242	0.82009368	0.19216209	PM-10 = 50% PM
PM-2.5	Non-Fugitive Point Source			0.013374 lb/ton	73,584 tons/yr	17,242 tons rock/yr	0.492056208	0.115297254	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--		--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--		--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--		--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--		--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds				0.002300				8.83946E-06	
Arsenic Compounds				0.006500				2.49811E-05	
Cadmium Compounds				0.001285				4.93664E-06	
Chromium Compounds				0.001300				4.99621E-06	
Cobalt Compounds				0.002800				1.07611E-05	
Lead Compounds				0.034500				0.000132592	
Manganese Compounds				0.001000				3.84324E-06	
Mercury Compounds				0.000050				1.92162E-07	
Nickel Compounds				0.001000				3.84324E-06	
Selenium Compounds				0.038800				0.000149118	
Total HAPs				(%)				*0.000344103*	

Notes:

1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
3. Emission factor based on 99% control of AP-42 factor, Section 11.24-2 1/95 - Low Moisture
4. Baghouse was added in 2007 on one hopper. There are three other hoppers that are uncontrolled.

ESTIMATED AIR POLLUTANT EMISSIONS FROM #1 MOLY SULFIDE LOADOUT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 045
SCC: 3-05-024-01

Operation Description:

Moly Sulfide Screw Conveyor Loadout #1

OPERATION ID 209, PROCESS 461 , SOURCE 045

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Actual Annual Production	Potential Emissions	Actual Emissions	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	None	0.01 lb/ton	87,600 tons/yr	13978 tons/yr	0.438 tons/yr	0.06989 tons/yr	AP-42, Section 11.24-2 1/95 - High Moisture
PM-10	Non-Fugitive Point Source	None	0.004 lb/ton	87,600 tons/yr	13978 tons/yr	0.1752 tons/yr	0.027956 tons/yr	AP-42, Section 11.24-2 1/95 - High Moisture
PM-2.5	Non-Fugitive Point Source		0.003 lb/ton	87,600 tons/yr	13,978 tons rock/yr	0.1314	0.020967	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds			0.002300				1.60747E-06	
Arsenic Compounds			0.006500				4.54285E-06	
Cadmium Compounds			0.001285				8.97737E-07	
Chromium Compounds			0.001300				9.0857E-07	
Cobalt Compounds			0.002800				1.95692E-06	
Lead Compounds			0.034500				2.41121E-05	
Manganese Compounds			0.001000				6.989E-07	
Mercury Compounds			0.000050				3.4945E-08	
Nickel Compounds			0.001000				6.989E-07	
Selenium Compounds			0.038800				2.71173E-05	
Total HAPs			(%)				*6.25757E-05*	

Notes:

1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
3. Emission Factor: AP-42 11/24-2 1/95 - High Moisture

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MOLYDENUM SULFIDE ROASTING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Operation description:

STACK : S 048
SCC: 3-03-024-04

Sierrita moly oxide storage, screening and handling. This part of operations are exhausted by 1 Mikro Pulseaire fabric filter.
OPERATION 211, PROCESS 433, SOURCE 048

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Moly Oxide Thru-put	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filters SI 60 266 00,	--	Included	NA **0.0049** **lb/ton**	73,584 **8,760** tons Mo oxide/yr hours of operation/yr	**25,635** 8,784 tons Mo oxide/yr hours of operation/yr	0.1806	0.0629	Source Test Data - 3/7/11
PM-10	Non-Fugitive Point Source			Included	NA **0.0049** **lb/ton**	73,584 **8,760** tons Mo oxide/yr hours of operation/yr	**25,635** 8,784 tons Mo oxide/yr hours of operation/yr	0.1806	0.0629	PM-10 = 50% PM
PM-2.5	Non-Fugitive Point Source				NA **0.0015** **lb/ton**	73,584 **8,760** tons Mo oxide/yr hours of operation/yr	**25,635** 113,177,529 tons Mo oxide/yr hours of operation/yr	0.0542	0.0189	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:	--	--	--	--	--	--	--	--	--	--
Antimony Compounds					0.004000				2.51739E-06	
Arsenic Compounds					0.006500				4.09076E-06	
Cadmium Compounds					0.005100				3.20967E-06	
Chromium Compounds					0.002500				1.57337E-06	
Cobalt Compounds					0.004000				2.51739E-06	
Lead Compounds					0.032000				2.01391E-05	
Manganese Compounds					0.006000				3.77609E-06	
Mercury Compounds					0.000100				6.29348E-08	
Nickel Compounds					0.002000				1.2587E-06	
Selenium Compounds					0.004000				2.51739E-06	
Total HAPs									*4.16628E-05*	

Notes:
1. Maximum throughput 12tph but limited on roaster max throughput of 8.4tph
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Oxide
3. Emission Factor based on source test 6/13/07, 0.31 pph / 5.28 tph

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MOLYBDENUM LEACH OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 053
SCC: 3-03-024-11

Operation description:

Sierrita leached moly operations - Three sets of 2 dryers. This part of operations are exhausted by 2 Ducon wet dust collectors.
Maximum Throughput: 12 tons/hr, 4 tons/hr per each set of dryers, #1 Wet Scrubber
OPERATION 210, PROCESS 430, SOURCE 053

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Moly Sulfide Leached tons/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors	--	Included	0.018994 lb/ton lcd Mo conc	73,584 tons lcd Mo conc/yr	22,034 tons lcd Mo conc/yr	0.698827248	0.20925932	Source Test: 2/9/12
PM-10	Non-Fugitive Point Source	SI 60 621 3001 and 3002 (2 units)		Included	0.040494 lb/ton lcd Mo conc	73,584 tons lcd Mo conc/yr	22,034 tons lcd Mo conc/yr	1.489855248	0.446127561	Source Test: 2/9/12 - Method 202
PM-2.5	Non-Fugitive Point Source			n/c	-- 0.00570 lb/ton unl Mo conc	73,584 tons unl Mo conc/yr	22,034 tons unl Mo conc/yr	0.2096	0.0628	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC	Non-Fugitive Point Source	Ducon wet dust collectors	--	--	0.53 lbs/ton	73,584	22,034 tons/yr	19.49976	5.839077575	Based on source test dated 1/13&17, 1997
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.002300				4.81296E-06	
Arsenic Compounds					0.006500				1.36019E-05	
Cadmium Compounds					0.001285				2.68794E-06	
Chromium Compounds					0.001300				2.72037E-06	
Cobalt Compounds					0.002800				5.85926E-06	
Lead Compounds					0.034500				7.21945E-05	
Manganese Compounds					0.001000				2.09259E-06	
Mercury Compounds					0.000050				1.0463E-07	
Nickel Compounds					0.001000				2.09259E-06	
Selenium Compounds					0.038800				8.11926E-05	
Total HAPs					(%)				*0.000187359*	

Notes:

1. The thruput from the three sets of dryers is divided by 2. Half is apportioned to Source ID 053. Half is apportioned to Source ID 054. Only one scrubber can operate at a time.
2. pph = 0.068 PM, 0.874 PM10 (source test-11/3/09). Average feed rate to leach during test = 6.0 tph.
3. pph = 3.71 VOC, Average feed rate to leach during test = 7.0 tph, Jan 1997
4. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
5. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).
6. Max Annual Throughput based on Minor Permit Revision for FeCl Leach expansion - 8.4tph

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MOLYBDENUM LEACH OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 054
SCC: 3-03-024-11

Operation description:

Sierrita leached moly operations - Three sets of 2 dryers. This part of operations are exhausted by 2 Ducon wet dust collectors.
Maximum Throughput: 12 tons/hr, 4 tons/hr per each set of dryers
OPERATION 210, PROCESS 430, SOURCE 054

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Moly Sulfide Leached tons/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors	--	0.96	0.006233 lb/ton lcd Mo conc	73,584 tons lcd Mo conc/yr	22,034 tons lcd Mo conc/yr	0.229324536 From 2 stacks	0.068669756	Source Test: 2/8/12
PM-10	Non-Fugitive Point Source	SI 60 621 3001 and 3002 (2 units)		0.96	0.025503 lb/ton lcd Mo conc	73,584 tons lcd Mo conc/yr	22,034 tons lcd Mo conc/yr	0.938306376 From 2 stacks	0.280969803	Source Test: 2/8/12 - Method 202
PM-2.5	Non-Fugitive Point Source			n/c	-- 0.00187 lb/ton unl Mo conc	73,584 tons unl Mo conc/yr	22,034 tons unl Mo conc/yr	0.0688	0.0206	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC	Non-Fugitive Point Source	Ducon wet dust collectors	--	--	0.53 lbs/ton	73,584	22,034 tons/year	19.49976	5.839077575	Based on source test dated 1/13&17, 1997
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.002300				1.5794E-06	
Arsenic Compounds					0.006500				4.46353E-06	
Cadmium Compounds					0.001285				8.82063E-07	
Chromium Compounds					0.001300				8.92707E-07	
Cobalt Compounds					0.002800				1.92275E-06	
Lead Compounds					0.034500				2.36911E-05	
Manganese Compounds					0.001000				6.86698E-07	
Mercury Compounds					0.000050				3.43349E-08	
Nickel Compounds					0.001000				6.86698E-07	
Selenium Compounds					0.038800				2.66439E-05	
Total HAPs					(%)				*6.14831E-05*	

Notes:

1. The thruput from the three sets of dryers is divided by 2. Half is apportioned to Source ID 053. Half is apportioned to Source ID 054.
2. pph = 0.127 PM, 0.337 PM10 (source test-11/3/09). Avegrage feed rate to leach during test = 6.0 tph.
3. pph = 3.71 VOC, Average feed rate to leach during test = 7.0 tph. Jan 1997
4. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide

ESTIMATED AIR POLLUTANT EMISSIONS FROM MOLYBDENUM SULFIDE ROASTING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 058
SCC: 3-03-011-99

Operation description:

Sierrita moly sulfide roasting operations - roasters 1 and 2. During operations the roaster offgas is routed thru the pollution control equipment then out the main stack.
OPERATION 211, PROCESS 452, SOURCE 058

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Throughput	Annual Throughput (3)	Potential Emissions tons/yr	Actual Emissions (4) tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive			n/c						
Two multiple hearth roasters	Point Source	Cyclones (Buell) and Electrost.Precip.			0.367857 lb/ton sulfide	73,584 tons sulfide/yr	25,635 tons sulfide/yr	13.53419474	4.715071472	Source test results, Method 5 + 202 2/8/2013
PM-10	Non-Fugitive		--	n/c						
Two multiple hearth roasters	Point Source	Cyclones (Buell) and Electrost.Precip.			0.367857 lb/ton sulfide	73,584 tons sulfide/yr	25,635 tons sulfide/yr	13.53419474	4.715071472	Source test results, Method 5 + 202 2/8/2013
Sulfur Dioxide	Non-Fugitive	2 SCRUBBER		n/c						
Two multiple hearth roasters	Point Source	(UOP Model 500)			16.12021858 PPH per CEMS	8,760 Hours/Year	Hours/Year	70.60655738	70.80	CEMS
Excess Emission Reports										
Total								70.60655738	70.8	
Carbon Monoxide	Non-Fugitive									
Two multiple hearth roasters	Point Source	--	--	N/A	--	--	--	--	--	
Combustion-derived emissions from 2 roasters					0.000084 lbs/cft	298,577,600 cft/yr	113,177,529 cft/yr	12.5402592	4.753456218	AP-42, Table 1.4-2, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive									
Two multiple hearth roasters	Point Source	--	--	N/A	--	--	--	--	--	
Combustion-derived emissions from 2 roasters					0.0001 lbs/cft	298,577,600 cft/yr	113,177,529 cft/yr	14.92888	5.65887645	AP-42, Table 1.4-2, 7/98
Non-Methane VOC	Non-Fugitive									
Two multiple hearth roasters	Point Source	--	--	N/A	--	--	--	--	--	
Combustion-derived emissions from 2 roasters					0.0000055 lbs/cft	298,577,600 cft/yr	113,177,529 cft/yr	0.8210884	0.311238205	AP-42, Table 1.4-3, 7/98
Stack ID 058 Continued										
HAPs										
Combustion-derived emissions from 2 roasters										
2-Methylnapthalene					2.4E-11	298,577,600	113,177,529	3.58293E-06	1.35813E-06	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene					1.8E-12	298,577,600	113,177,529	2.6872E-07	1.0186E-07	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene					1.6E-11	298,577,600	113,177,529	2.38862E-06	9.0542E-07	AP-42, Table 1.4-3, 7/98
Acenapthene					1.8E-12	298,577,600	113,177,529	2.6872E-07	1.0186E-07	AP-42, Table 1.4-3, 7/98
Acenapthylene					1.8E-12	298,577,600	113,177,529	2.6872E-07	1.0186E-07	AP-42, Table 1.4-3, 7/98
Anthracene					2.4E-12	298,577,600	113,177,529	3.58293E-07	1.35813E-07	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene					1.8E-12	298,577,600	113,177,529	2.6872E-07	1.0186E-07	AP-42, Table 1.4-3, 7/98
Benzene					2.1E-09	298,577,600	113,177,529	0.000313506	0.000118836	AP-42, Table 1.4-3, 7/98

Benzo(a)pyrene					1.2E-12	298,577,600	113,177,529	1.79147E-07	6.79065E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene					1.8E-12	298,577,600	113,177,529	2.6872E-07	1.0186E-07	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene					1.2E-12	298,577,600	113,177,529	1.79147E-07	6.79065E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene					1.8E-12	298,577,600	113,177,529	2.6872E-07	1.0186E-07	AP-42, Table 1.4-3, 7/98
Chrysene					1.8E-12	298,577,600	113,177,529	2.6872E-07	1.0186E-07	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene					1.2E-12	298,577,600	113,177,529	1.79147E-07	6.79065E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene					1.2E-09	298,577,600	113,177,529	0.000179147	6.79065E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene					3E-12	298,577,600	113,177,529	4.47866E-07	1.69766E-07	AP-42, Table 1.4-3, 7/98
Fluorene					2.8E-12	298,577,600	113,177,529	4.18009E-07	1.58449E-07	AP-42, Table 1.4-3, 7/98
Formaldehyde					0.000000075	298,577,600	113,177,529	0.01119666	0.004244157	AP-42, Table 1.4-3, 7/98
Hexane					0.0000018	298,577,600	113,177,529	0.26871984	0.101859776	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene					1.8E-12	298,577,600	113,177,529	2.6872E-07	1.0186E-07	AP-42, Table 1.4-3, 7/98
Napthalene					6.1E-10	298,577,600	113,177,529	9.10662E-05	3.45191E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene					1.7E-11	298,577,600	113,177,529	2.53791E-06	9.62009E-07	AP-42, Table 1.4-3, 7/98
Pyrene					5E-12	298,577,600	113,177,529	7.46444E-07	2.82944E-07	AP-42, Table 1.4-3, 7/98
Toluene					3.4E-09	298,577,600	113,177,529	0.000507582	0.000192402	AP-42, Table 1.4-3, 7/98
Arsenic					2E-10	298,577,600	113,177,529	2.98578E-05	1.13178E-05	AP-42, Table 1.4-3, 7/98
Beryllium					1.2E-11	298,577,600	113,177,529	1.79147E-06	6.79065E-07	AP-42, Table 1.4-3, 7/98
Cadmium					1.1E-09	298,577,600	113,177,529	0.000164218	6.22476E-05	AP-42, Table 1.4-3, 7/98
Chromium					1.4E-09	298,577,600	113,177,529	0.000209004	7.92243E-05	AP-42, Table 1.4-3, 7/98
Cobalt					8.4E-11	298,577,600	113,177,529	1.25403E-05	4.75346E-06	AP-42, Table 1.4-3, 7/98
Manganese					3.8E-10	298,577,600	113,177,529	5.67297E-05	2.15037E-05	AP-42, Table 1.4-3, 7/98
Mercury					2.6E-10	298,577,600	113,177,529	3.88151E-05	1.47131E-05	AP-42, Table 1.4-3, 7/98
Nickel					2.1E-09	298,577,600	113,177,529	0.000313506	0.000118836	AP-42, Table 1.4-3, 7/98
Selenium					2.4E-11	298,577,600	113,177,529	3.58293E-06	1.35813E-06	AP-42, Table 1.4-3, 7/98
Subtotal (Natural Gas HAPs)					lbs/cft	cft/yr	cft/yr	*0.281851014*	*0.106837222*	
HAP metals as % of PM										
Antimony Compounds					0.00315				0.000148525	
Arsenic Compounds					0.0065				0.00030648	
Cadmium Compounds					0.00319225				0.000150517	
Chromium Compounds					0.0019				8.95864E-05	
Cobalt Compounds					0.0034				0.000160312	
Lead Compounds					0.03325				0.001567761	
Manganese Compounds					0.0035				0.000165028	
Mercury Compounds					0.000075				3.5363E-06	
Nickel Compounds					0.0015				7.07261E-05	
Selenium Compounds					0.0214				0.001009025	
Subtotal (HAPs from PM)					(%)				*0.003671496*	
HAPs Total								*0.281020968*	*0.110508718*	

Notes:

1. Actual SO2 emissions from CEMS Data
2. Emission Factors for PM based on source compliance test results (4/20/09)
3. Maximum capacity is 298,577,600 cft/year. Assume a natural gas heating value of 1020 BTU/scf
Maximum Heat Input Capacity = 34.7658849 MMBtu/hr
Therefore, use EF 1.4 for small boilers (<100 MMBtu/hr heat input)
4. Actual emissions includes any reported releases from excess emission reports.
5. HAPs Source: Tim Fisher (TRI RY 2009 Files). Average of moly oxide and moly sulfide assays.
6. As all emissions from the Roaster report to the main stack, counting PM and PM10 generated as a result of combustion sources would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA CANNERY OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 059
SCC: 3-03-024-04

Operation description:

Sierrita cannery operations. This part of operations is exhausted by 1 Wheelabrator fabric filter.
OPERATION 214, PROCESS 436, SOURCE 059

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Annual Moly Oxide Thru-Put	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Wheelabrator Model 168 DW fabric filter	--	0.9935	0.1200 **0.2440** lb/ton Moly	105,120 tons MoO/MoS/yr	0 tons MoO & MoS pkgd/yr	12.8246	0.0000	Source Test Data - 5/21/07
PM-10	Non-Fugitive Point Source	SI 65 266 15 (1 unit)		0.9935	0.0600 **0.2440** lb/ton Moly	105120 tons MoO/MoS/yr	0 tons MoO & MoS pkgd/yr	12.8246	0.0000	Source Test Data - 5/21/07
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:	--	--	--	--	--	--	--	--	--	--
Antimony Compounds					0.004000				0	
Arsenic Compounds					0.006500				0	
Cadmium Compounds					0.005100				0	
Chromium Compounds					0.002500				0	
Cobalt Compounds					0.004000				0	
Lead Compounds					0.032000				0	
Manganese Compounds					0.006000				0	
Mercury Compounds					0.000100				0	
Nickel Compounds					0.002000				0	
Selenium Compounds					0.004000				0	
Total HAPs									*0*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Oxide
4. Emission Factor based on stack test 5/21/07, 1.24 pph / 5.71 tph

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA CANNERY OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 059
SCC: 3-03-024-04

Operation description:

Sierrita cannery operations. This part of operations is exhausted by 1 FARR cartridge-style unit
OPERATION 214, PROCESS 436, SOURCE 059

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Annual Moly Oxide Thru-Put	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source		–		0.1200 **0.0039** lb/ton Moly	105,120 tons MoO/MoS/yr	33,824 tons MoO & MoS pkgd/yr	0.2029	0.0653	Source Test Data - 3/30/12
PM-10	Non-Fugitive Point Source				0.0600 **0.0039** lb/ton Moly	105120 tons MoO/MoS/yr	33823.77 tons MoO & MoS pkgd/yr	0.2029	0.0653	Source Test Data - 3/30/12
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs	--	--	--	--	--	--	--	--	--	--
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.004000				2.6112E-06	
Arsenic Compounds					0.006500				4.24319E-06	
Cadmium Compounds					0.005100				3.32927E-06	
Chromium Compounds					0.002500				1.632E-06	
Cobalt Compounds					0.004000				2.6112E-06	
Lead Compounds					0.032000				2.08896E-05	
Manganese Compounds					0.006000				3.91679E-06	
Mercury Compounds					0.000100				6.52799E-08	
Nickel Compounds					0.002000				1.3056E-06	
Selenium Compounds					0.004000				2.6112E-06	
Total HAPs									*4.32153E-05*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Oxide
4. Wheel-a-brator replaced with FARR unit: 10/9/11

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-Misc
SCC: 1-02-006-03

Operation description:

Remaining natural gas fired equipment (heaters, etc.)

OPERATION 223, PROCESS 448, SOURCE 062-Misc

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	66,576,000 cft/yr	43,152,413 cft/yr	0.2529888	0.163979169	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	66,576,000 cft/yr	43,152,413 cft/yr	0.2529888	0.163979169	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	66,576,000 cft/yr	43,152,413 cft/yr	0.2529888	0.163979169	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	66,576,000 cft/yr	43,152,413 cft/yr	0.0199728	0.012945724	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	66,576,000 cft/yr	43,152,413 cft/yr	2.796192	1.812401346	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	66,576,000 cft/yr	43,152,413 cft/yr	3.3288	2.15762065	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	66,576,000 cft/yr	43,152,413 cft/yr	0.183084	0.118669136	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source							
2-Methylnapthalene			2.4E-11	66,576,000	43,152,413	7.98912E-07	5.17829E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	66,576,000	43,152,413	5.99184E-08	3.88372E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	66,576,000	43,152,413	5.32608E-07	3.45219E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	66,576,000	43,152,413	5.99184E-08	3.88372E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	66,576,000	43,152,413	5.99184E-08	3.88372E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	66,576,000	43,152,413	7.98912E-08	5.17829E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	66,576,000	43,152,413	5.99184E-08	3.88372E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	66,576,000	43,152,413	6.99048E-05	4.531E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	66,576,000	43,152,413	3.99456E-08	2.58914E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	66,576,000	43,152,413	5.99184E-08	3.88372E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	66,576,000	43,152,413	3.99456E-08	2.58914E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	66,576,000	43,152,413	5.99184E-08	3.88372E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	66,576,000	43,152,413	5.99184E-08	3.88372E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	66,576,000	43,152,413	3.99456E-08	2.58914E-08	AP-42, Table 1.4-3, 7/98

Dichlorobenzene			1.2E-09	66,576,000	43,152,413	3.99456E-05	2.58914E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	66,576,000	43,152,413	9.9864E-08	6.47286E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	66,576,000	43,152,413	9.32064E-08	6.04134E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	66,576,000	43,152,413	0.0024966	0.001618215	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	66,576,000	43,152,413	0.0599184	0.038837172	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	66,576,000	43,152,413	5.99184E-08	3.88372E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	66,576,000	43,152,413	2.03057E-05	1.31615E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	66,576,000	43,152,413	5.65896E-07	3.66796E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	66,576,000	43,152,413	1.6644E-07	1.07881E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	66,576,000	43,152,413	0.000113179	7.33591E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	66,576,000	43,152,413	6.6576E-06	4.31524E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	66,576,000	43,152,413	3.99456E-07	2.58914E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	66,576,000	43,152,413	3.66168E-05	2.37338E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	66,576,000	43,152,413	4.66032E-05	3.02067E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	66,576,000	43,152,413	2.79619E-06	1.8124E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	66,576,000	43,152,413	1.26494E-05	8.19896E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	66,576,000	43,152,413	8.65488E-06	5.60981E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	66,576,000	43,152,413	6.99048E-05	4.531E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	66,576,000	43,152,413	7.98912E-07	5.17829E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.062846353*	*0.040734976*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-062
SCC: 1-02-006-03

Operation description:

East boiler - Parker boiler Model 150, natural gas-fired, used for process steam operations.
Maximum rated heat input capacity: 8.3 MMBtu/hr.
OPERATION 217, PROCESS 442, SOURCE 062-062

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	72,708,000 cft/yr	529,800 cft/yr	0.2762904	0.00201324	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	72,708,000 cft/yr	529,800 cft/yr	0.2762904	0.00201324	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	72,708,000 cft/yr	529,800 cft/yr	0.2762904	0.00201324	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	72,708,000 cft/yr	529,800 cft/yr	0.0218124	0.00015894	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	72,708,000 cft/yr	529,800 cft/yr	3.053736	0.0222516	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	72,708,000 cft/yr	529,800 cft/yr	3.6354	0.02649	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	72,708,000 cft/yr	529,800 cft/yr	0.199947	0.00145695	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source							
2-Methylnapthalene			2.4E-11	72,708,000	529,800	8.72496E-07	6.3576E-09	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	72,708,000	529,800	6.54372E-08	4.7682E-10	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	72,708,000	529,800	5.81664E-07	4.2384E-09	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	72,708,000	529,800	6.54372E-08	4.7682E-10	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	72,708,000	529,800	6.54372E-08	4.7682E-10	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	72,708,000	529,800	8.72496E-08	6.3576E-10	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	72,708,000	529,800	6.54372E-08	4.7682E-10	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	72,708,000	529,800	7.63434E-05	5.5629E-07	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	72,708,000	529,800	4.36248E-08	3.1788E-10	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	72,708,000	529,800	6.54372E-08	4.7682E-10	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	72,708,000	529,800	4.36248E-08	3.1788E-10	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	72,708,000	529,800	6.54372E-08	4.7682E-10	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	72,708,000	529,800	6.54372E-08	4.7682E-10	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	72,708,000	529,800	4.36248E-08	3.1788E-10	AP-42, Table 1.4-3, 7/98

Dichlorobenzene			1.2E-09	72,708,000	529,800	4.36248E-05	3.1788E-07	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	72,708,000	529,800	1.09062E-07	7.947E-10	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	72,708,000	529,800	1.01791E-07	7.4172E-10	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	72,708,000	529,800	0.00272655	1.98675E-05	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	72,708,000	529,800	0.0654372	0.00047682	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	72,708,000	529,800	6.54372E-08	4.7682E-10	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	72,708,000	529,800	2.21759E-05	1.61589E-07	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	72,708,000	529,800	6.18018E-07	4.5033E-09	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	72,708,000	529,800	1.8177E-07	1.3245E-09	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	72,708,000	529,800	0.000123604	9.0066E-07	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	72,708,000	529,800	7.2708E-06	5.298E-08	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	72,708,000	529,800	4.36248E-07	3.1788E-09	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	72,708,000	529,800	3.99894E-05	2.9139E-07	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	72,708,000	529,800	5.08956E-05	3.7086E-07	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	72,708,000	529,800	3.05374E-06	2.22516E-08	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	72,708,000	529,800	1.38145E-05	1.00662E-07	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	72,708,000	529,800	9.45204E-06	6.8874E-08	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	72,708,000	529,800	7.63434E-05	5.5629E-07	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	72,708,000	529,800	8.72496E-07	6.3576E-09	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.068634832*	*0.00050012*	

Notes:

Max. Annual Prod (MBTU's/Hr)	8.466
Max. Allowable PM Rate (R18-2-724 (C))	5.248051851

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-064
SCC: 1-02-006-03

Operation description:

East Therminol heater - American Hydrotherm 500- Make, natural gas-fired, used for heating recirculating oil.
Maximum rated heat input capacity: 6.25 MMBtu/hr.
OPERATION 210, PROCESS 454, SOURCE 062-064

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	106,300 cft/yr	0.20805	0.00040394	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	106,300 cft/yr	0.20805	0.00040394	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	106,300 cft/yr	0.20805	0.00040394	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	54,750,000 cft/yr	106,300 cft/yr	0.016425	0.00003189	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	54,750,000 cft/yr	106,300 cft/yr	2.2995	0.0044646	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	54,750,000 cft/yr	106,300 cft/yr	2.7375	0.005315	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	54,750,000 cft/yr	106,300 cft/yr	0.1505625	0.000292325	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source							
2-Methylnapthalene			2.4E-11	54,750,000	106,300	0.000000657	1.2756E-09	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	54,750,000	106,300	4.9275E-08	9.567E-11	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	54,750,000	106,300	0.000000438	8.504E-10	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	54,750,000	106,300	4.9275E-08	9.567E-11	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	54,750,000	106,300	4.9275E-08	9.567E-11	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	54,750,000	106,300	6.57E-08	1.2756E-10	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	54,750,000	106,300	4.9275E-08	9.567E-11	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	54,750,000	106,300	5.74875E-05	1.11615E-07	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	54,750,000	106,300	3.285E-08	6.378E-11	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	54,750,000	106,300	4.9275E-08	9.567E-11	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	54,750,000	106,300	3.285E-08	6.378E-11	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	54,750,000	106,300	4.9275E-08	9.567E-11	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	54,750,000	106,300	4.9275E-08	9.567E-11	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	54,750,000	106,300	3.285E-08	6.378E-11	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	54,750,000	106,300	0.00003285	6.378E-08	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	54,750,000		106,300	8.2125E-08	1.5945E-10 AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	54,750,000		106,300	7.665E-08	1.4882E-10 AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	54,750,000		106,300	0.002053125	3.98625E-06 AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	54,750,000		106,300	0.049275	0.00009567 AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	54,750,000		106,300	4.9275E-08	9.567E-11 AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	54,750,000		106,300	1.66988E-05	3.24215E-08 AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	54,750,000		106,300	4.65375E-07	9.0355E-10 AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	54,750,000		106,300	1.36875E-07	2.6575E-10 AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	54,750,000		106,300	0.000093075	1.8071E-07 AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	54,750,000		106,300	0.000005475	1.063E-08 AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	54,750,000		106,300	3.285E-07	6.378E-10 AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	54,750,000		106,300	3.01125E-05	5.8465E-08 AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	54,750,000		106,300	0.000038325	7.441E-08 AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	54,750,000		106,300	2.2995E-06	4.4646E-09 AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	54,750,000		106,300	1.04025E-05	2.0197E-08 AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	54,750,000		106,300	7.1175E-06	1.3819E-08 AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	54,750,000		106,300	5.74875E-05	1.11615E-07 AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	54,750,000		106,300	0.000000657	1.2756E-09 AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		cft/yr		
HAPs Total							0.051682856	0.000100345

Notes:

Max. Annual Prod (MBTU's/Hr)	6.375
Max. Allowable PM Rate (R18-2-724 (C))	4.219478686

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-065
SCC: 1-02-006-03

Operation description:

West Hot-oil heater - American Hydrotherm 500- Make, natural gas-fired, used for heating recirculating oil.
Maximum rated heat input capacity: 6.25 MMBtu/hr.
OPERATION 209, PROCESS 453, SOURCE 062-065

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	343,800 cft/yr	0.20805	0.00130644	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	343,800 cft/yr	0.20805	0.00130644	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	343,800 cft/yr	0.20805	0.00130644	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	54,750,000 cft/yr	343,800 cft/yr	0.016425	0.00010314	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	54,750,000 cft/yr	343,800 cft/yr	2.2995	0.0144396	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	54,750,000 cft/yr	343,800 cft/yr	2.7375	0.01719	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	54,750,000 cft/yr	343,800 cft/yr	0.1505625	0.00094545	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source							
2-Methylnapthalene			2.4E-11	54,750,000	343,800	0.000000657	4.1256E-09	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	54,750,000	343,800	4.9275E-08	3.0942E-10	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	54,750,000	343,800	0.000000438	2.7504E-09	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	54,750,000	343,800	4.9275E-08	3.0942E-10	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	54,750,000	343,800	4.9275E-08	3.0942E-10	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	54,750,000	343,800	6.57E-08	4.1256E-10	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	54,750,000	343,800	4.9275E-08	3.0942E-10	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	54,750,000	343,800	5.74875E-05	3.6099E-07	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	54,750,000	343,800	3.285E-08	2.0628E-10	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	54,750,000	343,800	4.9275E-08	3.0942E-10	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	54,750,000	343,800	3.285E-08	2.0628E-10	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	54,750,000	343,800	4.9275E-08	3.0942E-10	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	54,750,000	343,800	4.9275E-08	3.0942E-10	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	54,750,000	343,800	3.285E-08	2.0628E-10	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	54,750,000	343,800	0.00003285	2.0628E-07	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	54,750,000	343,800	8.2125E-08	5.157E-10	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	54,750,000	343,800	7.665E-08	4.8132E-10	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	54,750,000	343,800	0.002053125	1.28925E-05	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	54,750,000	343,800	0.049275	0.00030942	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	54,750,000	343,800	4.9275E-08	3.0942E-10	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	54,750,000	343,800	1.66988E-05	1.04859E-07	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	54,750,000	343,800	4.65375E-07	2.9223E-09	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	54,750,000	343,800	1.36875E-07	8.595E-10	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	54,750,000	343,800	0.000093075	5.8446E-07	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	54,750,000	343,800	0.000005475	3.438E-08	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	54,750,000	343,800	3.285E-07	2.0628E-09	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	54,750,000	343,800	3.01125E-05	1.8909E-07	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	54,750,000	343,800	0.000038325	2.4066E-07	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	54,750,000	343,800	2.2995E-06	1.44396E-08	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	54,750,000	343,800	1.04025E-05	6.5322E-08	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	54,750,000	343,800	7.1175E-06	4.4694E-08	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	54,750,000	343,800	5.74875E-05	3.6099E-07	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	54,750,000	343,800	0.000000657	4.1256E-09	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						0.051682856	0.00032454	

Notes:

Max. Annual Prod (MBTU's/Hr)	6.375
Max. Allowable PM Rate (R18-2-724 (C))	4.219478686

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-080
SCC: 1-02-006-03

Operation description:

Rhenium plant hot water heaters - natural gas-fired, used for process operations.
Total maximum rated heat input capacity: 1.2 MMBtu/hr.
OPERATION 212, PROCESS 434, SOURCE 062-080

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
						tons/yr	tons/yr	
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076	10,512,000	46,500	0.0399456	0.0001767	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	lbs/cft 0.0000076	cft/yr 10,512,000	cft/yr 46,500	0.0399456	0.0001767	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	lbs/cft 0.0000076	cft/yr 10,512,000	cft/yr 46,500	0.0399456	0.0001767	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	lbs/cft 0.0000006	cft/yr 10,512,000	cft/yr 46,500	0.0031536	0.00001395	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	lbs/cft 0.000084	cft/yr 10,512,000	cft/yr 46,500	0.441504	0.001953	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	lbs/cft 0.0001	cft/yr 10,512,000	cft/yr 46,500	0.5256	0.002325	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	lbs/cft 0.0000055	cft/yr 10,512,000	cft/yr 46,500	0.028908	0.000127875	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source		lbs/cft	cft/yr	cft/yr			
2-Methylnapthalene			2.4E-11	10,512,000	46,500	1.26144E-07	5.58E-10	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	10,512,000	46,500	9.4608E-09	4.185E-11	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	10,512,000	46,500	8.4096E-08	3.72E-10	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	10,512,000	46,500	9.4608E-09	4.185E-11	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	10,512,000	46,500	9.4608E-09	4.185E-11	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	10,512,000	46,500	1.26144E-08	5.58E-11	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	10,512,000	46,500	9.4608E-09	4.185E-11	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	10,512,000	46,500	1.10376E-05	4.8825E-08	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	10,512,000	46,500	6.3072E-09	2.79E-11	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	10,512,000	46,500	9.4608E-09	4.185E-11	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	10,512,000	46,500	6.3072E-09	2.79E-11	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	10,512,000	46,500	9.4608E-09	4.185E-11	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	10,512,000	46,500	9.4608E-09	4.185E-11	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	10,512,000	46,500	6.3072E-09	2.79E-11	AP-42, Table 1.4-3, 7/98

Dichlorobenzene			1.2E-09	10,512,000	46,500	6.3072E-06	2.79E-08	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	10,512,000	46,500	1.5768E-08	6.975E-11	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	10,512,000	46,500	1.47168E-08	6.51E-11	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	10,512,000	46,500	0.0003942	1.74375E-06	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	10,512,000	46,500	0.0094608	0.00004185	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	10,512,000	46,500	9.4608E-09	4.185E-11	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	10,512,000	46,500	3.20616E-06	1.41825E-08	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	10,512,000	46,500	8.9352E-08	3.9525E-10	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	10,512,000	46,500	2.628E-08	1.1625E-10	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	10,512,000	46,500	1.78704E-05	7.905E-08	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	10,512,000	46,500	1.0512E-06	4.65E-09	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	10,512,000	46,500	6.3072E-08	2.79E-10	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	10,512,000	46,500	5.7816E-06	2.5575E-08	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	10,512,000	46,500	7.3584E-06	3.255E-08	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	10,512,000	46,500	4.41504E-07	1.953E-09	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	10,512,000	46,500	1.99728E-06	8.835E-09	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	10,512,000	46,500	1.36656E-06	6.045E-09	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	10,512,000	46,500	1.10376E-05	4.8825E-08	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	10,512,000	46,500	1.26144E-07	5.58E-10	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.009923108*	*4.3895E-05*	

Notes:

Max. Annual Prod (MBTU's/Hr)	1.224
Max. Allowable PM Rate (R18-2-724 (C))	1.186089448

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-081
SCC: 1-02-006-03

Operation description:

Change room - Parker boiler, natural gas fired, used for process steam operations.
Maximum rated heat input capacity: 2.0 MMBtu/hr
OPERATION 220, PROCESS 445, SOURCE 062-081

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	17,520,000 cft/yr	8,760,000 cft/yr	0.066576	0.033288	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	17,520,000 cft/yr	8,760,000 cft/yr	0.066576	0.033288	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	17,520,000 cft/yr	8,760,000 cft/yr	0.066576	0.033288	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	17,520,000 cft/yr	8,760,000 cft/yr	0.005256	0.002628	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	17,520,000 cft/yr	8,760,000 cft/yr	0.73584	0.36792	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	17,520,000 cft/yr	8,760,000 cft/yr	0.876	0.438	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	17,520,000 cft/yr	8,760,000 cft/yr	0.04818	0.02409	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive							
2-Methylnapthalene	Point Source		2.4E-11	17,520,000	8,760,000	2.1024E-07	1.0512E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	17,520,000	8,760,000	1.5768E-08	7.884E-09	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	17,520,000	8,760,000	1.4016E-07	7.008E-08	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	17,520,000	8,760,000	1.5768E-08	7.884E-09	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	17,520,000	8,760,000	1.5768E-08	7.884E-09	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	17,520,000	8,760,000	2.1024E-08	1.0512E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	17,520,000	8,760,000	1.5768E-08	7.884E-09	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	17,520,000	8,760,000	0.000018396	0.000009198	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	17,520,000	8,760,000	1.0512E-08	5.256E-09	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	17,520,000	8,760,000	1.5768E-08	7.884E-09	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	17,520,000	8,760,000	1.0512E-08	5.256E-09	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	17,520,000	8,760,000	1.5768E-08	7.884E-09	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	17,520,000	8,760,000	1.5768E-08	7.884E-09	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	17,520,000	8,760,000	1.0512E-08	5.256E-09	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	17,520,000	8,760,000	0.000010512	0.000005256	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	17,520,000	8,760,000	2.628E-08	1.314E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	17,520,000	8,760,000	2.4528E-08	1.2264E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	17,520,000	8,760,000	0.000657	0.0003285	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	17,520,000	8,760,000	0.015768	0.007884	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	17,520,000	8,760,000	1.5768E-08	7.884E-09	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	17,520,000	8,760,000	5.3436E-06	2.6718E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	17,520,000	8,760,000	1.4892E-07	7.446E-08	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	17,520,000	8,760,000	4.38E-08	2.19E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	17,520,000	8,760,000	0.000029784	0.000014892	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	17,520,000	8,760,000	0.000001752	0.000000876	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	17,520,000	8,760,000	1.0512E-07	5.256E-08	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	17,520,000	8,760,000	0.000009636	0.00004818	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	17,520,000	8,760,000	0.000012264	0.000006132	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	17,520,000	8,760,000	7.3584E-07	3.6792E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	17,520,000	8,760,000	3.3288E-06	1.6644E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	17,520,000	8,760,000	2.2776E-06	1.1388E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	17,520,000	8,760,000	0.000018396	0.000009198	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	17,520,000	8,760,000	2.1024E-07	1.0512E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.016538514*	*0.008269257*	

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-082
SCC: 1-02-006-03

Operation description:

SX1 - Parker boiler, natural gas fired, used for heating solutions. NOT IN USE
Maximum rated heat input capacity: 2.6 MMBtu/hr
OPERATION 215, PROCESS 439, SOURCE 062-082

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	22,776,000 cft/yr	0 cft/yr	0.0865488	0	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	22,776,000 cft/yr	0 cft/yr	0.0865488	0	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	22,776,000 cft/yr	0 cft/yr	0.0865488	0	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	22,776,000 cft/yr	0 cft/yr	0.0068328	0	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	22,776,000 cft/yr	0 cft/yr	0.956592	0	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	22,776,000 cft/yr	0 cft/yr	1.1388	0	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	22,776,000 cft/yr	0 cft/yr	0.062634	0	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive							
2-Methylnapthalene	Point Source		2.4E-11	22,776,000	0	2.73312E-07	0	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	22,776,000	0	2.04984E-08	0	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	22,776,000	0	1.82208E-07	0	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	22,776,000	0	2.04984E-08	0	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	22,776,000	0	2.04984E-08	0	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	22,776,000	0	2.73312E-08	0	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	22,776,000	0	2.04984E-08	0	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	22,776,000	0	2.39148E-05	0	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	22,776,000	0	1.36656E-08	0	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	22,776,000	0	2.04984E-08	0	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	22,776,000	0	1.36656E-08	0	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	22,776,000	0	2.04984E-08	0	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	22,776,000	0	2.04984E-08	0	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	22,776,000	0	1.36656E-08	0	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	22,776,000	0	1.36656E-05	0	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	22,776,000	0	3.4164E-08	0	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	22,776,000	0	3.18864E-08	0	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	22,776,000	0	0.0008541	0	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	22,776,000	0	0.0204984	0	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	22,776,000	0	2.04984E-08	0	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	22,776,000	0	6.94668E-06	0	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	22,776,000	0	1.93596E-07	0	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	22,776,000	0	5.694E-08	0	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	22,776,000	0	3.87192E-05	0	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	22,776,000	0	2.2776E-06	0	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	22,776,000	0	1.36656E-07	0	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	22,776,000	0	1.25268E-05	0	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	22,776,000	0	1.59432E-05	0	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	22,776,000	0	9.56592E-07	0	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	22,776,000	0	4.32744E-06	0	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	22,776,000	0	2.96088E-06	0	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	22,776,000	0	2.39148E-05	0	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	22,776,000	0	2.73312E-07	0	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.021500068*	*0*	

Notes:

Max. Annual Prod (MBTU's/Hr)	2.652
Max. Allowable PM Rate (R18-2-724 (C))	2.149520388

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-083
SCC: 1-02-006-03

Operation description:

Zinc pot heaters, natural gas-fired, used for relining crusher components using zinc.
Maximum rated heat input capacity: 0.6 MMBtu/hr -- NOT CURRENTLY IN USE
OPERATION 221, PROCESS 446, SOURCE 062-083

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	5,256,000 cft/yr	0 cft/yr	0.0199728	0	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	5,256,000 cft/yr	0 cft/yr	0.0199728	0	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	5,256,000 cft/yr	0 cft/yr	0.0199728	0	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	5,256,000 cft/yr	0 cft/yr	0.0015768	0	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	5,256,000 cft/yr	0 cft/yr	0.220752	0	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	5,256,000 cft/yr	0 cft/yr	0.2628	0	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	5,256,000 cft/yr	0 cft/yr	0.014454	0	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive							
2-Methylnapthalene	Point Source		2.4E-11	5,256,000	0	6.3072E-08	0	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	5,256,000	0	4.7304E-09	0	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	5,256,000	0	4.2048E-08	0	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	5,256,000	0	4.7304E-09	0	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	5,256,000	0	4.7304E-09	0	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	5,256,000	0	6.3072E-09	0	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	5,256,000	0	4.7304E-09	0	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	5,256,000	0	5.5188E-06	0	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	5,256,000	0	3.1536E-09	0	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	5,256,000	0	4.7304E-09	0	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	5,256,000	0	3.1536E-09	0	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	5,256,000	0	4.7304E-09	0	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	5,256,000	0	4.7304E-09	0	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	5,256,000	0	3.1536E-09	0	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	5,256,000	0	3.1536E-06	0	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	5,256,000	0	7.884E-09	0	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	5,256,000	0	7.3584E-09	0	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	5,256,000	0	0.0001971	0	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	5,256,000	0	0.0047304	0	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	5,256,000	0	4.7304E-09	0	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	5,256,000	0	1.60308E-06	0	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	5,256,000	0	4.4676E-08	0	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	5,256,000	0	1.314E-08	0	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	5,256,000	0	8.9352E-06	0	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	5,256,000	0	5.256E-07	0	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	5,256,000	0	3.1536E-08	0	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	5,256,000	0	2.8908E-06	0	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	5,256,000	0	3.6792E-06	0	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	5,256,000	0	2.20752E-07	0	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	5,256,000	0	9.9864E-07	0	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	5,256,000	0	6.8328E-07	0	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	5,256,000	0	5.5188E-06	0	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	5,256,000	0	6.3072E-08	0	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.004961554*	*0*	

Notes:

Max. Annual Prod (MBTU's/Hr)	0.612
Max. Allowable PM Rate (R18-2-724 (C))	0.69602586

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-084
SCC: 1-02-006-02

Operation description:

West boiler - Parker Model 150, natural gas-fired, used for process steam operations.
Maximum rated heat input capacity: 6.3 MMBtu/hr.
OPERATION 222, PROCESS 447, SOURCE 062-084

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	53,580,583 cft/yr	28,000 cft/yr	0.203606214	0.0001064	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	53,580,583 cft/yr	28,000 cft/yr	0.203606214	0.0001064	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	53,580,583 cft/yr	28,000 cft/yr	0.203606214	0.0001064	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	53,580,583 cft/yr	28,000 cft/yr	0.016074175	0.0000084	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	53,580,583 cft/yr	28,000 cft/yr	2.250384466	0.001176	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	53,580,583 cft/yr	28,000 cft/yr	2.679029126	0.0014	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	53,580,583 cft/yr	28,000 cft/yr	0.147346602	0.000077	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source							
2-Methylnapthalene			2.4E-11	53,580,583	28,000	6.42967E-07	3.36E-10	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	53,580,583	28,000	4.82225E-08	2.52E-11	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	53,580,583	28,000	4.28645E-07	2.24E-10	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	53,580,583	28,000	4.82225E-08	2.52E-11	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	53,580,583	28,000	4.82225E-08	2.52E-11	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	53,580,583	28,000	6.42967E-08	3.36E-11	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	53,580,583	28,000	4.82225E-08	2.52E-11	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	53,580,583	28,000	5.62596E-05	2.94E-08	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	53,580,583	28,000	3.21483E-08	1.68E-11	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	53,580,583	28,000	4.82225E-08	2.52E-11	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	53,580,583	28,000	3.21483E-08	1.68E-11	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	53,580,583	28,000	4.82225E-08	2.52E-11	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	53,580,583	28,000	4.82225E-08	2.52E-11	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	53,580,583	28,000	3.21483E-08	1.68E-11	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	53,580,583	28,000	3.21483E-05	1.68E-08	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	53,580,583	28,000	8.03709E-08	4.2E-11	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	53,580,583	28,000	7.50128E-08	3.92E-11	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	53,580,583	28,000	0.002009272	0.00000105	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	53,580,583	28,000	0.048222524	0.0000252	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	53,580,583	28,000	4.82225E-08	2.52E-11	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	53,580,583	28,000	1.63421E-05	8.54E-09	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	53,580,583	28,000	4.55435E-07	2.38E-10	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	53,580,583	28,000	1.33951E-07	7E-11	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	53,580,583	28,000	9.1087E-05	4.76E-08	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	53,580,583	28,000	5.35806E-06	2.8E-09	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	53,580,583	28,000	3.21483E-07	1.68E-10	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	53,580,583	28,000	2.94693E-05	1.54E-08	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	53,580,583	28,000	3.75064E-05	1.96E-08	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	53,580,583	28,000	2.25038E-06	1.176E-09	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	53,580,583	28,000	1.01803E-05	5.32E-09	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	53,580,583	28,000	6.96548E-06	3.64E-09	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	53,580,583	28,000	5.62596E-05	2.94E-08	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	53,580,583	28,000	6.42967E-07	3.36E-10	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.05057895*	*2.64314E-05*	

Notes:

Max. Annual Prod (MBTU's/Hr)	6.238834951
Max. Allowable PM Rate (R18-2-724 (C))	4.150000231

Boiler replaced August 08.

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

SOURCE NO. : 062-091
SCC: 1-02-006-02

Operation description:
Process Hot Water Boiler for Twin Buttes Electrowinning Plant - Natural Gas Fired
Cyclotherm Div., Oswego Package Boiler Co., Inc.; Model C-10500; S/N NB 5835; maximum rated capacity - 10 MMBtu/hr.
OPERATION 216, PROCESS 455, SOURCE 062-091

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Input Nat'l Gas	Annual Natural Gas Consumption cft/yr	Potential Emissions [1] tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	87,600,000 cft/yr	38,698,541 cft/yr	0.33288	0.147054454	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	87,600,000 cft/yr	38,698,541 cft/yr	0.33288	0.147054454	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	87,600,000 cft/yr	38,698,541 cft/yr	0.33288	0.147054454	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	87,600,000 cft/yr	38,698,541 cft/yr	0.02628	0.011609562	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	87,600,000 cft/yr	38,698,541 cft/yr	3.6792	1.625338701	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	87,600,000 cft/yr	38,698,541 cft/yr	4.38	1.934927025	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	87,600,000 cft/yr	38,698,541 cft/yr	0.2409	0.106420986	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive							
2-Methylnapthalene	Point Source		2.4E-11	87,600,000	38,698,541	1.0512E-06	4.64382E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	87,600,000	38,698,541	7.884E-08	3.48287E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	87,600,000	38,698,541	7.008E-07	3.09588E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	87,600,000	38,698,541	7.884E-08	3.48287E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	87,600,000	38,698,541	7.884E-08	3.48287E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	87,600,000	38,698,541	1.0512E-07	4.64382E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	87,600,000	38,698,541	7.884E-08	3.48287E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	87,600,000	38,698,541	0.00009198	4.06335E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	87,600,000	38,698,541	5.256E-08	2.32191E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	87,600,000	38,698,541	7.884E-08	3.48287E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	87,600,000	38,698,541	5.256E-08	2.32191E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	87,600,000	38,698,541	7.884E-08	3.48287E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	87,600,000	38,698,541	7.884E-08	3.48287E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	87,600,000	38,698,541	5.256E-08	2.32191E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	87,600,000	38,698,541	0.00005256	2.32191E-05	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	87,600,000	38,698,541	1.314E-07	5.80478E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	87,600,000	38,698,541	1.2264E-07	5.4178E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	87,600,000	38,698,541	0.003285	0.001451195	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	87,600,000	38,698,541	0.07884	0.034828686	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	87,600,000	38,698,541	7.884E-08	3.48287E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	87,600,000	38,698,541	0.000026718	1.18031E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	87,600,000	38,698,541	7.446E-07	3.28938E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	87,600,000	38,698,541	0.000000219	9.67464E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	87,600,000	38,698,541	0.00014892	6.57875E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	87,600,000	38,698,541	0.00000876	3.86985E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	87,600,000	38,698,541	5.256E-07	2.32191E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	87,600,000	38,698,541	0.00004818	2.12842E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	87,600,000	38,698,541	0.00006132	2.7089E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	87,600,000	38,698,541	3.6792E-06	1.62534E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	87,600,000	38,698,541	0.000016644	7.35272E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	87,600,000	38,698,541	0.000011388	5.03081E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	87,600,000	38,698,541	0.00009198	4.06335E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	87,600,000	38,698,541	1.0512E-06	4.64382E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.082692569*	*0.036530613*	

Notes:

Max. Annual Prod (MBTU's/Hr)	10.2
Max. Allowable PM Rate (R18-2-724 (C))	6.056574506

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-098
SCC: 1-02-006-03

Operation description:
Autoclave Process boiler - natural gas-fired, used for rhenium process operations.
Total maximum rated heat input capacity: 2.80 MMBtu/hr.
OPERATION 212, PROCESS 434, SOURCE 062-098

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	24,528,000 cft/yr	13,140,000 cft/yr	0.0932064	0.049932	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	24,528,000 cft/yr	13,140,000 cft/yr	0.0932064	0.049932	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	24,528,000 cft/yr	13,140,000 cft/yr	0.0932064	0.049932	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	24,528,000 cft/yr	13,140,000 cft/yr	0.0073584	0.003942	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	24,528,000 cft/yr	13,140,000 cft/yr	1.030176	0.55188	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	24,528,000 cft/yr	13,140,000 cft/yr	1.2264	0.657	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	24,528,000 cft/yr	13,140,000 cft/yr	0.067452	0.036135	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source							
2-Methylnapthalene			2.4E-11	24,528,000	13,140,000	2.94336E-07	1.5768E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	24,528,000	13,140,000	2.20752E-08	1.1826E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	24,528,000	13,140,000	1.96224E-07	1.0512E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	24,528,000	13,140,000	2.20752E-08	1.1826E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	24,528,000	13,140,000	2.20752E-08	1.1826E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	24,528,000	13,140,000	2.94336E-08	1.5768E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	24,528,000	13,140,000	2.20752E-08	1.1826E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	24,528,000	13,140,000	2.57544E-05	0.000013797	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	24,528,000	13,140,000	1.47168E-08	7.884E-09	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	24,528,000	13,140,000	2.20752E-08	1.1826E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	24,528,000	13,140,000	1.47168E-08	7.884E-09	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	24,528,000	13,140,000	2.20752E-08	1.1826E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	24,528,000	13,140,000	2.20752E-08	1.1826E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	24,528,000	13,140,000	1.47168E-08	7.884E-09	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	24,528,000	13,140,000	1.47168E-05	0.000007884	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	24,528,000	13,140,000	3.6792E-08	1.971E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	24,528,000	13,140,000	3.43392E-08	1.8396E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	24,528,000	13,140,000	0.0009198	0.00049275	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	24,528,000	13,140,000	0.0220752	0.011826	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	24,528,000	13,140,000	2.20752E-08	1.1826E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	24,528,000	13,140,000	7.48104E-06	4.0077E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	24,528,000	13,140,000	2.08488E-07	1.1169E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	24,528,000	13,140,000	6.132E-08	3.285E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	24,528,000	13,140,000	4.16976E-05	0.000022338	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	24,528,000	13,140,000	2.4528E-06	0.000001314	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	24,528,000	13,140,000	1.47168E-07	7.884E-08	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	24,528,000	13,140,000	1.34904E-05	0.000007227	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	24,528,000	13,140,000	1.71696E-05	0.000009198	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	24,528,000	13,140,000	1.03018E-06	5.5188E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	24,528,000	13,140,000	4.66032E-06	2.4966E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	24,528,000	13,140,000	3.18864E-06	1.7082E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	24,528,000	13,140,000	2.57544E-05	0.000013797	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	24,528,000	13,140,000	2.94336E-07	1.5768E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.023153919*	*0.012403885*	

Notes:

Max. Annual Prod (MBTU's/Hr)	2.856
Max. Allowable PM Rate (R18-2-724 (C))	2.275577287

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-099
SCC: 1-02-006-03

Operation description:

Twin Buttes EW Boiler - natural gas-fired, used for process operations.
Maximum rated heat input capacity: 3.0 MMBtu/hr
OPERATION 216, PROCESS 441, SOURCE 062-099

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	26,280,000 cft/yr	12,899,514 cft/yr	0.099864	0.049018151	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	26,280,000 cft/yr	12,899,514 cft/yr	0.099864	0.049018151	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	26,280,000 cft/yr	12,899,514 cft/yr	0.099864	0.049018151	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	26,280,000 cft/yr	12,899,514 cft/yr	0.007884	0.003869854	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	26,280,000 cft/yr	12,899,514 cft/yr	1.10376	0.541779567	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	26,280,000 cft/yr	12,899,514 cft/yr	1.314	0.644975675	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	26,280,000 cft/yr	12,899,514 cft/yr	0.07227	0.035473662	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source							
2-Methylnapthalene			2.4E-11	26,280,000	12,899,514	3.1536E-07	1.54794E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	26,280,000	12,899,514	2.3652E-08	1.16096E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	26,280,000	12,899,514	2.1024E-07	1.03196E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	26,280,000	12,899,514	2.3652E-08	1.16096E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	26,280,000	12,899,514	2.3652E-08	1.16096E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	26,280,000	12,899,514	3.1536E-08	1.54794E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	26,280,000	12,899,514	2.3652E-08	1.16096E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	26,280,000	12,899,514	0.000027594	1.35445E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	26,280,000	12,899,514	1.5768E-08	7.73971E-09	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	26,280,000	12,899,514	2.3652E-08	1.16096E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	26,280,000	12,899,514	1.5768E-08	7.73971E-09	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	26,280,000	12,899,514	2.3652E-08	1.16096E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	26,280,000	12,899,514	2.3652E-08	1.16096E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	26,280,000	12,899,514	1.5768E-08	7.73971E-09	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	26,280,000	12,899,514	0.000015768	7.73971E-06	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	26,280,000	12,899,514	3.942E-08	1.93493E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	26,280,000	12,899,514	3.6792E-08	1.80593E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	26,280,000	12,899,514	0.0009855	0.000483732	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	26,280,000	12,899,514	0.023652	0.011609562	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	26,280,000	12,899,514	2.3652E-08	1.16096E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	26,280,000	12,899,514	8.0154E-06	3.93435E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	26,280,000	12,899,514	2.2338E-07	1.09646E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	26,280,000	12,899,514	6.57E-08	3.22488E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	26,280,000	12,899,514	0.000044676	2.19292E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	26,280,000	12,899,514	0.000002628	1.28995E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	26,280,000	12,899,514	1.5768E-07	7.73971E-08	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	26,280,000	12,899,514	0.000014454	7.09473E-06	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	26,280,000	12,899,514	0.000018396	9.02966E-06	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	26,280,000	12,899,514	1.10376E-06	5.4178E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	26,280,000	12,899,514	4.9932E-06	2.45091E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	26,280,000	12,899,514	3.4164E-06	1.67694E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	26,280,000	12,899,514	0.000027594	1.35445E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	26,280,000	12,899,514	3.1536E-07	1.54794E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.024807771*	*0.012176871*	

Notes:

Max. Annual Prod (MBTU's/Hr)	3.06
Max. Allowable PM Rate (R18-2-724 (C))	2.399569367

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-122
SCC: 1-02-006-03

Operation description:

Copper Sulfate Plant Boiler - Natural Gas Fired
Total maximum rated heat input capacity: 3.6 MMBtu/hr.
OPERATION 225, PROCESS ?, SOURCE 062-122

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	31,536,000 cft/yr	15,479,920 cft/yr	0.1198368	0.058823696	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	31,536,000 cft/yr	15,479,920 cft/yr	0.1198368	0.058823696	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	31,536,000 cft/yr	15,479,920 cft/yr	0.1198368	0.058823696	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	31,536,000 cft/yr	15,479,920 cft/yr	0.0094608	0.004643976	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	31,536,000 cft/yr	15,479,920 cft/yr	1.324512	0.65015664	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	31,536,000 cft/yr	15,479,920 cft/yr	1.5768	0.773996	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	31,536,000 cft/yr	15,479,920 cft/yr	0.086724	0.04256978	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive							
2-Methylnapthalene	Point Source		2.4E-11	31,536,000	15,479,920	3.78432E-07	1.85759E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	31,536,000	15,479,920	2.83824E-08	1.39319E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	31,536,000	15,479,920	2.52288E-07	1.23839E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	31,536,000	15,479,920	2.83824E-08	1.39319E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	31,536,000	15,479,920	2.83824E-08	1.39319E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	31,536,000	15,479,920	3.78432E-08	1.85759E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	31,536,000	15,479,920	2.83824E-08	1.39319E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	31,536,000	15,479,920	3.31128E-05	1.62539E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	31,536,000	15,479,920	1.89216E-08	9.28795E-09	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	31,536,000	15,479,920	2.83824E-08	1.39319E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	31,536,000	15,479,920	1.89216E-08	9.28795E-09	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	31,536,000	15,479,920	2.83824E-08	1.39319E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	31,536,000	15,479,920	2.83824E-08	1.39319E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	31,536,000	15,479,920	1.89216E-08	9.28795E-09	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	31,536,000	15,479,920	1.89216E-05	9.28795E-06	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	31,536,000	15,479,920	4.7304E-08	2.32199E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	31,536,000	15,479,920	4.41504E-08	2.16719E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	31,536,000	15,479,920	0.0011826	0.000580497	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	31,536,000	15,479,920	0.0283824	0.013931928	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	31,536,000	15,479,920	2.83824E-08	1.39319E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	31,536,000	15,479,920	9.61848E-06	4.72138E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	31,536,000	15,479,920	2.68056E-07	1.31579E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	31,536,000	15,479,920	7.884E-08	3.86998E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	31,536,000	15,479,920	5.36112E-05	2.63159E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	31,536,000	15,479,920	3.1536E-06	1.54799E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	31,536,000	15,479,920	1.89216E-07	9.28795E-08	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	31,536,000	15,479,920	1.73448E-05	8.51396E-06	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	31,536,000	15,479,920	2.20752E-05	1.08359E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	31,536,000	15,479,920	1.32451E-06	6.50157E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	31,536,000	15,479,920	5.99184E-06	2.94118E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	31,536,000	15,479,920	4.09968E-06	2.01239E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	31,536,000	15,479,920	3.31128E-05	1.62539E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	31,536,000	15,479,920	3.78432E-07	1.85759E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.029769325*	*0.014612721*	

Notes:

Max. Annual Prod (MBTU's/Hr)	3.672
Max. Allowable PM Rate (R18-2-724 (C))	2.760728428

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-127
SCC: 1-02-006-03

Operation description:

Copper Sulfate Plant Water Heater - Natural Gas Fired
Total maximum rated heat input capacity: 3.6 MMBtu/hr.
OPERATION 225, PROCESS ?, SOURCE 062-127

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	31,536,000 cft/yr	2,902,485 cft/yr	0.1198368	0.011029443	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	31,536,000 cft/yr	2,902,485 cft/yr	0.1198368	0.011029443	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	31,536,000 cft/yr	2,902,485 cft/yr	0.1198368	0.011029443	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	31,536,000 cft/yr	2,902,485 cft/yr	0.0094608	0.000870746	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	31,536,000 cft/yr	2,902,485 cft/yr	1.324512	0.12190437	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	31,536,000 cft/yr	2,902,485 cft/yr	1.5768	0.14512425	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	31,536,000 cft/yr	2,902,485 cft/yr	0.086724	0.007981834	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source							
2-Methylnapthalene			2.4E-11	31,536,000	2,902,485	3.78432E-07	3.48298E-08	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	31,536,000	2,902,485	2.83824E-08	2.61224E-09	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	31,536,000	2,902,485	2.52288E-07	2.32199E-08	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	31,536,000	2,902,485	2.83824E-08	2.61224E-09	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	31,536,000	2,902,485	2.83824E-08	2.61224E-09	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	31,536,000	2,902,485	3.78432E-08	3.48298E-09	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	31,536,000	2,902,485	2.83824E-08	2.61224E-09	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	31,536,000	2,902,485	3.31128E-05	3.04761E-06	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	31,536,000	2,902,485	1.89216E-08	1.74149E-09	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	31,536,000	2,902,485	2.83824E-08	2.61224E-09	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	31,536,000	2,902,485	1.89216E-08	1.74149E-09	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	31,536,000	2,902,485	2.83824E-08	2.61224E-09	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	31,536,000	2,902,485	2.83824E-08	2.61224E-09	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	31,536,000	2,902,485	1.89216E-08	1.74149E-09	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	31,536,000	2,902,485	1.89216E-05	1.74149E-06	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	31,536,000	2,902,485	4.7304E-08	4.35373E-09	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	31,536,000	2,902,485	4.41504E-08	4.06348E-09	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	31,536,000	2,902,485	0.0011826	0.000108843	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	31,536,000	2,902,485	0.0283824	0.002612237	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	31,536,000	2,902,485	2.83824E-08	2.61224E-09	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	31,536,000	2,902,485	9.61848E-06	8.85258E-07	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	31,536,000	2,902,485	2.68056E-07	2.46711E-08	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	31,536,000	2,902,485	7.884E-08	7.25621E-09	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	31,536,000	2,902,485	5.36112E-05	4.93422E-06	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	31,536,000	2,902,485	3.1536E-06	2.90249E-07	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	31,536,000	2,902,485	1.89216E-07	1.74149E-08	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	31,536,000	2,902,485	1.73448E-05	1.59637E-06	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	31,536,000	2,902,485	2.20752E-05	2.03174E-06	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	31,536,000	2,902,485	1.32451E-06	1.21904E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	31,536,000	2,902,485	5.99184E-06	5.51472E-07	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	31,536,000	2,902,485	4.09968E-06	3.77323E-07	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	31,536,000	2,902,485	3.31128E-05	3.04761E-06	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	31,536,000	2,902,485	3.78432E-07	3.48298E-08	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.029769325*	*0.002739885*	

Notes:

Max. Annual Prod (MBTU's/Hr)	3.672
Max. Allowable PM Rate (R18-2-724 (C))	2.760728428

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-128
SCC: 1-02-006-03

Operation description:

Copper Sulfate Plant Water Heater - Natural Gas Fired
Total maximum rated heat input capacity: 0.3 MMBtu/hr.
OPERATION 225, PROCESS ?, SOURCE 062-128

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Annual Natural Gas Consumption cft/yr	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	2,628,000 cft/yr	967,495 cft/yr	0.0099864	0.003676481	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	2,628,000 cft/yr	967,495 cft/yr	0.0099864	0.003676481	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	2,628,000 cft/yr	967,495 cft/yr	0.0099864	0.003676481	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	2,628,000 cft/yr	967,495 cft/yr	0.0007884	0.000290249	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	2,628,000 cft/yr	967,495 cft/yr	0.110376	0.04063479	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	2,628,000 cft/yr	967,495 cft/yr	0.1314	0.04837475	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	2,628,000 cft/yr	967,495 cft/yr	0.007227	0.002660611	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive							
2-Methylnapthalene	Point Source		2.4E-11	2,628,000	967,495	3.1536E-08	1.16099E-08	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	2,628,000	967,495	2.3652E-09	8.70746E-10	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	2,628,000	967,495	2.1024E-08	7.73996E-09	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	2,628,000	967,495	2.3652E-09	8.70746E-10	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	2,628,000	967,495	2.3652E-09	8.70746E-10	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	2,628,000	967,495	3.1536E-09	1.16099E-09	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	2,628,000	967,495	2.3652E-09	8.70746E-10	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	2,628,000	967,495	2.7594E-06	1.01587E-06	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	2,628,000	967,495	1.5768E-09	5.80497E-10	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	2,628,000	967,495	2.3652E-09	8.70746E-10	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	2,628,000	967,495	1.5768E-09	5.80497E-10	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	2,628,000	967,495	2.3652E-09	8.70746E-10	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	2,628,000	967,495	2.3652E-09	8.70746E-10	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	2,628,000	967,495	1.5768E-09	5.80497E-10	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	2,628,000	967,495	1.5768E-06	5.80497E-07	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	2,628,000	967,495	3.942E-09	1.45124E-09	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	2,628,000	967,495	3.6792E-09	1.35449E-09	AP-42, Table 1.4-3, 7/98

Formaldehyde			0.000000075	2,628,000	967,495	0.00009855	3.62811E-05	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	2,628,000	967,495	0.0023652	0.000870746	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	2,628,000	967,495	2.3652E-09	8.70746E-10	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	2,628,000	967,495	8.0154E-07	2.95086E-07	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	2,628,000	967,495	2.2338E-08	8.22371E-09	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	2,628,000	967,495	6.57E-09	2.41874E-09	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	2,628,000	967,495	4.4676E-06	1.64474E-06	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	2,628,000	967,495	2.628E-07	9.67495E-08	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	2,628,000	967,495	1.5768E-08	5.80497E-09	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	2,628,000	967,495	1.4454E-06	5.32122E-07	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	2,628,000	967,495	1.8396E-06	6.77247E-07	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	2,628,000	967,495	1.10376E-07	4.06348E-08	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	2,628,000	967,495	4.9932E-07	1.83824E-07	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	2,628,000	967,495	3.4164E-07	1.25774E-07	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	2,628,000	967,495	2.7594E-06	1.01587E-06	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	2,628,000	967,495	3.1536E-08	1.16099E-08	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr	cft/yr			
HAPs Total						*0.002480777*	*0.000913295*	

Notes:

Max. Annual Prod (MBTU's/Hr)	0.306
Max. Allowable PM Rate (R18-2-724 (C))	0.408444741

ESTIMATED AIR POLLUTANT EMISSIONS FROM LIME HANDLING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 063
SCC: 3-03-011-99

Operation description:
Sierrita lime handling operations. Particulate emissions controlled by one Ducon Dynamic wet dust collector at a time. - Wet Scrubber #1
OPERATION 218, PROCESS 443, SOURCE 063

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Annual Lime Throughput	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collector UW-3 Model II	--	0.96	**0.0303** lb/ton lime	87,600 tons lime/yr	29,577 tons lime/yr	1.3289	0.4487	Source Test: 11/18/09
PM-10	Non-Fugitive Point Source	Size 48 SI 502674001		0.96	**0.0303** lb/ton lime	87,600 tons lime/yr	29,577 tons lime/yr	1.3289	0.4487	PM = PM10
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00455** lb/ton rock	87,600 tons rock/yr	29,577 tons rock/yr	0.1993	0.0673	AP-42 App B, B.2.2
Sulfur Dioxide **(not anticipated)**	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs (not anticipated)	--	--	--	--	--	--	--	--	--	--

Notes:
1. Maximum product throughput is based on the maximum capacity of slaked lime handling system of 10 tons/hr.
2. The moisture content of the Lime delivered is 0% per Chemical Lime.

ESTIMATED AIR POLLUTANT EMISSIONS FROM LIME HANDLING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 063
SCC: 3-03-011-99

Operation description:
Sierrita lime handling operations. Particulate emissions controlled by one Ducon Dynamic wet dust collector at a time. - Wet Scrubber #2
OPERATION 218, PROCESS 443, SOURCE 063

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Annual Lime Throughput	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collector UW-3 Model II	–	0.96	**0.0061** lb/ton lime	87,600 tons lime/yr	29,577 tons lime/yr	0.2663	0.0899	Source Test: 11/18/09
PM-10	Non-Fugitive Point Source	Size 48 SI 502674001		0.96	**0.0061** lb/ton lime	87,600 tons lime/yr	29,577 tons lime/yr	0.2663	0.0899	PM = PM10
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00091** lb/ton rock	87,600 tons rock/yr	29,577 tons rock/yr	0.0399	0.0135	AP-42 App B, B.2.2
Sulfur Dioxide **(not anticipated)**	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs (not anticipated)	--	--	--	--	--	--	--	--	--	--

Notes:

1. Maximum product throughput is based on the maximum capacity of slaked lime handling system of 10 tons/hr.
2. The moisture content of the Lime delivered is 0% per Chemical Lime.

ESTIMATED AIR POLLUTANT EMISSIONS FROM MINING ACTIVITIES
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 066
SCC: 3-05-020-09

Operation description:

Rock blasting with ANFO for production. Production refers to the total of ore + leach + waste.
Includes blasting operations at and above 3850 elevation.
OPERATION 201, PROCESS 401, SOURCE 066

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Cntr. Emission Factor (1)	Max. Annual Production (2)	Actual Annual Blasts (3)	Emissions Potential tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point		55.33985905 **55.33985905** lb/blast	1,095 blasts/yr	40.91420638 blasts/yr	30.29857283	1.132093207	AP-42, Table 11.9-1, 7/98 Blasting Operation.
PM-10	Fugitive Non-Point		28.77672671 **28.77672671** lb/blast	1,095 blasts/yr	40.91420638 blasts/yr	15.75525787	0.588688468	AP-42, Table 11.9-1, 7/98 Blasting Operation.
PM-2.5	Fugitive Non-Point		1.660195772 **1.660195772**	1095 blasts/yr	40.91420638 blasts/yr	0.908957185	0.033962796	AP-42 Table 11.9-1, 7/98 Blasting Operation.
Sulfur Dioxide	Fugitive Non-Point	--	2 lb/ton ANFO	22180 ton ANFO/yr	7945.31 ton ANFO/yr	22.18	7.94531	AP-42 Table 13.3-1, 1/95
Carbon Monoxide	Fugitive Non-Point	--	67 lb/ton ANFO	22180 ton ANFO/yr	7945.31 ton ANFO/yr	743.03	266.167885	AP-42 Table 13.3-1, 1/95
Nitrogen Oxides (NOx)	Fugitive Non-Point	--	17 lb/ton ANFO	22180 ton ANFO/yr	7945.31 ton ANFO/yr	188.53	67.535135	AP-42 Table 13.3-1, 1/95
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs (not anticipated)	--	--	--	--	--	--	--	--

Notes:
(1) Uncontrolled PM emission factor was calculated based on the AP-42, Table 11.9-1., blasting operation at western surface coal mines.
TSP = 0.000014(A)^1.5 lb/blast
A 25000 sq. ft. 3/4/04 Email from M. DeLaat
(2) Assume maximum 3 blasts per day.
(3) Actual Annual Blasts = # blasts above 3850 elevation. Pit Lip is 4050 elevation. Emissions below 50 ft. below pit lip do not escape the pit. Use 3850 elevation as conservative estimate.

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 069
SCC: 3-03-024-04

Operation description:
6A/6B Overland Ore Conveyor Transfer from B2 to B3
Emissions from material handling and transfer, applicable to the belt transfer point. Maximum capacity: 5,000 tph.
OPERATION 204, PROCESS 410, SOURCE 069

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Ore Thru-put	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	Water sprays & Enclosed		0.0001 lb/ton rock/point	43,800,000 tons rock/yr	20,584,453 tons rock/yr	3.0660	1.4409	AP-42, Section 11.19.2
PM-10	Non-Fugitive Point Source		Transfer Points		0.0000 lb/ton rock/point	43,800,000 tons rock/yr	20,584,453 tons rock/yr	1.0074	0.4734	AP-42, Section 11.19.2
PM-2.5	Non-Fugitive Point Source				0.0000 lb/ton rock/point	43,800,000 lb/ton rock/point	20,584,453 tons rock/yr	0.2847 tons rock/yr	0.1338	AP-42, Section 11.19.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231				1.77343E-05	
Arsenic Compounds					0.001200				1.72909E-05	
Beryllium Compounds					0.000100				1.44091E-06	
Cadmium Compounds					0.000050				7.20456E-07	
Chromium Compounds					0.014577				0.000210041	
Cobalt Compounds					0.000623				8.97799E-06	
Lead Compounds					0.003000				4.32274E-05	
Manganese Compounds					0.023238				0.000334846	
Mercury Compounds					0.000002				2.65539E-08	
Nickel Compounds					0.001077				1.55175E-05	
Selenium Compounds					0.000000				0.0000	
Total HAPs					(%)				*0.000649822*	

Notes:
1. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
2. Emission Factor based on AP-42 Section 11.19.2

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 072
SCC: 3-05-020-07

Operation description:
Sierrita Conveyor A3 stacker transfer to coarse ore stockpile north of Sierrita fine crushing.
OPERATION 204, PROCESS 472, SOURCE 072

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Ore Thru-put	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	**Fugitive - Non-Point**	--	Wet ore	--	0.0020					AP-42, Section 13.2.4 11/06
	A3 to Stockpile		prior to			43,800,000	20,584,453	43.8428	20.6046	(formerly Sec. 11.2.3)
	Magnetic Steel									
	Recovery Plant		stockpile		lb/ton rock/point	11,388,000	8,017	11.3991	0.0080	
	Total		discharge			tons rock/yr	tons rock/yr		**20.6126**	
PM-10	**Fugitive - Non-Point**			--	0.0009					AP-42, Section 13.2.4 11/06
	A3 to Stockpile					43,800,000	20,584,453	20.7365	9.7454	
	Magnetic Steel									
	Recovery Plant				lb/ton rock/point	11,388,000	8,017	5.3915	0.0038	(formerly Sec. 11.2.3)
	Total					tons rock/yr	tons rock/yr		**9.7492**	
PM-2.5	**Fugitive - Non-Point**			--	0.0001					AP-42, Section 13.2.4 11/06
	A3 to Stockpile					43,800,000	20,584,453	3.1401	1.4757	
	Magnetic Steel									
	Recovery Plant				lb/ton rock/point	11,388,000	8,017	0.8164	0.0006	(formerly Sec. 11.2.3)
	Total					tons rock/yr	tons rock/yr		**1.4763**	
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										--
Antimony Compounds					0.001231				0.000253694	
Arsenic Compounds					0.001200				0.000247351	
Beryllium Compounds					0.000100				2.06126E-05	
Cadmium Compounds					0.000050				1.03063E-05	
Chromium Compounds					0.014577				0.003004684	
Cobalt Compounds					0.000623				0.000128432	
Lead Compounds					0.003000				0.000618378	
Manganese Compounds					0.023238				0.004790053	
Mercury Compounds					0.000002				3.79861E-07	
Nickel Compounds					0.001077				0.000221982	
Selenium Compounds					0.000000				0	
Total HAPs					*(%)*				*0.009295874*	

Notes:

1. Crushed coarse ore stockpile maximum throughput is based on the overall limit of the Primary Crusher as per Title V Permit 42862, Attachment B, Section V.B.1.a
2. AP-42, Section 13.2.4, Aggregate Handling & Storage Piles

Formula for Emisssion Factor

$E = (k)(0.0032) [(U/5)^{1.3} / [(M/2)^{1.4}]$

E = emission factor (lb/ton)

k = particulate size multiplier (dimensionless) =

0.74	for PM	pg. 13.2.4-4
0.35	for PM10	pg. 13.2.4-4
0.053	for PM2.5	pg. 13.2.4-4

U = mean wind speed (mph)	6.8	Update wind speed with annual mean daily windspeed.
M = material moisture content (%)	3	C&C L. Thompsen Email 3/2/04 + 1% moisture added for water sprays.

3. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
4. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM CONCENTRATE HANDLING ACTIVITIES
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

STACK : S 073
SCC: 3-05-020-07

Operation description:
Concentrate storage areas
OPERATION 209, PROCESS 450, SOURCE 073

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Ore Thru-put	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	--	--	--	0.0004 lb/ton conc	562,000 tons conc/yr	290,961 tons conc/yr	0.1043	0.0540	AP-42 Sec 13.2.4, 11/06
PM-10	Fugitive Non-Point			--	0.0002 lb/ton conc	562,000 tons conc/yr	290,961 tons conc/yr	0.0493	0.0255	AP-42 Sec 13.2.4, 11/06
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.028000				0.001511427	
Arsenic Compounds					0.252500				0.01362983	
Beryllium Compounds					0.001000				5.39795E-05	
Cadmium Compounds					0.010583				0.000571283	
Chromium Compounds					0.003083				0.000166437	
Cobalt Compounds					0.010333				0.000557788	
Lead Compounds					0.255333				0.013782772	
Manganese Compounds					0.004667				0.000251904	
Mercury Compounds					0.000200				1.07959E-05	
Nickel Compounds					0.004083				0.000220416	
Selenium Compounds					0.019500				0.0011	
Total HAPs									*0.031809234*	

Notes:
1. Concentrate throughput
2. AP-42, Section 13.2.4, Aggregate Handling & Storage Piles
Formula for Emisssion Factor
E = (k)(0.0032) [(U/5)^1.3 / [(M/2)^1.4]
E = emission factor (lb/ton)
k = particulate size multiplier (dimensionless) =
0.74 for PM pg. 13.2.4-4
0.35 for PM10 pg. 13.2.4-4
U = mean wind speed (mph) 6.8 Title V Permit Application June 1997 Appendix A (pg. A-4)
M = material moisture content (%) 10 Title V Permit Application June 1997 Appendix A (pg. A-4)
3. Sierrita Monthly Composite Assay Report for 2009 from Miami (see Assay.xls) (TRI RY 2009 Files)

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 075
SCC: 3-03-024-04

Operation description:
Sierrita fine ore crushing, including the four secondary scalping screens.
This part of operations are exhausted by the #10 Ducon wet dust collector (25,000 dcfm).
OPERATION 207, PROCESS 418, SOURCE 75

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Thruput (2)	Actual Annual Ore Thru-put	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors	Water sprays on	n/c	0.00015 lb/ton rock	42,591,120 tons rock/yr	0 tons rock/yr	3.1943	0.0000	Source Test - 11/4/10
PM-10	Non-Fugitive Point Source		material transfer	n/c	0.00015 lb/ton rock	42,591,120 tons rock/yr	0 tons rock/yr	3.1943	0.0000	
PM-2.5	Non-Fugitive Point Source			0.9935	-- 0.00002 lb/ton	42,591,120 tons/yr	0 tons rock/yr	0.4792	0.0000	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231				0	
Arsenic Compounds					0.001200				0	
Beryllium Compounds					0.000100				0	
Cadmium Compounds					0.000050				0	
Chromium Compounds					0.014577				0	
Cobalt Compounds					0.000623				0	
Lead Compounds					0.003000				0	
Manganese Compounds					0.023238				0	
Mercury Compounds					0.000002				0	
Nickel Compounds					0.001077				0	
Selenium Compounds					0				0	
Total HAPs					*(%)*				*0*	

Notes:
n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.
1. Controlled PM emission factor based on source test data 11/4/10.
Controlled PM-10 emission factor estimated at 50% of PM.
2. Maximum production rate is Fine Crushing Plant Capacity (4S Crushers)
3. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
4. #3S FARR installed 9/30/10 (ID 203).

ESTIMATED AIR POLLUTANT EMISSIONS FROM SOLVENT EXTRACTION OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 076

Fugitive
Non-Point

Operation description:
Evaporative Losses from SX#1, SX#2, and SX#3 Operations - Extractors, Strippers, and Washers.
OPERATION 215, PROCESS 438, SOURCE 076

Description	Solvent Name (1)	Vapor Mol Wt	Storage Temp (F)	Vapor Pres. (psia)	Mix Tank Dimensions & Working Volume (ft & gal)					Turnover (gal/yr) (4), (5)	Mix Tanks Vapor Loss Per Unit (tons/yr)	Unit(s)	Mix Vapor Loss (tons/year)
					Diameter	Height	Tank Cap.	Liq Height	Working Vol.				
SX Plant #1													
Extractor	Orfom SX-12	241	70.53	0.0128	10	5.66	3325	4	2350.223479	4700.446958	0.001605	15	0.024075
Stripper	Orfom SX-12	241	70.53	0.0128	10	5.66	3325	4	2350.223479	4700.446958	0.001605	5	0.008025
Washer	Orfom SX-12	241	70.53	0.0128	10	5.66	3325	4	2350.223479	4700.446958	0.001605	5	0.008025
Subtotal													***0.040125***
SX Plant #2													
Extractor	Orfom SX-12	241	70.53	0.0128	16.93	13	21881.925	9.75	16418.8	32837.6	0.00946	2	0.01892
Stripper	Orfom SX-12	241	70.53	0.0128	16.93	13	21881.925	9.75	16418.8	32837.6	0.00946	1	0.00946
Washer	Orfom SX-12	241	70.53	0.0128	10.5	13.5	8745	10	6477.8	12955.6	0.00387	2	0.00774
Subtotal													***0.03612***
SX Plant #3 (6)													
Extractor	Orfom SX-12	241	70.53	0.0128	16.93	13	21881.9	9.75	16418.8	32837.6	0.010095	3	0.030285
Stripper	Orfom SX-12	241	70.53	0.0128	16.93	13	21881.9	9.75	16981	33962	0.010095	1	0.010095
Washer	Orfom SX-12	241	70.53	0.0128	16.93	13	21881.9	9.75	16981	33962	0.010095	1	0.010095
Subtotal													***0.050475***

Notes:
(1) Emissions are calculated using the US EPA TANKS 4.0 Program, provided by U.S. EPA
(2) Average annual liquid vapor pressure as calcualted by TANKS 4 uses n-decane as surrogate for Orform SX-12 having similar molecular weight and vapor pressure.
(3) None of the tanks are heated. Dominant liquid height has been assumed to be between 75% and 100% of the shell height.
(4) For this continuous process the tank level is set by an overflow wier and is constant.
(5) Assumed 2 tank turnovers per year to represent tank working losses due to maintenance activity, temporary shutdowns, etc.
(6) SX Plant #3 not in use
(7) Since flow is constant, there is no difference between maximum potential and actual emissions. The difference shown is because SX Plant #3 is not operating.

2012

Stack: S 076

Fugitive
Non-Point

Description	Settler Dimensions & Working Volume (ft & gal)					Turnover (gal/yr) (4),	Settler Tanks Vapor Loss Per Unit (tons/yr)	Unit(s)	Settler Vapor Loss (tons/year)	Total Vapor Loss (tons/year)
	Diameter	Height	Tank Cap.	Liq Height	Working Vol.					
SX Plant #1										
Extractor	25.93	2	7901.039	1.5	5925.77915	11851.55831	0.00343	15	0.05145	
Stripper	25.93	2	7901.039	1.5	5925.77915	11851.55831	0.00343	5	0.01715	
Washer	25.93	2	7901.039	1.5	5925.77915	11851.55831	0.00343	5	0.01715	
Subtotal									***0.08575***	***0.125875***
SX Plant #2										
Extractor	80.11	2.8	105571.9	2.1	79179	158358	0.04581	2	0.09162	
Stripper	92.11	2.8	139505.7	2.1	104629	209258	0.0606	1	0.0606	
Washer	42.76	5.25	56379.62	3.94	42324.78	84649.56	0.0244	2	0.0488	
Subtotal									***0.20102***	***0.23714***
SX Plant #3 (6)										
Extractor	80.11	2.8	105571.8	2.1	79179	158358	0.04889	3	0.14667	
Stripper	80.11	2.8	105571.8	2.1	79179	158358	0.04889	1	0.04889	
Washer	80.11	2.8	105571.8	2.1	79179	158358	0.04889	1	0.04889	
Subtotal									***0.24445***	***0.294925***

Actual Emissions **0.363015**
Potential Maximum Emissions **0.65794**

ESTIMATED AIR POLLUTANT EMISSIONS FROM HEAVY EQUIPMENT TRAVELING ON UNPAVED ROADS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK: S 077

Fugitive - Non-Point

Operation Description:
Heavy Equipment traveling on the unpaved roads, including haul trucks.
Includes operations in the Sierrita, Twin Buttes, Ocotillo and Esperanza pits.
OPERATION 203, PROCESS, 406, SOURCE 077

Vehicle Type	No. Vehicles Available [1]	No. Vehicles Used	Vehicle Wt (tons)	Mean Vehicle Wt. (tons)	Potential Annual Travel (VMT)	Total Annual VMT	AP-42 Emission Factor lbs/VMT PM	PM-10	PM-2.5	PM Emissions Potential tons/yr	PM Emissions Actual tons/yr	PM10 Emissions Potential tons/yr	PM10 Emissions Actual tons/yr	PM2.5 Emissions Potential tons/yr	PM2.5 Emissions Actual tons/yr	Remarks
HAUL TRUCKS				201	Unknown	84,359	3.68483055	0.85487123	0.15334709	N/A	155.4251	N/A	36.05823	N/A	6.468137	AP-42 13.2.2 (11/06)
797 Haul Truck	0	0	239.7													
793 Haul Truck	26	26	201													
WATER TRUCKS																
Water Truck	3	3	116.5	116.5	2000	8,792	2.88287599	0.66881983	0.10255237	2.88287599	12.67305	0.66881983	2.940116	0.01826742	0.450818	AP-42 13.2.2 (11/06)
Water Truck	2	2	71	71	2000	927	1.31827952	0.30583746	0.04689508	1.31827952	0.610986	0.30583746	0.141747	0.00040273	0.021735	AP-42 13.2.2 (11/06)
MAINTENANCE VEHICLES				31.4333333			1.59883995	0.37092677	0.05687544	2.39825993	9.216196	0.55639015	2.138134	0.08531316	0.327847	AP-42 13.2.2 (11/06)
Rubber Tired Dozers (RTDs)	8	8	33.5		1000	8,560										
Motor Graders 2x16G	4	4	27.3		1000	2,968										
Motor Graders 2x14G	0	0	20.5		1000	0										
MINE ACCESS ROAD					Unknown	328,500	0.28042799	0.06505857	0.00997565	N/A	46.0603	N/A	10.68587	N/A	1.6385	
Delivery Trucks		25	4.5	2.27777778												
Employee Vehicles		200	2													
TAILINGS ROAD					Unknown	87,600	0.26448725	0.06136036	0.00940859	N/A	11.58454	N/A	2.687584	N/A	0.412096	
Vehicles		4	2	2												
Totals						**521,707**					**235.5702**		**54.65168**		**9.319133**	

Notes:

1. It has been assumed that each maintenance vehicle travels a total of 1000 mi /year.
2. Emision Factors from AP-42 13.2.2 (11/06)
3. Use equation (1a) for vehciles traveling on unpaved surfaces at industrial sites.

E = k*((s/12)^a)*((W/3)^b)

E = size specific emission factor (lb/VMT)

s = surface material silt content (%) 3 AP-42 Section 13.2.2 - Unpaved Roads Additional Files (EPA) r13s0202_dec03.xls (Arizona Surface Material Silt Content)

W = mean vehicle weight (tons). Pg. 13.2.2-6 states only one emission factor should be calcualted that represents the "fleet" average. To reflect operating conditions, calculated one for all haul trucks, one each for both types of water trucks, and another for maintenance vehicles.

For k, a, and b (empirical constants)	PM-10	PM-30 (assun	PM-2.5
k (lb/VMT)	1.5	4.9	0.23
a	0.9	0.7	0.9
b	0.45	0.45	0.45

4. Add control factor for mitigatin from rainfall and other precipitation using equation (2)

Eext = E((365-P)/365)

P 53 number of days in a year with at least 0.01 inches of precipitation (Using Figure 13.2.2-1)

5. Previous emission estimates provided a PM control efficiency for wet suppression program of 65%. In absence of road moisture testing, continued to apply this control efficiency for all roads traveling in mine area.
6. For the small water truck, tailing road vehicles and mine access road vehicles, applied an additional 80% control efficiency because MgCl2 is applied to the tailing and mine access roads Pg. 13.2.2-13 states chemcial dust suppressants provide a PM-10 control efficiency of about 80% when applied at regular intervals of 2 weeks to 1 month.
7. Employee vehicles on mine access includes contractors and is estimated at 100 vehicles/shift.
8. VMT: Subtract % emissions from haul truck traffic below pit lip. Data Input C8

FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY FACILITY

STORAGE TANK EMISSIONS INVENTORY

OPERATION 219, PROCESS 444, SOURCE 078

Nearest City: Tucson, AZ Stack: S 078

Fugitive-Non-Point **2012**

Location	Tank No.	Tank Cap gal	H/V	Roof Type	Tank Dia ft	Tank Ht ft	Shell Color	Annual Thruput (gal)	Solvent Name	Vapor Mol Wt	Storage Temp (F)	Vap Pres psia	Working Loss (lbs)	Breathing Loss (lbs)	Total Loss (lbs)
Sierrita Pit	SP-14	12000	H	Cylnd	7.00	36.00	White	88,780	Gasoline	66.00	68.00	6.25	888.9405	802.8967	1691.837
												Subtotal	***888.9405***	***802.8967***	***1691.837***
Twin Buttes	TB-4	12000	H	Cylnd	8.00	32.00	White	0	Gasoline	66.00	68.00	6.37	0	0	0
NO LONGER IN USE	TB-5	12000	H	Cylnd	8.00	32.00	White	0	Gasoline	66.00	68.00	6.37	0	0	0
												Subtotal	***0***	***0***	***0***
Mill Area	ML-12(1)	12000	V	Cylnd	8.00	32.00	White	78,916	Gasoline	66.00	68.00	6.37	790.1712	1122.41	1912.582
	ML-12(2)	12000	V	Cylnd	8.00	32.00	White	78,916	Gasoline	66.00	68.00	6.37	679.25	964.85	1644.1
												Subtotal	***1469.421***	***2087.26***	***3556.682***

Total VOC Emissions

lb/year	2358.362	2890.157	5248.519
ton/year			**2.624259**

Total HAP Emissions

lbs/year	412.7133	505.7775	918.4908
ton/year			**0.459245**

Note:

1. Storage tank emissions are calculated per the USEPA TANKS3.0 program.
2. HAP emission summation includes approximately 17.5 weight % HAP content in gasoline vapor (Ref. The Air Pollution Consultant. May-June, 1995, Page 1.21)
3. Total Gasoline Usage for the year was divided equally between the 3 gasoline storage tanks.

ESTIMATED AIR POLLUTANT EMISSIONS FROM TAILING IMPOUNDMENTS - SIERRITA
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Operation description:

Sierrita tailing impoundment, located southeast of Sierrita plant. Dust reduction practices have been implemented.
At any time, at most one - sixth of the total impoundment area is drying. Surface binders also applied, as necessary.
OPERATION 209, PROCESS 428, SOURCE 087

STACK : S 087
SCC: 3-03-999-99

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Total Impoundment	Drying Area	U/C Emission Cntr. Emission Factor	Avg. Annual Drying Area	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	Surface wetting & Application	3615 acre	602.5 acre	0.3934 tpy/acre	603 acre	237 tons/yr	237.0259 tons/yr	AMC Report - 7/83 ** Page 52-57
PM-10	Fugitive Non-Point	of binders	3615 acre	602.5 acre	**0.1967** tpy/acre	603 acre	119 tons/yr	118.5129 tons/yr	AMC Report - 7/83 ** Page 52-57
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs (not anticipated)	--	--	--	--	--	--	--	--	--

Notes:
Reference: Uncontrolled emission factor for wind erosion calculated as described in "American Mining Report of Fugitive Dust Emission Factors for the Mining Industry", July 1983.
Page 52-57
EF = AIKCLV

A	0.025	Clay Loam
I	47	Clay Loam
K	*1*	*Field with a smooth surface*
C	*((0.345*(U^3))/(PE*	*0.334811852*
U	6.8	Mean annual windspeed (mph)
PE	18	Figure 14
L	1	Greater than 2000 feet across
V	1	Unvegetated

ESTIMATED AIR POLLUTANT EMISSIONS FROM DRILLING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 088
SCC: 3-05-020-10

Operation Description:

Drilling for the ore, leach and waste productions.
Includes operations in the Sierrita, Ocotillo and Esperanza pits.
OPERATION , PROCESS , SOURCE 088

Pollutant	Fugitive/ Point Source	Air Pollution Control	Controlled Emission Factor	Max Annual Production	Actual Annual Production	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	Water Spray	0.00016 lb/ton mined	131,400,000 tons rock/yr	4,817,023 tons rock/yr	10.512	0.38536184	AP-42, Section 11.19 8/04
PM-10	Fugitive Non-Point	Water Spray	0.00008 lb/ton mined	131,400,000 tons rock/yr	4,817,023 tons rock/yr	5.256	0.19268092	AP-42, Section 11.19 8/04
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs (not anticipated)	--	--	--	--	--	--	--	--

Note:

1. Maximum production is based on the maximum potential for rock blasting.
2. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
3. Actual production - total loaded * percentage above the pit lip. Do no count emissions below pit lip.

ESTIMATED AIR POLLUTANT EMISSIONS FROM AMMONIUM NITRATE STORAGE
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 089
SCC: 3-05-020-10

Operation Description:

Ammonium Nitrate Storage
Includes operations in the Sierrita pit.
OPERATION, PROCESS, SOURCE 089

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Actual Annual Production	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point		0.4 lb/ton	Unknown tons/yr	9631.87 tons/yr	Unknown	1.926374	AP-42, Section 8.3.2 7/93 Publish E.F. =.02 @95%control
PM-10	Fugitive Non-Point		0.2 lb/ton waste	Unknown tons/yr	9631.87 tons rock/yr	Unknown	0.963187	PM/2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs (not anticipated)	--	--	--	--	--	--	--	--

Notes:

1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. The published E.F. is 0.02 lb/ton with a scrubber operating at 95% control efficiency (for bulk loading). There is no scrubber at this source. Therefore, emission factor = 0.02/(1-0.95)

ESTIMATED AIR POLLUTANT EMISSIONS FROM EL JAY PORTABLE CRUSHED STONE PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Non-Fugitive
Point Source

SOURCE NO.: 093 SSC:3-05-020-02/06	**Operation Description:** El Jay Crushing Plant for Haul Road surfacing material OPERATION 224, PROCESS 449, SOURCE 093

I.D.	Description	Process Rate Pollutant	tph	tpy	Control Efficiency %	Emission Factor lb/ton	Controlled Emissions lb/hr	Controlled Emissions tpy	ADEQ General Crushing & Screening Permit Application
1	Truck/Loader transfer and feed material	PM	273	254,739	Included in	0.00023	0.0637	0.0297	Form 2
		PM10			emission factor	***0.00011***	***0.0301***	***0.0140***	Table 1
2	Grizzly Feeder [35"x20']	PM	273	254,739	Included in	0.00007	0.0200	0.0093	Form 2
		PM10			emission factor	***0.00006***	***0.0150***	***0.0070***	Table 2
3	Grizzly Feeder [35"x20'] to Screen Feed Conveyor [36"x60']	PM	273	254,739	Included in	0.00010	0.0278	0.0130	Form 2
		PM10			emission factor	***0.00005***	***0.0131***	***0.0061***	Table 5
4	Screen Feed Conveyor [36"x60'] to Three Deck Screen [5'x16']	PM	369	343,898	Included in	0.00010	0.0375	0.0175	Form 2
		PM10			emission factor	***0.00005***	***0.0177***	***0.0083***	Table 5
5	Three Deck Screen [5'x16']	PM	369	343,898	Included in	0.00279	1.0306	0.4803	Form 2
		PM10			emission factor	***0.00210***	***0.7749***	***0.3611***	Table 4
6	Three Deck Screen [5'x16'] to Crusher Conveyor [30"x40]	PM	96	89,159	Included in	0.00010	0.0097	0.0045	Form 2
		PM10			emission factor	***0.00005***	***0.0046***	***0.0021***	Table 5
7	Crusher Conveyor [30"x40'] to Cone Crusher [54"]	PM	96	89,159	Included in	0.00010	0.0097	0.0045	Form 2
		PM10			emission factor	***0.00005***	***0.0046***	***0.0021***	Table 5
8	Cone Crusher [54"]	PM	96	89,159	Included in	0.00097	0.0931	0.0434	Form 2
		PM10			emission factor	***0.00059***	***0.0564***	***0.0263***	Table 3
9	Cone Crusher [54"] to Recirculating Conveyor [30"x60']	PM	96	89,159	Included in	0.00010	0.0097	0.0045	Form 2
		PM10			emission factor	***0.00005***	***0.0046***	***0.0021***	Table 5
10	Recirculating Conveyor [30"x60'] to Feed Conveyor [36"x60']	PM	96	89,159	Included in	0.00010	0.0097	0.0045	Form 2
		PM10			emission factor	***0.00005***	***0.0046***	***0.0021***	Table 5B
11	Three Deck Screen [5'x16'] to Product Conveyor [30"x20']	PM	161	150,296	Included in	0.00010	0.0164	0.0076	Form 2
		PM10			emission factor	***0.00005***	***0.0077***	***0.0036***	Table 5
12	Product Conveyor [30"x20'] to Scale Belt	PM	161	150,296	Included in	0.00010	0.0164	0.0076	Form 2
		PM10			emission factor	***0.00005***	***0.0077***	***0.0036***	Table 5
13	Radial Stacker [30"x70'] to Product Stockpile	PM	161	150,296	Included in	0.00123	0.1984	0.0924	Form 2
		PM10			emission factor	***0.00058***	***0.0935***	***0.0436***	Table 5A
14	Truck/Loader Handling of Product from Stockpile	PM	161	150,296	Included in	0.00023	0.0376	0.0175	Form 2
		PM10			emission factor	***0.00011***	***0.0177***	***0.0083***	Table 1
15	Three Deck Screen [5'x16'] to Fines Conveyor [30"x60']	PM	112	104,443	Included in	0.00010	0.0114	0.0053	Form 2
		PM10			emission factor	***0.00005***	***0.0054***	***0.0025***	Table 5
16	Stacker [30"x60'] to Fine Product Stockpile	PM	112	104,443	Included in	0.00123	0.1378	0.0642	Form 2
		PM10			emission factor	***0.00058***	***0.0650***	***0.0303***	Table 5
17	Truck/Loader Handling of Product from Fine Stockpile	PM	112	104,443	Included in	0.00023	0.0261	0.0122	Form 2
		PM10			emission factor	***0.00011***	***0.0123***	***0.0057***	Table 1
18	Scale Belt to Radial Stacker [30"x70']	PM	161	150,296	Included in	0.00010	0.0164	0.0076	Form 2
		PM10			emission factor	***0.00005***	***0.0077***	***0.0036***	Table 5
19	Feed, Product and Fines Storage piles	PM	273	2,364,044	Included in	Not Anticipated	0.0000	0.0000	Form 2
		PM10			emission factor	***0.00005***	***0.0131***	***0.0567***	Table 12
	TOTAL EMISSIONS	PM					1.7723	0.8259	
		PM10					***1.1559***	***0.5893***	

Annual Operation (Hours per Year)	932.00
Feed Rate (Tons per Hour)	273.33

Est. Screen Analysis per T. Comi, M. Ioli - Dec. 1994	0	-2", +1.5"	-1.5", +3/8"	-3/8"
Feed Material to Grizzly Feeder	0.35	0.02	0.29	0.34
Recycled through Crusher	0	0	0.2	0.8

Notes: PM10 EF from general crushing and screening permit. PM emission factors are not determined under the general crushing and screening permit calculations from Form 2 for rock products sources. PM factor are based on the ratio of metalic mineral emission factors (PM:PM10) times the non-metalic minerals PM10 factors.

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK: S 095
SCC: 3-03-024-04

Operation description:

The 6A/6B Overland Conveyor transfer point A2 to A3. Single transfer point.
Maximum capacity: 5,000 tph.
OPERATION 204, PROCESS 470, SOURCE 095

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy.	U/C Emission Cntr. Emission Factor	Max. Annual Throughput	Total Thru-put tons/yr	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	**Non-Fugitive - Point Source**	--	Water	--	0.00014					AP-42, Section 11.19.2
	A2 to A3 CTP		sprays			43,800,000	19,279,042	3.066	1.349532969	
	Magnetic Steel Recovery Plant		& Enclosed			11,388,000.00	8,017	0.79716	0.00056119	
	Total		Transfer		lb/ton rock/point	tons rock/yr	tons rock/yr		**1.350094159**	
PM-10	**Non-Fugitive - Point Source**	--	Points	--	0.000046				0	AP-42, Section 11.19.2
	A2 to A3 CTP					43,800,000	19,279,042	1.0074	0.443417975	
	Magnetic Steel Recovery Plant					11,388,000.00	8,017	0.261924	0.000184391	
	Total				lb/ton rock/point	tons rock/yr	tons rock/yr		**0.443602366**	
PM-2.5	**Non-Fugitive - Point Source**	--		--	0.000013				0	AP-42, Section 11.19.2
	A2 to A3 CTP					43,800,000	19,279,042	0.2847	0.125313776	
	Magnetic Steel Recovery Plant					11,388,000.00	8,017	0.074022	5.21105E-05	
	Total				lb/ton rock/point	tons rock/yr	tons rock/yr		**0.125365886**	
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001230769				1.66165E-05	
Arsenic Compounds					0.0012				1.62011E-05	
Beryllium Compounds					0.0001				1.35009E-06	
Cadmium Compounds					0.00005				6.75047E-07	
Chromium Compounds					0.014576923				0.000196802	
Cobalt Compounds					0.000623077				8.41213E-06	
Lead Compounds					0.003				4.05028E-05	
Manganese Compounds					0.023238462				0.000313741	
Mercury Compounds					1.84286E-06				2.48803E-08	
Nickel Compounds					0.001076923				1.45395E-05	
Selenium Compounds					0				0	

Total HAPs								*0.000608865*	

Notes:

1. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
2. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK: S 096
SCC: 3-03-024-04

Operation description:

The 6A/6B Overland Conveyor transfer point B3 to B4 Stacker. Single transfer point.
TB-E (007) conveyor relocated from Twin Buttes. Maximun Capacity = 7,000 tph
OPERATION 204, PROCESS 471, SOURCE 096

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy.	U/C Emission Cntr. Emission Factor	Max. Annual Throughput	Total Thru-put tons/yr	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	Water sprays & Enclosed		0 lb/ton rock/point	61,320,000 tons rock/yr	19,279,042 tons rock/yr	4.2924	1.349532969	AP-42, Section 11.19.2
PM-10	Non-Fugitive Point Source		Transfer Points		0 lb/ton rock/point	61,320,000 tons rock/yr	19,279,042 tons rock/yr	1.41036	0.443417975	AP-42, Section 11.19.2
PM-2.5	Non-Fugitive Point Source		Transfer Points		0 lb/ton rock/point	61,320,000 tons rock/yr	19,279,042 tons rock/yr	0.39858	0.125313776	AP-42, Section 11.19.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001230769				1.66096E-05	
Arsenic Compounds					0.0012				1.61944E-05	
Beryllium Compounds					0.0001				1.34953E-06	
Cadmium Compounds					0.00005				6.74766E-07	
Chromium Compounds					0.014576923				0.00019672	
Cobalt Compounds					0.000623077				8.40863E-06	
Lead Compounds					0.003				4.0486E-05	
Manganese Compounds					0.023238462				0.000313611	
Mercury Compounds					1.84286E-06				2.487E-08	
Nickel Compounds					0.001076923				1.45334E-05	
Selenium Compounds					0 (%)				0	
Total HAPs									*0.000608612*	

Notes:

1. Crushed coarse ore stockpile maximum throughput is the sum of Sierrita and Esperanza maximum throughput.
2. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
3. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

2012

ESTIMATED AIR POLLUTANT EMISSIONS FROM HAUL TRUCK LOADING AND DUMPING
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Stack: S 097

Operation Description:
Haul truck dumping of ore, leach and waste productions.
Includes operations in the Sierrita pit
OPERATION 280, PROCESS 490, SOURCE 097

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Actual Annual Production	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)								
Unloading at Primary Crusher	Fugitive Non-Point	Water Spray	4.81995E-05 lb/ton waste		38,644,318 tons rock/yr		0.931318773	AP-42, Section 13.2.4 11/06
Unloading to Leach & Waste Plus Fines Rehandled	Fugitive Non-Point	Water Spray	0.003531688 lb/ton waste		48,244,445 tons rock/yr		85.19215346	AP-42, Section 13.2.4 11/06
Total							86.12347223	
PM-10								
Unloading At Primary Crusher	Fugitive Non-Point	Water Spray	2.27971E-05 lb/ton waste		38,644,318 tons rock/yr		0.440488609	AP-42, Section 13.2.4 11/06
Unloading to Leach & Waste Plus Fines Rehandled	Fugitive Non-Point	Water Spray	0.001670393 lb/ton waste		48,244,445 tons rock/yr		40.29358609	AP-42, Section 13.2.4 11/06
Total							40.734074	
PM-2.5								
Unloading At Primary Crusher	Fugitive Non-Point	Water Spray	3.45213E-06 lb/ton waste		38,644,318 tons rock/yr		0.066702561	AP-42, Section 13.2.4 11/06
Unloading to Leach & Waste Plus Fines Rehandled	Fugitive Non-Point	Water Spray	0.000252945 lb/ton waste		48,244,445 tons rock/yr		6.10160018	AP-42, Section 13.2.4 11/06
Total							6.168302774	
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001230769	0	1.14624E-05	
Arsenic Compounds					0.0012	0	1.11758E-05	
Beryllium Compounds					0.0001	0	9.31319E-07	
Cadmium Compounds					0.00005	0	4.65659E-07	
Chromium Compounds					0.014576923	0	0.000135758	
Cobalt Compounds					0.000623077	0	5.80283E-06	
Lead Compounds					0.003	0	2.79396E-05	
Manganese Compounds					0.023238462	0	0.000216424	

Mercury Compounds Nickel Compounds Selenium Compounds	Freeport-McMoRan Sierrita Inc.			2012 Emissions Calculations	1.84286E-06 0.001076923 0	0 0 0	1.71629E-08 1.00296E-05 0	Title V Permit Renewal
Total HAPs					(%)	*0*	*0.000420006*	

Notes:

1. Maximum production is based on the maximum potential for rock blasting = 131400000 tons rock/yr
2. Formula for Emisssion Factor

E = (k)(0.0032) [(U/5)^1.3 / [(M/2)^1.4]

E = emission factor (lb/ton)

k = particulate size multiplier (dimensionless) =

0.74	for PM	pg. 13.2.4-4
0.35	for PM10	pg. 13.2.4-4
0.053	for PM2.5	pg. 13.2.4-4

U = mean wind speed (mph)	6.8	At unloading to leach and waste
U = mean wind speed (mph)	0.25	At unloading at Primary
M = material moisture content (%)	2	C&C L. Thompsen Email 3/2/04

3. The windspeed for material unloaded to the primary crusher was assumed to be 0.25 MPH because the primary crusher has draft towards Ducson wet scrubber. In addition the material is unloaded under parking bay cover and is below the pit ri
4. The blast/dump reconcilliation report is used for waste, leach, fines, and ore (handled twice) dumping, not the monthly operating report because the monthly operating report tonage does not include material that might be handled twice in the pi
5. HAPs include only those for material dumped at primary crusher because assay is available for "ore".
6. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
7. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM HAUL TRUCK LOADING AND DUMPING
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 097

Operation Description:
Haul truck loading for the ore, leach and waste productions.
Includes operations in the Sierrita, Ocotillo and Esperanza pits.
OPERATION 280, PROCESS 490, SOURCE 097

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Actual Annual Production	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	Water Spray	0.003531688 lb/ton waste	131,400,000 tons rock/yr	4,817,023 tons rock/yr		8.506110168	AP-42, Section 13.2.4 11/06
PM-10	Fugitive Non-Point	Water Spray	0.001670393 lb/ton waste	131,400,000 tons rock/yr	4,817,023 tons rock/yr		4.023160215	AP-42, Section 13.2.4 11/06
PM-2.5	Fugitive Non-Point	Water Spray	0.000252945 lb/ton waste	131,400,000 tons rock/yr	4,817,023 tons rock/yr		0.609221404	AP-42, Section 13.2.4 11/06
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs (not anticipated)	--	--	--	--	--	--	--	--

Notes:
1. Maximum production is based on the maximum potential for rock blasting. Actual Producation is total loaded above 3850 elevation. Do not count emissions below 50 feet below pit lip (4050 elevation).
2. Formula for Emisssion Factor
E = (k)(0.0032) [(U/5)^1.3 / [(M/2)^1.4]
E = emission factor (lb/ton)
k = particulate size multiplier (dimensionless) =

0.74	for PM	pg. 13.2.4-4
0.35	for PM10	pg. 13.2.4-4
0.053	for PM2.5	pg. 13.2.4-4
U = mean wind speed (mph)	6.8	See Data Input Spreadsheet
M = material moisture content (%)	2	C&C L. Thompsen Email 3/2/04

2. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT - TWIN BUTTES STACKER
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 102
SCC: 3-03-024-01

Operation description:

The Sierrita ore overland conveyor B4 Stacker to Coarse Ore Stockpile located north of the Sierrita fine crushing.
Single belt transfer. Maximum capacity 7,000 tph.
OPERATION 204, PROCESS 473, SOURCE 102

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	Emission Factor	Max. Annual Throughput	Total Thru-put tons/yr	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	--	Wet ore prior to stockpile		0.002001956 lb/ton rock/point	61,320,000 tons rock/yr	19,279,042 tons rock/yr	61.379969	19.29789679	AP-42, Section 13.2.4 11/06 (formerly Sec. 11.2.3)
PM-10	Fugitive Non-Point		discharge		0.000946871 lb/ton rock/point	61,320,000 tons rock/yr	19,279,042 tons rock/yr	29.031067	9.127383615	AP-42, Section 13.2.4 11/06 (formerly Sec. 11.2.3)
PM-2.5	Fugitive Non-Point				0.000143383 lb/ton rock/point	61,320,000 tons rock/yr	19,279,042 tons rock/yr	4.3961329	1.382146662	AP-42, Section 13.2.4 11/06 (formerly Sec. 11.2.3)
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001230769				0.000237513	
Arsenic Compounds					0.0012				0.000231575	
Beryllium Compounds					0.0001				1.92979E-05	
Cadmium Compounds					0.00005				9.64895E-06	
Chromium Compounds					0.014576923				0.00281304	
Cobalt Compounds					0.000623077				0.000120241	
Lead Compounds					0.003				0.000578937	
Manganese Compounds					0.023238462				0.004484534	
Mercury Compounds					1.84286E-06				3.55633E-07	
Nickel Compounds					*0.001076923*				*0.000207824*	
Selenium Compounds					0				0	
Total HAPs					(%)				*0.008702965*	

Notes:
1. Maximum potential throughput based on the capacity of conveyor segment (7,000 tph)
2. SA Stacker relocated from Twin Buttes in 1995.
3. AP-42, Section 13.2.4, Aggregate Handling & Storage Piles
Formula for Emisssion Factor

E = (k)(0.0032)[(U/5)^1.3]/[(M/2)^1.4]

E = emission factor (lb/ton)

k = particulate size multiplier (dimensionless) =

0.74	for PM	pg. 13.2.4-4
0.35	for PM10	pg. 13.2.4-4
0.053	for PM2.5	pg. 13.2.4-4

U = mean wind speed (mph) 6.8 Update wind speed with annual mean daily windspeed.

M = material moisture content (%) 3 C&C L. Thompsen Email 3/2/04 + 1% moisture added for water sprays.

4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

5. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM TWIN BUTTES ELECTROWINNING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Operation description:

Twin Buttes Electrowinning operations - This operation reclaims metallic copper from pregnant electrolyte solution from the SX #1 & SX #2 plants. H2SO4 emissions are released from the surface of the electrowinning cells. Tankhouse is ventilated by 3 fans.
OPERATION 216, PROCESS 440, SOURCE 105

STACK : S 105
SCC: 3-03-024-02/03

Pollutant	Fugitive/ Point Source	Primary Control	No. of Cells	Area per cell (ft2)	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Total Sol'n Throughput	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	--	--	--	--	-- 0	72,533,000	19,279,042	0	0	--
PM-10	--			--	-- 0	72,533,000	19,279,042	0	0	--
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
VOCs (not anticipated)	--	--	--	--	--	--	--	--	--	--
H2SO4 Sulfuric acid	Fugitive Non-Point	Surfactant & Ball blanket	18	94.5	0.000157 lb/hr/ft2	72533000 Gal/yr	19,279,042 Gal/yr	1.1697097	1.16970966	Emission factor based on testing at Twin Buttes plant, with controls
HAPs Cobalt	Fugitive Non-Point	Surfactant & Ball blanket			0.008 %				9.35768E-05	

Notes:
Max. potential emissions rate is independent of throughput. Assumes all cells are filled and operational for entire 8,760 hours/year.
Emission controls consist of use of anti-foam surfactant, and use of styrofoam ball blanket floating on top of cells.

2012

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

STACK : S 112
SCC: 3-03-024-04

Operation description:
#6 and #8 Tertiary Crushers and associated screens.
This part of operations are exhausted by the #9 Ducon wet dust collector (57,000 ACFM).
OPERATION 207, PROCESS 495, SOURCE 112

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Thruput (2) tons/yr	Actual Annual Ore Thru-put	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors	Water sprays on	n/c	**0.0009** lb/ton rock	42,591,120 tons/yr	0 tons rock/yr	19.0874	0.0000	Source Test 6/15/10
PM-10	Non-Fugitive Point Source		material transfer	n/c	**0.0004** lb/ton rock	42,591,120 tons/yr	0 tons rock/yr	9.5437	0.0000	PM-10 = 50% PM
PM-2.5	Non-Fugitive Point Source			0.9935	**0.0001** lb/ton	42,591,120 tons/yr	0 tons rock/yr	2.8631	0.0000	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231				0	
Arsenic Compounds					0.001200				0	
Beryllium Compounds					0.000100				0	
Cadmium Compounds					0.000050				0	
Chromium Compounds					0.014577				0	
Cobalt Compounds					0.000623				0	
Lead Compounds					0.003000				0	
Manganese Compounds					0.023238				0	
Mercury Compounds					0.000002				0	
Nickel Compounds					0.001077				0	
Selenium Compounds					0.000000				0	
Total HAPs									*0.0000*	

Notes:
n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.
1. Controlled PM emission factor based on source test data 4/21/05: 0.51PPH / 569 TPH (6 & 8T crusher throughput)
2. Maximum Potential Emissions based on Fine Crushing throughput out 7B belt.
3. The #6 T H8000 and screen were installed in 2001.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Off line as of 10/6/11

ESTIMATED AIR POLLUTANT EMISSIONS FROM MINING OPERATIONS - SIERRITA PRIMARY CRUSHERS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Operation description:

STACK : S 113A

SCC: 3-03-024-01

6A Primary Crusher: Primary crushing of low-moisture sulfide ore in Sierrita pit by 2 stationary primary crushers. (A-Side)
Controlled by 1 FARR Cartridge-Style Dust Collector
OPERATION 204, PROCESS 407, SOURCE 113A

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy (1)(2)	U/C Emission Cntr. Emission Factor (3)(4)	Max. Annual Thruput	Actual Annual Ore Thru-put	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon SI 230 3221	Water sprays		**0.00001** lb/ton rock	42,591,120 tons rock/yr	20,584,453 tons rock/yr	0.2981	0.1441	Source Test: 3/11/13
PM-10	Non-Fugitive Point Source	Wet dust collector			**0.00001** lb/ton rock	42,591,120 tons rock/yr	20,584,453 tons rock/yr	0.2981	0.1441	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			0.9935	-- **0.000002** lb/ton	42,591,120 tons/yr	20,584,453 tons rock/yr	0.0447	0.0216	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										--
Antimony Compounds					0.001231				1.77343E-06	
Arsenic Compounds					0.001200				1.72909E-06	
Beryllium Compounds					0.000100				1.44091E-07	
Cadmium Compounds					0.000050				7.20456E-08	
Chromium Compounds					0.014577				2.10041E-05	
Cobalt Compounds					0.000623				8.97799E-07	
Lead Compounds					0.003000				4.32274E-06	
Manganese Compounds					0.023238				3.34846E-05	
Mercury Compounds					0.000002				2.65539E-09	
Nickel Compounds					0.001077				1.55175E-06	
Selenium Compounds					0.000000				0	
Total HAPs					(%)				*0.0001*	

Notes:

1. Unit Installed and Startup: 11/9/12
2. Throughput: 11/9/12 - 12/31/12
3 - PM emissions were assumed to be all PM-10.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM MINING OPERATIONS - SIERRITA PRIMARY CRUSHERS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

STACK : S 113B

SCC: 3-03-024-01

Operation description:

6B Primary Crusher: Primary crushing of low-moisture sulfide ore in Sierrita pit by 2 stationary primary crushers. (B-Side)
Controlled by 1 FARR Cartridge-Style Dust Collector
OPERATION 204, PROCESS 407, SOURCE 113B

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Ore Thru-put	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon SI 230 3221	Water sprays		**0.00001** lb/ton rock	42,591,120 tons rock/yr	19,279,042 tons rock/yr	0.2981	0.1350	Source Test: 3/11/13 (A-Side)
PM-10	Non-Fugitive Point Source	Wet dust collector			**0.00001** lb/ton rock	42,591,120 tons rock/yr	19,279,042 tons rock/yr	0.2981	0.1350	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			0.9935	-- **0.000002** lb/ton	42,591,120 tons/yr	19,279,042 tons rock/yr	0.0447	0.0202	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										--
Antimony Compounds					0.001231				1.66096E-06	
Arsenic Compounds					0.001200				1.61944E-06	
Beryllium Compounds					0.000100				1.34953E-07	
Cadmium Compounds					0.000050				6.74766E-08	
Chromium Compounds					0.014577				1.9672E-05	
Cobalt Compounds					0.000623				8.40863E-07	
Lead Compounds					0.003000				4.0486E-06	
Manganese Compounds					0.023238				3.13611E-05	
Mercury Compounds					0.000002				2.487E-09	
Nickel Compounds					0.001077				1.45334E-06	
Selenium Compounds					0.000000				0	
Total HAPs					(%)				*0.000061*	

Notes:

1. Unit Installed and Startup: 11/9/12
2. Throughput: 11/9/12 - 12/31/12
3 - PM emissions were assumed to be all PM-10.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B
6. Emission factor is based on test results on the A-side FARR (ID 113A) The units are identical

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE TRANSFER OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012 Emissions Calculations

STACK : S 116
SCC: 3-03-024-04

Operation description:
Sierrita 8B to 8C conveyor transfer point. This part of operations is exhausted by the #11 Wet Scrubber
Maximum throughput rate: 116,688 tpd. - Taken out of service as of 3/16/10.
OPERATION 208, PROCESS 421, SOURCE 009

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Ore Thru-put	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Wet Srubber	--	0.9935	**0.0000151** lb/ton rock	42,591,120 tons rock/yr	- tons rock/yr	0.3216 From 1 stacks	0.0000	Source Test Data - 5/7/07
PM-10	Non-Fugitive Point Source	(1 unit)		0.9935	**0.0000151** lb/ton rock	42,591,120 tons rock/yr	- tons rock/yr	0.3216 From 1 stacks	0.0000	Source Test Data - 5/7/07
PM-2.5	Non-Fugitive Point Source			0.9935	-- **0.0000023** lb/ton	42,591,120 tons	- tons/year	0.0482	0.0000	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231				0	
Arsenic Compounds					0.001200				0	
Beryllium Compounds					0.000100				0	
Cadmium Compounds					0.000050				0	
Chromium Compounds					0.014577				0	
Cobalt Compounds					0.000623				0	
Lead Compounds					0.003000				0	
Manganese Compounds					0.023238				0	
Mercury Compounds					0.000002				0	
Nickel Compounds					0.001077				0	
Selenium Compounds					0.000000				0	
Total HAPs					(%)				*0.0000*	

Notes:

1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2. High moisture emission factor was used because C&C goal is to keep moisture between 3 and 5%. (Ave. 4%).(J. Miller 2/26/04)
3. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
4. Emission Factor based on source test, 5/7/07, 0.095 pph / 6118 tph

ESTIMATED AIR POLLUTANT EMISSIONS FROM #2 MOLY SULFIDE LOADOUT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Stack: S 117
SCC: 3-05-024-01

Operation Description:
Moly Sulfide Screw Conveyor Loadout #2

OPERATION 209, PROCESS 462, SOURCE 117

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Actual Annual Production	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	None	0.01 lb/ton	87,600 tons/yr	0 tons/yr	0.438	0	AP-42, Section 11.24-2 1/95 - High Moisture
PM-10	Non-Fugitive Point Source	None	0.004 lb/ton	87,600 tons/yr	0 tons/yr	0.1752	0	AP-42, Section 11.24-2 1/95 - High Moisture
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds			0.002300				0	
Arsenic Compounds			0.006500				0	
Cadmium Compounds			0.001285				0	
Chromium Compounds			0.001300				0	
Cobalt Compounds			0.002800				0	
Lead Compounds			0.034500				0	
Manganese Compounds			0.001000				0	
Mercury Compounds			0.000050				0	
Nickel Compounds			0.001000				0	
Selenium Compounds			0.038800				0	
Total HAPs			(%)				*0*	

Notes:
1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
3. EF based on AP-42, Section 11.24-2 1/95 - High Moisture

ESTIMATED AIR POLLUTANT EMISSIONS FROM MOLY LEACH PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Stack: S 118
SCC: 3-03-024-11

Operation Description:
Moly Leach Plant Production - Wet Process

OPERATION , PROCESS , SOURCE 118

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Actual Annual Production	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	Wet Process	0 lb/ton	73,584 tons/yr	Wet Process	0	0	
PM-10	Fugitive Non-Point	Wet Process	0 lb/ton	73,584 tons/yr	Wet Process	0	0	
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC	Non-Fugitive Point Source	Fume Scrubber	0.391 lb/hr	8760 hr/yr	8,784	1.71258	1.717272	-- Source Test - 3/24/07
HAPs	Non-Fugitive	Fume Scrubber	--	--	--	--	--	--
Ethylidene Dichloride (1,1-Dichloroethane)	Point Source		0.0001	8760	8,784	0.000438	0.0004392	Source Test - 3/24/07
Benzene			0.0004	8760	8,784	0.001752	0.0017568	Source Test - 3/24/07
Bromomethane (methyl bromide)			0.0002	8760	8,784	0.000876	0.0008784	Source Test - 3/24/07
Carbon Disulfide			0.0021	8760	8,784	0.009198	0.0092232	Source Test - 3/24/07
Carbon tetrachloride			0.002	8760	8,784	0.00876	0.008784	Source Test - 3/24/07
Chlorine			0.11	8760	8,784	0.4818	0.48312	Source Test - 3/24/07
Chloroethane (ethyl chloride)			0.0036	8760	8,784	0.015768	0.0158112	Source Test - 3/24/07
Chloroform			0.0125	8760	8,784	0.05475	0.0549	Source Test - 3/24/07
Chloromethane (methyl chloride)			0.0015	8760	8,784	0.00657	0.006588	Source Test - 3/24/07
Ethylbenzene			0.0002	8760	8,784	0.000876	0.0008784	Source Test - 3/24/07
Hydrogen Chloride			0.032	8760	8,784	0.14016	0.140544	Source Test - 3/24/07
Methylene Chloride			0.0004	8760	8,784	0.001752	0.0017568	Source Test - 3/24/07
Toluene			0.0012	8760	8,784	0.005256	0.0052704	Source Test - 3/24/07
Xylenes (Total)			0.0006	8760	8,784	0.002628	0.0026352	Source Test - 3/24/07
Total HAPs			lb/hr	hr/yr		*0.730584* tons/yr	***0.7325856*** tons/yr	

Notes:

1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. VOCs are based on an emission factor which includes Methane.

ESTIMATED AIR POLLUTANT EMISSIONS FROM RHENIUM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 119
SCC: 1-02-00-6-03

Operation Description:
Rhenium Plant Production - Wet Process
1 Storage Bin and 1 enclosed screw conveyor
OPERATION , PROCESS , SOURCE 119

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Total Production	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point		0.12 lb/ton	87.6 tons/yr	0 tons/yr	0.015768	0	AP-42 11.24 for low moisture ore New Process
PM-10	Fugitive Non-Point		0.06 lb/ton	87.6 tons/yr	0 tons/yr	0.007884	0	AP-42 11.24 for low moisture ore
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs (not anticipated)	--	--	--	--	--	--	--	--

Note:

1. One storage bin and one screw conveyor provides one unloading operation and 2 conveyor transfer points. Minor Permit Revision submitted 12/12/06.
2. Note, these emissions are overly conservative, the screw conveyor was not operation for much of the year. (2009)

ESTIMATED AIR POLLUTANT EMISSIONS FROM MISCELLANEOUS SCREENS AND GRIZZLIES
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 120
SCC: 3-05-020-03

Operation Description:
Miscellaneous Screens and Grizzlies

OPERATION , PROCESS , SOURCE 120

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Actual Annual Production	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive	Water Spray	0.03 lb/ton waste		0 tons rock/yr	0	0	PM10 EF x 2 1/95
PM-10	Non-Fugitive	Water Spray	0.015 lb/ton waste	0 tons rock/yr	0 tons rock/yr	0	0	AP-42, Section 11.19.2-2 1/95
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Unknown Metals Content	--	--	--	--	--	--	--	--

Notes:
1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 121
SCC: 3-03-024-02/03

Operation description:

Sierrita fine crushing operations - No. 2T, 3T & 4T Tertiary Discharge Screens, 7C/#1 scalping screen transfer point, 8D/8B CTP, 7A/7B CTP.
This part of operations is exhausted by 1 Ducon wet dust collector (#12) on North side of fine crushing building.
OPERATION 207, PROCESS , SOURCE 121

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Ore Thru-put	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collector	Water sprays on	n/c	**0.00011** lb/ton rock	1,116,900 tons rock/yr	3,057,993 tons rock/yr	0.0599	0.1639	3/11/11 Source Test
PM-10	Non-Fugitive Point Source	SI 40 265 2012 (1 unit)	material transfer	n/c	**0.00011** lb/ton rock	1,116,900 tons rock/yr	3,057,993 tons rock/yr	0.0599	0.1639	3/11/11 Source Test
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00002** lb/ton	1,116,900 tons	3,057,993 tons/year	0.0090	0.0246	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231				2.01734E-06	
Arsenic Compounds					0.001200				1.96691E-06	
Beryllium Compounds					0.000100				1.63909E-07	
Cadmium Compounds					0.000050				8.19544E-08	
Chromium Compounds					0.014577				2.38929E-05	
Cobalt Compounds					0.000623				1.02128E-06	
Lead Compounds					0.003000				4.91727E-06	
Manganese Compounds					0.023238				3.80899E-05	
Mercury Compounds					0.000002				3.02061E-09	
Nickel Compounds					0.001077				1.76517E-06	
Selenium Compounds					0.000000				0	
Total HAPs					(%)				*0.0001*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

#12 Wet Scrubber initial start-up March, 2004. Minor Permit Revision No. 31648.

1. Controlled emission factor based on source test data: 0.6 lb/hr at process rate of 5597 tph (total fine crusher throughput)

3. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

4. Throughput based on tertiary crushing limit divided by 5 to reflect operation of two tertiary crushers.

5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

6. Removed from service as of 5/24/12 with installation of ID 311

7. Throughput covers 1/1/12 - 5/23/12

ESTIMATED AIR POLLUTANT EMISSIONS FROM THE COPPER SULFATE PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Stack: S 122A
SCC: 3-03-024-11,
3-005-002-45 / 3-03-024-04&08

Operation Description:
Copper Sulfate Plant: Vibratory Screen, Dryer, Boiler, Conveyor Transfer Points and Material Handling
Copper Sulfate Plant Cartridge Filter (Dry Side)
OPERATION , PROCESS , SOURCE 122A

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	U/C Controlled Emission Factor lbs/ton	Max Annual Production tons/yr	Actual Annual Production tons/yr	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	**Non-Fugitive - Point Source** CTPs (2)	Cartridge Filter	0.999	0.00012	30,310.00	8,446	0.0036372	**0.0010**	AP-42, Section 11.24-2 1/95
PM-10	**Non-Fugitive - Point Source** CTPs (2)	Cartridge Filter	0.999	0.00006	30,310.00	8,446	0.0009093	**0.0005**	AP-42, Section 11.24-2 1/95
PM-2.5	**Non-Fugitive - Point Source** CTPs (2)	Cartridge Filter	0.999	0.000018	30,310.00	8,446	0.00027279	**0.0002**	AP-42 App B, B.2.2
HAPs (not anticipated)	--	--	--	--	--	--	--	--	--

Notes:
1. This source was added to the Emission Inventory in 2006 (for 2005 emissions reporting). Start-up 1/3/05.
2. HAPS Source: No HAPs Data Available.
3. Potential Throughput based on plant design. See MPR No. 32531 Application.
4. Control Efficiency of dryer includes 47% control of emissions from dryer by product recovery cyclone and 99.9% control of emissions from product recovery cyclone by cartridge collector.
5. Natural Gas Dryer Emission Factors from AP-42 11.1-5&6 divided by 0.92 to reflect the amount of material dried.
6. Currently, oversize is not manually loaded - it is redissolved and sent back to the SX in solution via the tails line - wet process.

ESTIMATED AIR POLLUTANT EMISSIONS FROM THE COPPER SULFATE PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

Stack: S 122B
SCC: 3-03-024-11,
3-005-002-45 / 3-03-024-04&08

Operation Description:
Copper Sulfate Plant: Vibratory Screen, Dryer, Boiler, Conveyor Transfer Points and Material Handling
Copper Sulfate Plant Baghouse (Wet Side)
OPERATION , PROCESS , SOURCE 122B

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	Uncontrolled **Controlled** Emission Factor lbs/ton	Max Annual Production tons/yr	Actual Annual Production tons/yr	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	**Non-Fugitive - Point Source**	Baghouse		0.01					AP-42, Section 11.24-2 1/95
	Vibratory Screen		0.999	**0.00001**	30,310.00	8,446	0.00015	0.000042	
	CTPs (3)		0.999	**0.00001**	30,310.00	8,446	0.00045	0.000127	
	Dryer		0.9995	**0.00985**	30,310.00	8,446	0.1493	0.041596	
	Total						**0.14988**	**0.04176**	
PM-10	**Non-Fugitive - Point Source**	Baghouse		0.004					AP-42, Section 11.24-2 1/95
	Vibratory Screen		0.999	**0.000004**	30,310.00	8,446	0.00006	0.000017	
	CTPs (3)		0.999	**0.000004**	30,310.00	8,446	0.00018	0.000051	
	Dryer		0.9995	**0.006**	30,310.00	8,446	0.0909	0.025337	
	Total						**0.09117**	**0.02540**	
PM-2.5	**Non-Fugitive - Point Source**	Baghouse							AP-42 App B, B.2.2
	Vibratory Screen			**0.0000015**	30,310.00	8,446	0.00002	0.000006	
	CTPs (3)			**0.0000015**	30,310.00	8,446	0.00007	0.000019	
	Dryer			**0.0014775**	30,310.00	8,446	0.0224	0.006239	
	Total						**0.02248**	**0.00626**	
Sulfur Dioxide	Dryer	Cartridge Filter		0.005	30,309.60	8,446	0.075774	0.021114525	AP-42, Section 11.1-5
Carbon Monoxide	Dryer	Cartridge Filter		0.434783	30,309.60	8,446	6.589049408	1.836047305	AP-42, Section 11.1-5
Nitrogen Oxides (NOx)	Dryer	Cartridge Filter		0.027174	30,309.60	8,446	0.411816535	0.11475322	AP-42, Section 11.1-5
Non-Methane VOC	Dryer	Cartridge Filter		0.008913	30,309.60	8,446	0	0.037638752	AP-42, Section 11.1-6
HAPs (not anticipated)	--	--	--	--	--	--	--	--	--

Notes:
1. This source was added to the Emission Inventory in 2006 (for 2005 emissions reporting). Start-up 1/3/05.
2. HAPS Source: No HAPs Data Available.
3. Potential Throughput based on plant design.
4. Control Efficiency of dryer includes 47% control of emissions from dryer by product recovery cyclone and 99.9% control of emissions from product recovery cyclone by cartridge collector.
5. Natural Gas Dryer Emission Factors from AP-42 11.1-5&6 divided by 0.92 to reflect the amount of material dried.
6. Currently, oversize is not manually loaded - it is redissolved and sent back to the SX in solution via the tails line - wet process.
7. Baghouse installed 8/22/12, throughput is based on entire year production

ESTIMATED AIR POLLUTANT EMISSIONS FROM DECANT SOLIDS HANDLING FACILITY
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 123
SCC: 3-03-024-04

Operation Description:

Decant Solids Handling Facility: stockpile, front-end loader, 5tph ball mill & screw conveyor.
Minor Permit Revision No. 33180. Initial Start-up 9/14/04.
OPERATION , PROCESS , SOURCE 123

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	U/C Controlled Emission Factor lbs/ton	Max Annual Production tons/year	Actual Annual Production tons/year	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	**Non-Fugitive** Screw Discharge	Enclosed	0.75	0.03	43,800.00	0	0.657	**0.0000**	AP-42, Section 11.24-2 1/95 - Low Moisture
	Fugitive			0.12	43,800.00	0			AP-42, Section 11.24-2 1/95 - Low Moisture
	Feed Hopper	Water Sprays	0.7	0.036			0.7884	0.0000	" "
	Stockpile			0.002584094			0.056591652	0.0000	AP-42 Sect 13.2.4 (See Below)
	Total Fugitive						0.845091652	0.0000	
PM-10	**Non-Fugitive** Screw Discharge	Enclosed	0.75	0.015	43,800.00	0	0.3285	**0.0000**	AP-42, Section 11.24-2 1/95 - Low Moisture
	Fugitive			0.06	43,800.00	0			AP-42, Section 11.24-2 1/95 - Low Moisture
	Feed Hopper	Water Sprays	0.7	0.018			0.3942	0.0000	" "
	Stockpile			0.001222206			0.026766322	0.0000	AP-42 Sect 13.2.4 (See Below)
	Total Fugitive						0.420966322	0.0000	
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs									
Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds				0.028000				0	
Arsenic Compounds				0.252500				0	
Beryllium Compounds				0.001000				0	
Cadmium Compounds				0.010583				0	
Chromium Compounds				0.003083				0	
Cobalt Compounds				0.010333				0	
Lead Compounds				0.255333				0	
Manganese Compounds				0.004667				0	
Mercury Compounds				0.000200				0	
Nickel Compounds				0.004083				0	
Selenium Compounds				0.019500				0	
Total HAPs								*0.0000*	

Notes:
1. This source was added to the Emission Inventory in 2005 (for 2004 emissions reporting). Start-up 9/14/04.
2. HAPS Source: Sierrita Monthly Composite Assay Report for 2009 from Miami (see Assay.xls) (TRI RY 2009 Files)
3. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

4. The Screw Conveyor is considered to be a non-fugitive source, and the others are fugitive sources as per Title V Permit #42862 - Technical Support Document.

Stockpile: AP-42, Section 13.2.4, Aggregate Handling & Storage Piles

Formula for Emisssion Factor

E = (k)(0.0032) [(U/5)^1.3 / [(M/2)^1.4]

E = emission factor (lb/ton)

k = particulate size multiplier (dimensionless) =

0.74 for PM pg. 13.2.4-4

ESTIMATED AIR POLLUTANT EMISSIONS FROM PORTABLE SCREENING PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 124
SCC: 3-03-024-04

Operation Description:

Portable Screen Plant
Minor Permit Revision Application Submitted 11/12/2004. Started Production 11/11/2005
OPERATION , PROCESS , SOURCE 124

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	Emission Factor lbs/ton	Max Annual Production tpy / hpy	Actual Annual Production tpy / hpy	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	**Non-Fugitive - Point Source**				11,388,000.00	8,017			Emissions Factors from the Application for
	Feed Hopper Loading	Water Sprays		0.00011			0.62634	0.0004	Crushing / Screening General Permit, ADEQ,
	Screening			0.00168			9.56592	0.0067	,12/19/02.
	Stacking			0.00011			0.62634	0.0004	
	Combined						**10.8186**	**0.0076**	
PM-10	**Non-Fugitive - Point Source**				11,388,000.00	8,017			Emissions Factors from the Application for
	Feed Hopper Loading	Water Sprays		0.000055			0.31317	0.0002	Crushing / Screening General Permit, ADEQ,
	Screening			0.00084			4.78296	0.0034	,12/19/02.
	Stacking			0.000055			0.31317	0.0002	
	Combined						**5.4093**	**0.0038**	
HAPs									
Hazardous Air Pollutants found in									
Particulate Matter:									
Antimony Compounds				0.001230769				9.37372E-08	
Arsenic Compounds				0.0012				9.13938E-08	
Beryllium Compounds				0.0001				7.61615E-09	
Cadmium Compounds				0.00005				3.80808E-09	
Chromium Compounds				0.014576923				1.1102E-06	
Cobalt Compounds				0.000623077				4.74545E-08	
Lead Compounds				0.003				2.28485E-07	
Manganese Compounds				0.023238462				1.76988E-06	
Mercury Compounds				1.84286E-06				1.40355E-10	
Nickel Compounds				*0.001076923*				8.20201E-08	
Selenium Compounds				0				0	
				(%)					
Total HAPs								*3.43473E-06*	

Notes:
1. This source was added to the Emission Inventory in 2006 (for 2005 emissions reporting). Start-up production11/11/05.
2. IC Engine was removed from this unit. - 317 Notice dated 10/24/08.
3. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
4. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).
5. This source is considered to be "Non-Fugitive" as per Title V Permit #42862 - Technical Support Document

ESTIMATED AIR POLLUTANT EMISSIONS FROM MAGNETIC STEEL RECOVERY PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 125
SCC: 3-03-024-04

Operation Description:
Magnetic Steel Recovery System
Minor Permit Revision Application Submitted 11/12/2004. Started Production 11/11/2005
OPERATION , PROCESS , SOURCE 125

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	U/C Controlled Emission Factor lbs/ton	Max Annual Production tpy / hpy	Actual Annual Production tpy / hpy	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive - Point Source CTPs(8)	Water Sprays		0.00014	11,388,000.00	8,017	6.37728	0.0045	AP-42 Chapter 11.19.2
PM-10	Non-Fugitive - Point Source CTPs(8)	Water Sprays		0.000046	11,388,000.00	8,017	2.095392	0.0015	AP-42 Chapter 11.19.2
PM-2.5	Non-Fugitive - Point Source CTPs(8)	Water Sprays		0.000013	11,388,000.00	8,017	0.592176	0.0004	AP-42 Chapter 11.19.2
HAPs									
Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds				0.001230769				5.52556E-08	
Arsenic Compounds				0.0012				5.38742E-08	
Beryllium Compounds				0.0001				4.48952E-09	
Cadmium Compounds				0.00005				2.24476E-09	
Chromium Compounds				0.014576923				6.54434E-07	
Cobalt Compounds				0.000623077				2.79732E-08	
Lead Compounds				0.003				1.34686E-07	
Manganese Compounds				0.023238462				1.0433E-06	
Mercury Compounds				1.84286E-06				8.27354E-11	
Nickel Compounds				0.001076923				4.83487E-08	
Selenium Compounds				0				0	
Total HAPs				(%)				*2.02468E-06*	

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY ENGINES
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 126

Operation description:
Various Stationary Engines

Dept.	Horespower Rating	Fuel Used	Max Allowed Operating Hours	Actual Hours Operated	PM10 (tons)	NOx (tons)	SOx (tons)	CO (tons)	TOC (tons)	Notes
Diesel Internal Combustion Engines (<600 bhp)										
Tailing Thickener Generator	375	Diesel	1000	125.3	0.052	0.728	0.048	0.157	0.059	
Twin Buttes Emergency Fire Water Back-Up	280	Diesel	1000		0.000	0.000	0.000	0.000	0.000	
Mine Truck Shop Emergency Fire Water Back-Up	67	Diesel	1000	57	0.004	0.005	0.014	0.010	0.001	
Taillings Dam Pumping Station Generator	268	Diesel	1000	23	0.007	0.007	0.022	0.017	0.002	
Diesel Internal Combustion Engines (>600 bhp)										
#3 Headwall Generator	1600	Diesel	1500	34	0.019	0.065	0.198	0.150	0.019	
Natural Gas Fired Engines										
Mill Reservoir Fire Water Pump	130	Natural Gas	1000	1.4	0.000	0.003	0.000	0.000	0.000	
Moly Roaster Generator	168	Natural Gas	1000	19.1	0.000	0.056	0.000	0.004	0.002	
CEMS Emergency Generator	20	Natural Gas	1000	35.9	0.000	0.012	0.000	0.001	0.000	
Administration Building Generator	200	Natural Gas	1000	86	0.000	0.298	0.000	0.023	0.009	
SCC Emergency Generator	137	Natural Gas	1000	36.1	0.000	0.086	0.000	0.007	0.002	
Propane Fired Engines										
Radio Hill Generator	23	Propane	1000	49.7	0.000	0.007	0.000	0.007	0.004	
Love Shack Generator	10	Propane	1000	0.3	0.000	0.000	0.000	0.000	0.000	
Dispatch Tower Generator	57	Propane	1000	24.7	0.000	0.009	0.000	0.009	0.005	
Dispatch Tower #2 Generator	63	Propane	1000	0	0.000	0.000	0.000	0.000	0.000	
Mine Engineering Generator	10	Propane	1000	24.8	0.000	0.002	0.000	0.001	0.001	
Primary Crusher Generator	134	Propane	1000	32	0.001	0.028	0.000	0.026	0.017	
West Robo Shack Generator	10	Propane			0.000	0.000	0.000	0.000	0.000	
Truck Shop Generator	10	Propane			0.000	0.000	0.000	0.000	0.000	
Twin Buttes Radio Hill Generator	39.5	Propane	1000	85.5	0.001	0.022	0.000	0.020	0.013	
Twin Buttes Sandcastle Generator	39.5	Propane	1000	50.5	0.000	0.013	0.000	0.012	0.008	
			Totals:		**0.085**	**1.341**	**0.283**	**0.444**	**0.143**	

Note:
1. Emissions are calculated using the following emission factors. = Horsepower * operating hours * Emission Factor
2. The calculations above are organized based on the emission factors found below.

Diesel Internal Combustion Engine Emisison Factors (<600 bhp) Section 3.3 Gasoline and Diesel Industrial Engines

Pollutant	#/hp-hr
PM10	0.0022
Nox	0.031
Sox	0.00205
CO	0.00668
TOC	0.0025141

Diesel Internal Combustion Engine Emisison Factors (>600 bhp) Section 3.4 Large Stationary Diesel and All Stationary Dual-fuel Engines

Pollutant	#/hp-hr
PM10	0.0007
Nox	0.0024
Sox	0.007281
CO	0.0055
TOC	0.000705

Per Arizona Administrative Code R18 -2- 719(H) generators will be not be allowed to use high sulfur oill. Per AAC R18-2-701(14) high sulfur oil is fuel with 0.9% sulfur or more. Thus SOx emission factor based on 0.9% sulfur

Natural Gas Emission Factors AP-42 3.2-2

	lb/MMBtu	lbs/bhp-hr = EF Lbs/MMBtu X 2545 Btu/Bhp-hrX MMBtu/1,000,000 Btu X 1/(30% efficiency)
PM10	0.0000771	6.54065E-07
Nox	4.08	0.034612
Sox	0.000588	4.9882E-06
CO	0.317	0.002689217
VOC	0.118	0.001001033

SCAQMD General Instruction Book for the AQMD 2005-2006 AER, Internal Combustion Engines (LPG, Propane, Butane)

		PM-10	NOx	SOx	CO	TOC
Propane (fuel input) (lb/1000-gal)		5	139	0.35	129	83
Propane (power output) (lb/hp-hr)1		0.000468692	0.01302965	3.28085E-05	0.012092265	0.007780295

Assume 100% load factor and 30% engine efficiency

lb/bhp - hr EF =EF lbs/(1000) gallon X (1000 gallons)/1000 gallons X 100% load efficiency * 1 gal/90,500 Btu X 2545 Btu-bhp X 1/.30

Heating Value 90,500 Btu/gallon typical heating value for commercial grade and HD-5 Propane per AP-42 Section 1.5 Liquified Petroleum Gas Combustion

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 201
SCC: 3-03-024-02/03

Operation description:

Secondary Crushing: #1 Secondary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 201

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.00009** lb/ton	13,961,250 tons/year	9,048,391 tons/year	0.6440	0.4174	Source Test Data - 6/17/10
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.00009** lb/ton	13,961,250 tons/year	9,048,391 tons/year	0.6440	0.4174	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00001** lb/ton	13,961,250 tons	9,048,391 tons/year	0.0966	0.0626	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			7.92675E-06	5.13739E-06	
Arsenic Compounds					0.001200			7.72858E-06	5.00895E-06	
Beryllium Compounds					0.000100			6.44048E-07	4.17413E-07	
Cadmium Compounds					0.000050			3.22024E-07	2.08706E-07	
Chromium Compounds					0.014577			9.38824E-05	6.08459E-05	
Cobalt Compounds					0.000623			4.01292E-06	2.6008E-06	
Lead Compounds					0.003000			1.93214E-05	1.25224E-05	
Manganese Compounds					0.023238			0.000149667	9.70003E-05	
Mercury Compounds					0.000002			1.18689E-08	7.69232E-09	
Nickel Compounds					0.001077			6.9359E-06	4.49521E-06	
Selenium Compounds					0.000000			0	0	
					(%)					
Total HAPs								*0.0003*	*0.0002*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor based on most recent source test data available for this unit.

2. Max throughput based on total secondary crushing throughput limit divided by 4 secondary crushing lines for PTE purposes. Each individual crushing line will capable of 1/4 total secondary crushing throughput.

3. FARR installed 9/11/09

4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

5. EF based on stack test performed 6/17/10 - 0.15 pph / 1625.8 tph

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 202
SCC: 3-03-024-02/03

Operation description:

Secondary Crushing: #2 Secondary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 202

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0002** lb/ton	13,961,250 tons/year	10,096,226 tons/year	1.2978	0.9385	Based on source test data for #1S & #3S - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0002** lb/ton	13,961,250 tons/year	10,096,226 tons/year	1.2978	0.9385	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00003** lb/ton	13,961,250 tons	10,096,226 tons/year	0.1947	0.1408	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			1.59731E-05	1.15511E-05	
Arsenic Compounds					0.001200			1.55738E-05	1.12623E-05	
Beryllium Compounds					0.000100			1.29781E-06	9.38528E-07	
Cadmium Compounds					0.000050			6.48907E-07	4.69264E-07	
Chromium Compounds					0.014577			0.000189181	0.000136808	
Cobalt Compounds					0.000623			8.08638E-06	5.84775E-06	
Lead Compounds					0.003000			3.89344E-05	2.81558E-05	
Manganese Compounds					0.023238			0.000301592	0.000218099	
Mercury Compounds					0.000002			2.39169E-08	1.72957E-08	
Nickel Compounds					0.001077			1.39765E-05	1.01072E-05	
Selenium Compounds					0.000000			0	0	
Total HAPs					(%)			*0.0006*	*0.0004*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 201	6/17/2010	**0.0001**
ID 203	12/16/2010	**0.0003**

2. PTE calculated based on total possible run time assuming 24/7 operation.

3. Actual Run Time determined based on date of initial start-up of May 22, 2008, conservatively assuming 24/7 operation from that date. 223 days left in the year, 224 counting the 22nd. = 5376 hours

4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

5. EF based on stack test performed 3/15/10 (first one performed) - 0.39 pph / 1688.4 tph on Source ID 201, #1 Secondary Crusher. The units are identical.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 203
SCC: 3-03-024-02/03

Operation description:

Secondary Crushing: #3 Secondary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 203

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on material transfer	n/c	-- **0.0003** lb/ton	13,961,250 tons/year	10,005,315 tons/year	1.9516	1.3986	Source Test Data - 12/16/10
PM-10	Non-Fugitive Point Source			n/c	-- **0.0003** lb/ton	13,961,250 tons/year	10,005,315 tons/year	1.9516	1.3986	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00004** lb/ton	13,961,250 tons	10,005,315 tons/year	0.2927	0.2098	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			2.40194E-05	1.72135E-05	
Arsenic Compounds					0.001200			2.3419E-05	1.67832E-05	
Beryllium Compounds					0.000100			1.95158E-06	1.3986E-06	
Cadmium Compounds					0.000050			9.7579E-07	6.99299E-07	
Chromium Compounds					0.014577			0.00028448	0.000203872	
Cobalt Compounds					0.000623			1.21598E-05	8.71434E-06	
Lead Compounds					0.003000			5.85474E-05	4.19579E-05	
Manganese Compounds					0.023238			0.000453517	0.000325012	
Mercury Compounds					0.000002			3.59648E-08	2.57741E-08	
Nickel Compounds					0.001077			2.1017E-05	1.50618E-05	
Selenium Compounds					0.000000			0	0	
Total HAPs					(%)			*0.0009*	*0.0006*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor based on most recent source test data available for this unit.
2. Max throughput based on total secondary crushing throughput limit divided by 4 secondary crushing lines for PTE purposes. Each individual crushing line will capable of 1/4 total secondary crushing throughput.
3. FARR installed 9/30/10 - throughput covers period since install.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. EF based on stack test performed 12/16/10 - 0.628 pph / 2246.3 tph

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 204
SCC: 3-03-024-02/03

Operation description:

Secondary Crushing: #4 Secondary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 204

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0002** lb/ton	13,961,250 tons/year	10,007,667 tons/year	1.2978	0.9303	Based on source test data for #1S & #3S - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0002** lb/ton	13,961,250 tons/year	10,007,667 tons/year	1.2978	0.9303	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00003** lb/ton	13,961,250 tons	10,007,667 tons/year	0.1947	0.1395	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			1.59731E-05	1.14498E-05	
Arsenic Compounds					0.001200			1.55738E-05	1.11635E-05	
Beryllium Compounds					0.000100			1.29781E-06	9.30296E-07	
Cadmium Compounds					0.000050			6.48907E-07	4.65148E-07	
Chromium Compounds					0.014577			0.000189181	0.000135608	
Cobalt Compounds					0.000623			8.08638E-06	5.79646E-06	
Lead Compounds					0.003000			3.89344E-05	2.79089E-05	
Manganese Compounds					0.023238			0.000301592	0.000216186	
Mercury Compounds					0.000002			2.39169E-08	1.7144E-08	
Nickel Compounds					0.001077			1.39765E-05	1.00186E-05	
Selenium Compounds					0.000000			0	0	
Total HAPs					(%)			*0.0006*	*0.0004*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 201	6/17/2010	**0.0001**
ID 203	12/16/2010	**0.0003**

2. PTE calculated based on total possible run time assuming 24/7 operation.

3. Start up: 10/17/11

4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 301
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #1 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 301

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0007** lb/ton	5,584,500 tons	1,978,549 tons/year	1.8466	0.6542	See #1 Below
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons	1,978,549 tons/year	1.8466	0.6542	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	1,978,549 tons/year	0.2770	0.0981	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			2.27275E-05	8.05219E-06	
Arsenic Compounds					0.001200			2.21593E-05	7.85088E-06	
Beryllium Compounds					0.000100			1.84661E-06	6.5424E-07	
Cadmium Compounds					0.000050			9.23304E-07	3.2712E-07	
Chromium Compounds					0.014577			0.000269179	9.53681E-05	
Cobalt Compounds					0.000623			1.15058E-05	4.07642E-06	
Lead Compounds					0.003000			5.53982E-05	1.96272E-05	
Manganese Compounds					0.023238			0.000429123	0.000152035	
Mercury Compounds					0.000002			3.40303E-08	1.20567E-08	
Nickel Compounds					0.001077			1.98865E-05	7.04566E-06	
Selenium Compounds					0.000000			0	0	
Total HAPs					(%)			*0.0008*	*0.0003*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available on three identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.

3. Source started up on 9/16/09.

4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 302
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #2 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 302

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0006** lb/ton	5,584,500 tons/year	2,022,899 tons/year	1.7144	0.6210	Source Test: 11/16/11
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0006** lb/ton	5,584,500 tons/year	2,022,899 tons/year	1.7144	0.6210	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	2,022,899 tons/year	0.2572	0.0932	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			2.11008E-05	7.64345E-06	
Arsenic Compounds					0.001200			2.05733E-05	7.45236E-06	
Beryllium Compounds					0.000100			1.71444E-06	6.2103E-07	
Cadmium Compounds					0.000050			8.57221E-07	3.10515E-07	
Chromium Compounds					0.014577			0.000249913	9.05271E-05	
Cobalt Compounds					0.000623			1.06823E-05	3.8695E-06	
Lead Compounds					0.003000			5.14332E-05	1.86309E-05	
Manganese Compounds					0.023238			0.00039841	0.000144318	
Mercury Compounds					0.000002			3.15947E-08	1.14447E-08	
Nickel Compounds					0.001077			1.84632E-05	6.68802E-06	
Selenium Compounds					0.000000			0	0	
					(%)					
Total HAPs								*0.0008*	*0.0003*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available on three identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started up: 7/16/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 303
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #3 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 303

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	2,022,974 tons/year	1.8466	0.6689	Based on source test data for #2T #4T & #6T - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	2,022,974 tons/year	1.8466	0.6689	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	2,022,974 tons/year	0.2770	0.1003	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			2.27275E-05	8.23298E-06	
Arsenic Compounds					0.001200			2.21593E-05	8.02716E-06	
Beryllium Compounds					0.000100			1.84661E-06	6.6893E-07	
Cadmium Compounds					0.000050			9.23304E-07	3.34465E-07	
Chromium Compounds					0.014577			0.000269179	9.75094E-05	
Cobalt Compounds					0.000623			1.15058E-05	4.16795E-06	
Lead Compounds					0.003000			5.53982E-05	2.00679E-05	
Manganese Compounds					0.023238			0.000429123	0.000155449	
Mercury Compounds					0.000002			3.40303E-08	1.23274E-08	
Nickel Compounds					0.001077			1.98865E-05	7.20386E-06	
Selenium Compounds					0.000000			0	0	
Total HAPs					(%)			*0.0008*	*0.0003*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started up: 6/13/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 304
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #4 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 304

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0004** lb/ton	5,584,500 tons/year	2,259,702 tons/year	1.1532	0.4666	Source Test: 11/18/11
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0004** lb/ton	5,584,500 tons/year	2,259,702 tons/year	1.1532	0.4666	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	2,259,702 tons/year	0.1730	0.0700	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			1.41932E-05	5.74312E-06	
Arsenic Compounds					0.001200			1.38384E-05	5.59954E-06	
Beryllium Compounds					0.000100			1.1532E-06	4.66628E-07	
Cadmium Compounds					0.000050			5.766E-07	2.33314E-07	
Chromium Compounds					0.014577			0.000168101	6.80201E-05	
Cobalt Compounds					0.000623			7.18532E-06	2.90745E-06	
Lead Compounds					0.003000			3.4596E-05	1.39989E-05	
Manganese Compounds					0.023238			0.000267986	0.000108437	
Mercury Compounds					0.000002			2.12518E-08	8.5993E-09	
Nickel Compounds					0.001077			1.24191E-05	5.02523E-06	
Selenium Compounds					0.000000			0	0	
					(%)					
Total HAPs								*0.0005*	*0.0002*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started up: 9/2/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 305
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #5 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 305

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1,973,069 tons/year	1.8466	0.6524	Based on source test data for #2T #4T & #6T - See #1 below.
PM-10	Non-Fugitive Point Source			n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1,973,069 tons/year	1.8466	0.6524	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	1,973,069 tons/year	0.2770	0.0979	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			2.27275E-05	8.02989E-06	
Arsenic Compounds					0.001200			2.21593E-05	7.82914E-06	
Beryllium Compounds					0.000100			1.84661E-06	6.52428E-07	
Cadmium Compounds					0.000050			9.23304E-07	3.26214E-07	
Chromium Compounds					0.014577			0.000269179	9.5104E-05	
Cobalt Compounds					0.000623			1.15058E-05	4.06513E-06	
Lead Compounds					0.003000			5.53982E-05	1.95728E-05	
Manganese Compounds					0.023238			0.000429123	0.000151614	
Mercury Compounds					0.000002			3.40303E-08	1.20233E-08	
Nickel Compounds					0.001077			1.98865E-05	7.02615E-06	
Selenium Compounds					0.000000			0	0	
Total HAPs					(%)			*0.0008*	*0.0003*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.

3. Unit installed and started up: 8/24/11

4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 306
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #6 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 306

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on material transfer	n/c	**0.0010** lb/ton	5,584,500 tons/year	2,053,533 tons/year	2.6722	0.9826	Source Test: 11/18/11
PM-10	Non-Fugitive Point Source			n/c	**0.0010** lb/ton	5,584,500 tons/year	2,053,533 tons/year	2.6722	0.9826	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	**0.0001** lb/ton	5,584,500 tons	2,053,533 tons/year	0.4008	0.1474	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			3.28884E-05	1.20937E-05	
Arsenic Compounds					0.001200			3.20662E-05	1.17914E-05	
Beryllium Compounds					0.000100			2.67218E-06	9.82615E-07	
Cadmium Compounds					0.000050			1.33609E-06	4.91308E-07	
Chromium Compounds					0.014577			0.000389522	0.000143235	
Cobalt Compounds					0.000623			1.66498E-05	6.12245E-06	
Lead Compounds					0.003000			8.01655E-05	2.94785E-05	
Manganese Compounds					0.023238			0.000620974	0.000228345	
Mercury Compounds					0.000002			4.92445E-08	1.81082E-08	
Nickel Compounds					0.001077			2.87774E-05	1.0582E-05	
Selenium Compounds					0.000000			0	0	
Total HAPs					(%)			*0.0012*	*0.0004*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started up: 9/23/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 307
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #7 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 307

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1,895,028 tons/year	1.8466	0.6266	Based on source test data for #2T #4T & #6T - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1,895,028 tons/year	1.8466	0.6266	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	1,895,028 tons/year	0.2770	0.0940	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			2.27275E-05	7.71228E-06	
Arsenic Compounds					0.001200			2.21593E-05	7.51947E-06	
Beryllium Compounds					0.000100			1.84661E-06	6.26623E-07	
Cadmium Compounds					0.000050			9.23304E-07	3.13311E-07	
Chromium Compounds					0.014577			0.000269179	9.13423E-05	
Cobalt Compounds					0.000623			1.15058E-05	3.90434E-06	
Lead Compounds					0.003000			5.53982E-05	1.87987E-05	
Manganese Compounds					0.023238			0.000429123	0.000145617	
Mercury Compounds					0.000002			3.40303E-08	1.15478E-08	
Nickel Compounds					0.001077			1.98865E-05	6.74824E-06	
Selenium Compounds					0.000000			0	0	
					(%)					
Total HAPs								*0.0008*	*0.0003*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started: 9/19/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 308
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #8 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 308

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	2,146,068 tons/year	1.8466	0.7096	Based on source test data for #2T #4T & #6T - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	2,146,068 tons/year	1.8466	0.7096	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	2,146,068 tons/year	0.2770	0.1064	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			2.27275E-05	8.73395E-06	
Arsenic Compounds					0.001200			2.21593E-05	8.5156E-06	
Beryllium Compounds					0.000100			1.84661E-06	7.09633E-07	
Cadmium Compounds					0.000050			9.23304E-07	3.54817E-07	
Chromium Compounds					0.014577			0.000269179	0.000103443	
Cobalt Compounds					0.000623			1.15058E-05	4.42156E-06	
Lead Compounds					0.003000			5.53982E-05	2.1289E-05	
Manganese Compounds					0.023238			0.000429123	0.000164908	
Mercury Compounds					0.000002			3.40303E-08	1.30775E-08	
Nickel Compounds					0.001077			1.98865E-05	7.6422E-06	
Selenium Compounds					0.000000			0	0	
Total HAPs					(%)			*0.0008*	*0.0003*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started: 9/29/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 309
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #9 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 309

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1,814,096 tons/year	1.8466	0.5999	Based on source test data for #2T #4T & #6T - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1,814,096 tons/year	1.8466	0.5999	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	1,814,096 tons/year	0.2770	0.0900	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			2.27275E-05	7.38291E-06	
Arsenic Compounds					0.001200			2.21593E-05	7.19833E-06	
Beryllium Compounds					0.000100			1.84661E-06	5.99861E-07	
Cadmium Compounds					0.000050			9.23304E-07	2.99931E-07	
Chromium Compounds					0.014577			0.000269179	8.74413E-05	
Cobalt Compounds					0.000623			1.15058E-05	3.7376E-06	
Lead Compounds					0.003000			5.53982E-05	1.79958E-05	
Manganese Compounds					0.023238			0.000429123	0.000139398	
Mercury Compounds					0.000002			3.40303E-08	1.10546E-08	
Nickel Compounds					0.001077			1.98865E-05	6.46004E-06	
Selenium Compounds					0.000000			0	0	
Total HAPs					(%)			*0.0008*	*0.0003*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started: 10/20/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 310
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #10 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 310

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1,519,532 tons/year	1.8466	0.5025	Based on source test data for #2T #4T & #6T - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1,519,532 tons/year	1.8466	0.5025	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	1,519,532 tons/year	0.2770	0.0754	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			2.27275E-05	6.18411E-06	
Arsenic Compounds					0.001200			2.21593E-05	6.0295E-06	
Beryllium Compounds					0.000100			1.84661E-06	5.02459E-07	
Cadmium Compounds					0.000050			9.23304E-07	2.51229E-07	
Chromium Compounds					0.014577			0.000269179	7.3243E-05	
Cobalt Compounds					0.000623			1.15058E-05	3.1307E-06	
Lead Compounds					0.003000			5.53982E-05	1.50738E-05	
Manganese Compounds					0.023238			0.000429123	0.000116764	
Mercury Compounds					0.000002			3.40303E-08	9.25959E-09	
Nickel Compounds					0.001077			1.98865E-05	5.41109E-06	
Selenium Compounds					0.000000			0	0	
Total HAPs					(%)			*0.0008*	*0.0002*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started: 10/27/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 311
SCC: 3-03-024-02/03

Operation description:

Sierrita fine crushing operations - 8D/8B CTP
This part of operations is exhausted by FARR Cartridge-Style Dust Collector on North side of fine crushing building.
OPERATION 207, PROCESS , SOURCE 311

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	23,354,354 tons/year	0.5585	2.3354	Source Test 10/11/12
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	23,354,354 tons/year	0.5585	2.3354	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00003** lb/ton	5,584,500 tons	23,354,354 tons/year	0.0838	0.3503	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			6.87323E-06	2.87438E-05	
Arsenic Compounds					0.001200			6.7014E-06	2.80252E-05	
Beryllium Compounds					0.000100			5.5845E-07	2.33544E-06	
Cadmium Compounds					0.000050			2.79225E-07	1.16772E-06	
Chromium Compounds					0.014577			8.14048E-05	0.000340435	
Cobalt Compounds					0.000623			3.47957E-06	1.45516E-05	
Lead Compounds					0.003000			1.67535E-05	7.00631E-05	
Manganese Compounds					0.023238			0.000129775	0.000542719	
Mercury Compounds					0.000002			1.02914E-08	4.30387E-08	
Nickel Compounds					0.001077			6.01408E-06	2.51508E-05	
Selenium Compounds					0.000000			0	0	
					(%)					
Total HAPs								*0.0003*	*0.0011*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

2. PTE calculated based on total possible run time assuming 24/7 operation.

3. Unit installed and started: 5/24/12

4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

6. Throughput: 5/24/12 - 12/31/12

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 312
SCC: 3-03-024-02/03

Operation description:

Sierrita fine crushing operations - fine ore transfer tower.
This part of operations is exhausted by 1 FARR Cartridge-Style Dust Collector on West side of fine crushing building.
OPERATION 207, PROCESS 419, SOURCE 312

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Actual Annual Throughput (3)	Potential Emissions tons/yr	Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	7,202,734 tons/year	0.4188	0.5402	Based on Permit emission limit
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	7,202,734 tons/year	0.4188	0.5402	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0000** lb/ton	5,584,500 tons	7,202,734 tons/year	0.0628	0.0810	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--	--
HAPs										
Hazardous Air Pollutants found in Particulate Matter:										
Antimony Compounds					0.001231			5.15492E-06	6.64868E-06	
Arsenic Compounds					0.001200			5.02605E-06	6.48246E-06	
Beryllium Compounds					0.000100			4.18838E-07	5.40205E-07	
Cadmium Compounds					0.000050			2.09419E-07	2.70103E-07	
Chromium Compounds					0.014577			6.10536E-05	7.87453E-05	
Cobalt Compounds					0.000623			2.60968E-06	3.36589E-06	
Lead Compounds					0.003000			1.25651E-05	1.62062E-05	
Manganese Compounds					0.023238			9.73314E-05	0.000125535	
Mercury Compounds					0.000002			7.71858E-09	9.95521E-09	
Nickel Compounds					0.001077			4.51056E-06	5.81759E-06	
Selenium Compounds					0.000000			0	0	
					(%)					
Total HAPs								*0.0002*	*0.0002*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor based on Permit limit for ID 312
2. PTE calculated based on total possible run time assuming 24/7 operation.
3. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
4. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B
5. Installed 10/18/12
6. Throughput: 10/18/12 - 12/31/12

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA PAX USE
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK :

Operation description:
Potassium Amyl Xanthate (PAX) use in Milling.

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	U/C Emission Cntr. Emission Factor (1)	Max. Annual PAX Use	Actual Annual PAX Use	Potential Emissions tons/yr	Emissions tons/yr	Remarks
HAPs Carbon Disulfide			**4.1305** lb CS2-days	582 lbs PAX/day	1,103.51 lbs PAX/day		2.2790	CS2 = PAX/day * 0.01 * 3 * ratio (CS2/PAX) * 365 1% loss per day, average hold time is 3 days. EF = 0.01 * ratio CS2/PAX *3 * 365

Notes:

1. Source added to Emission Inventory in 2010 (Reporting Year 2009). PAX Use restarted in the Sierrita Mill in Jan 2009.
2. Emission Calculation:

Total PAX (lbs)	Time Period (days)	Daily Rate (lbs/day)	PAX Lost per day (lbs/day)	Ratio of CS2 to PAX	CS2 Equivalent (lbs/day)	CS2 Equivalent (lbs/year)
403,883.00	366	1103.505464	11.03505464	0.376185771	4.151230537	4558.051129

Molecular Weight	
CS2	76.14
PAX	202.4

3. Emission Factor above is presented to make the final calculation easier to see:
EF = 0.01 * 3 * 0.376185771 * time period = 4.1192 lb CS2-day (2009)
4. A decomposition rate of 1% per day is assumed for PAX according to manufacturers data as well as average water temperature.
5. Average hold times of PAX in mixing tanks is up to three days.
6. PAX weight in pounds refers to dry PAX, not mixed solution used.
7. In order to account for loss of PAX per day, the Process input for calculation shall be in lbs/day
8. MAX Annual PAX use based on 0.005 lb PAX/ton ore @ 42,591,120 tpy crusher throughput

APPENDIX F

DRAFT PERMIT

ATTACHMENT "A": GENERAL PROVISIONS

Air Quality Control Permit No. 6067
for
Freeport-McMoRan Sierrita, Inc.

I. PERMIT EXPIRATION AND RENEWAL

[PCC 17.12.180.A.1, and PCC 17.12.160.D.1]

A. This permit is valid for a period of five years from the date of issuance.

B. The Permittee shall submit an application for renewal of this permit at least 6 months, but not more than 18 months, prior to the date of permit expiration.

II. COMPLIANCE WITH PERMIT CONDITIONS

[PCC 17.12.180.A.8.a and b]

A. The Permittee shall comply with all conditions of this permit including all applicable requirements of the Arizona air quality statutes and air quality rules. Any permit noncompliance constitutes a violation of the Arizona Revised Statutes and is grounds for enforcement action; for permit termination, revocation and reissuance, or revision; or for denial of a permit renewal application. In addition, noncompliance with any federally enforceable requirement constitutes a violation of the Clean Air Act.

B. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

III. PERMIT REVISION, REOPENING, REVOCATION AND REISSUANCE, OR TERMINATION FOR CAUSE

[PCC 17.12.180.A.8.c and PCC 17.12.270]

A. The permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit revision, revocation and reissuance, termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

B. The permit shall be reopened and revised under any of the following circumstances

1. Additional applicable requirements under the Clean Air Act become applicable to the Class I source. Such a reopening shall only occur if there are three or more years remaining in the permit term. The reopening shall be completed no later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless an application for renewal has been submitted pursuant to A.A.C. R18-2-322.B. Any permit revision required pursuant to this subparagraph shall comply with the provisions in A.A.C. R18-2-322 for permit renewal and shall reset the five-year permit term.

2. Additional requirements, including excess emissions requirements, become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the Class I permit.

3. The Control Officer or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

4. The Control Officer or the Administrator determines that the permit needs to be revised or revoked to assure compliance with the applicable requirements.

C. Proceedings to reopen and reissue a permit, including appeal of any final action relating to a permit reopening, shall follow the same procedures as apply to initial permit issuance and shall, except for reopenings under Condition III.B.1 above, affect only those parts of the permit for which cause to reopen exists. Such reopenings shall be made as expeditiously as practicable. Permit reopenings for reasons other than those stated in Condition III.B.1 above shall not result in a resetting of the five-year permit term.

IV. POSTING OF PERMIT

[PCC 17.12.080]

The Permittee who has been granted an operating permit or an Authorization to Operate (ATO) by PDEQ shall maintain a complete copy of the operating permit and ATO onsite. If it is not feasible to maintain a copy of the operating permit or ATO onsite, the Permittee may request, in writing, to maintain a copy of the permit at an alternate location. Upon written approval by the Control Officer, the Permittee must maintain a complete copy of the permit at the approved alternative location.

V. FEE PAYMENT

[PCC 17.12.180.A.9 and PCC 17.12.510]

The Permittee shall pay fees to the Control Officer pursuant to PCC 17.12.510.

VI. ANNUAL EMISSION INVENTORY QUESTIONNAIRE

[PCC 17.12.320]

A. The Permittee shall complete and submit to the Control Officer an annual emissions inventory questionnaire. The questionnaire is due by March 31st or ninety days after the Control Officer makes the inventory form available each year, whichever occurs later, and shall include emission information for the previous calendar year.

B. The questionnaire shall be on a form provided by the Control Officer and shall include the information required by PCC 17.12.320

VII. COMPLIANCE CERTIFICATION

[PCC 17.12.220]

A. The Permittee shall submit a compliance certification to the Control Officer semiannually, which describes the compliance status of the source with respect to each permit condition. The first certification shall be submitted no later than May 15th, and shall report the compliance status of the source during the period between October 1st of the previous year and March 31st of the current year. The second certification shall be submitted no later than November 15th, and shall report the compliance status of the source during the period between April 1st and September 30th of the current year.

B. The compliance certifications shall include the following:

1. Identification of each term or condition of the permit that is the basis of the certification;

2. Identification of the methods or other means used by the Permittee for determining the compliance status with each term and condition during the certification period,

3. The status of compliance with the terms and conditions of the permit for the period covered by the certification, including whether compliance during the period was continuous or intermittent. The certification shall be based on the methods or means designated in Condition VII.A.2 above. The certifications shall identify each deviation and take it into account for consideration in the compliance certification;

4. For emission units subject to 40 CFR Part 64, the certification shall also identify as possible exceptions to compliance any period during which compliance is required and in which an excursion or exceedance defined under 40 CFR Part 64 occurred;

5. All instances of deviations from permit requirements reported pursuant to Condition XII.B of this Attachment; and

6. Other facts the Control Officer may require to determine the compliance status of the source.

C. A copy of all compliance certifications shall also be submitted to the EPA Administrator.

D. If any outstanding compliance schedule exists, a progress report shall be submitted with the semi-annual compliance certifications required in Condition VII.A above.

VIII. CERTIFICATION OF TRUTH, ACCURACY AND COMPLETENESS [PCC 17.12.220.A.3]

Any document required to be submitted by this permit, including reports, shall contain a certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

IX. INSPECTION AND ENTRY [PCC 17.12.220.A.4]

Upon presentation of proper credentials, the Permittee shall allow the Control Officer or the authorized representative of the Control Officer to:

A. Enter upon the Permittee's premises where a source is located, emissions-related activity is conducted, or where records are required to be kept under the conditions of the permit;

B. Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of the permit;

C. Inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

D. Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements; and

E. Record any inspection by use of written, electronic, magnetic and photographic media.

X. PERMIT REVISION PURSUANT TO FEDERAL HAZARDOUS AIR POLLUTANT STANDARD [PCC 17.12.160.D.3]

If this source becomes subject to a standard promulgated by the Administrator pursuant to Section 112(d) of the Act, then the Permittee shall, within twelve months of the date on which the standard is promulgated, submit an application for a permit revision demonstrating how the source will comply with the standard.

XI. ACCIDENTAL RELEASE PROGRAM [40 CFR Part 68]

If this source becomes subject to the provisions of 40 CFR Part 68, then the Permittee shall comply with these provisions according to the time line specified in 40 CFR Part 68.

XII. EXCESS EMISSIONS, PERMIT DEVIATIONS, AND EMERGENCY REPORTING

A. Excess Emissions Reporting [PCC 17.12.040]

1. Excess emissions shall be reported as follows:

   a. The Permittee shall report to the Control Officer any emissions in excess of the limits established by this permit. Such report shall be in two parts as specified below:

      (1) Notification by telephone or facsimile within 24 hours of the time when the Permittee first learned of the occurrence of excess emissions including all available information from Condition XII.A.1.b below.

      (2) Detailed written notification by submission of an excess emissions report within 72 hours of the notification pursuant to Condition XII.A.1.a.(i) above. Notifications should be sent to:

      PDEQ Air Program 33N Stone Avenue, Suite 700, Tucson, Arizona 85701.

   b. The report shall contain the following information:

      (1) Identity of each stack or other emission point where the excess emissions occurred;

      (2) Magnitude of the excess emissions expressed in the units of the applicable emission limitation and the operating data and

calculations used in determining the magnitude of the excess emissions;

(3) Date, time and duration, or expected duration, of the excess emissions;

(4) Identity of the equipment from which the excess emissions emanated;

(5) Nature and cause of such emissions;

(6) If the excess emissions were the result of a malfunction, steps taken to remedy the malfunction and the steps taken or planned to prevent the recurrence of such malfunctions; and

(7) Steps taken to limit the excess emissions. If the excess emissions resulted from start-up or malfunction, the report shall contain a list of the steps taken to comply with the permit procedures.

2. In the case of continuous or recurring excess emissions, the notification requirements of this section shall be satisfied if the source provides the required notification after excess emissions are first detected and includes in such notification an estimate of the time the excess emissions will continue. Excess emissions occurring after the estimated time period, or changes in the nature of the emissions as originally reported, shall require additional notification pursuant to Condition XII.A.1 above. [PCC 17.12.040.C]

B. Permit Deviations Reporting [PCC 17.12.180.A.5.b]

The Permittee shall promptly report deviations from permit requirements, including those attributable to upset conditions as defined in the permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. Prompt reporting shall mean that the report was submitted to the Control Officer by certified mail, facsimile, or hand delivery within two working days of the time when emission limitations were exceeded due to an emergency or within two working days of the time when the owner or operator first learned of the occurrence of a deviation from a permit requirement.

C. Emergency Provisions [PCC 17.12.180.E]

1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, that require immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if Condition XII.C.3 is met.

3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An emergency occurred and that the Permittee can identify the cause(s) of the emergency;

   b. The permitted facility was being properly operated at the time;

   c. During the period of the emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and

   d. The Permittee submitted notice of the emergency to the Control Officer by certified mail, facsimile, or hand delivery within two working days of the time when emission limitations were exceeded due to the emergency. This notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective action taken.

4. In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.

5. This provision is in addition to any emergency or upset provision contained in any applicable requirement.

D. Compliance Schedule [ARS § 49-480.F.3 and 5]

For any excess emission or permit deviation that cannot be corrected within 72 hours, the Permittee is required to submit a compliance schedule to the Control Officer within 21 days of such occurrence. The compliance schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with the permit terms or conditions that have been violated.

E. Affirmative Defenses for Excess Emissions Due to Malfunctions, Startup, and Shutdown [PCC 17.12.035]

1. Applicability

   This rule establishes affirmative defenses for certain emissions in excess of an emission standard or limitation and applies to all emission standards or limitations except for standards or limitations:

   a. Promulgated pursuant to Sections 111 or 112 of the Act;

   b. Promulgated pursuant to Titles IV or VI of the Clean Air Act;

c. Contained in any Prevention of Significant Deterioration (PSD) or New Source Review (NSR) permit issued by the U.S. EPA;

d. Included in a permit to meet the requirements of PCC 17.16.590.A.5.

2. Affirmative Defense for Malfunctions

Emissions in excess of an applicable emission limitation due to malfunction shall constitute a violation. When emissions in excess of an applicable emission limitation are due to a malfunction, the Permittee has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if the Permittee has complied with the reporting requirements of PCC 17.12.040 and has demonstrated all of the following:

a. The excess emissions resulted from a sudden and unavoidable breakdown of process equipment or air pollution control equipment beyond the reasonable control of the Permittee;

b. The air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good practice for minimizing emissions;

c. If repairs were required, the repairs were made in an expeditious fashion when the applicable emission limitations were being exceeded. Off-shift labor and overtime were utilized where practicable to ensure that the repairs were made as expeditiously as possible. If off-shift labor and overtime were not utilized, the Permittee satisfactorily demonstrated that the measures were impracticable;

d. The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable during periods of such emissions;

e. All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;

f. The excess emissions were not part of a recurring pattern indicative of inadequate design, operation, or maintenance;

g. During the period of excess emissions there were no exceedances of the relevant ambient air quality standards established in PCC Chapter 17.08 that could be attributed to the emitting source;

h. The excess emissions did not stem from any activity or event that could have been foreseen and avoided, or planned, and could not have been avoided by better operations and maintenance practices;

i. All emissions monitoring systems were kept in operation if at all practicable; and

j. The Permittee's actions in response to the excess emissions were documented by contemporaneous records

3. Affirmative Defense for Startup and Shutdown

a. Except as provided in Condition XII.E.3.b below, and unless otherwise provided for in the applicable requirement, emissions in excess of an applicable emission limitation due to startup and shutdown shall constitute a violation. When emissions in excess of an applicable emission limitation are due to startup and shutdown, the Permittee has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if the Permittee has complied with the reporting requirements of PCC 17.12.040 and has demonstrated all of the following:

(1) The excess emissions could not have been prevented through careful and prudent planning and design;

(2) If the excess emissions were the result of a bypass of control equipment, the bypass was unavoidable to prevent loss of life, personal injury, or severe damage to air pollution control equipment, production equipment, or other property;

(3) The air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good practice for minimizing emissions;

(4) The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable during periods of such emissions;

(5) All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;

(6) During the period of excess emissions there were no exceedances of the relevant ambient air quality standards established in PCC Chapter 17.08 that could be attributed to the emitting source;

(7) All emissions monitoring systems were kept in operation if at all practicable; and

(8) Contemporaneous records documented the Permittee's actions in response to the excess emissions.

b. If excess emissions occur due to a malfunction during routine startup and shutdown, then those instances shall be treated as other malfunctions subject to Condition XII.E.2 above.

4. Affirmative Defense for Malfunctions during Scheduled Maintenance

If excess emissions occur due to a malfunction during scheduled maintenance, then those instances will be treated as other malfunctions subject to Condition XII.E.2 above.

5. Demonstration of Reasonable and Practicable Measures

For an affirmative defense under Condition XII.E.2 or XII.E.3 above, the Permittee shall demonstrate, through submission of the data and information required by Condition XII.E and PCC 17.12.040, that all reasonable and practicable measures within the Permittee's control were implemented to prevent the occurrence of the excess emissions.

XIII. RECORD KEEPING REQUIREMENTS [PCC 17.12.180.A.4]

A. The Permittee shall keep records of all required monitoring information including, but not limited to, the following:

1. The date, place as defined in the permit, and time of sampling or measurements;
2. The date(s) analyses were performed;
3. The name of the company or entity that performed the analyses;
4. A description of the analytical techniques or methods used;
5. The results of such analyses; and
6. The operating conditions as existing at the time of sampling or measurement.

B. The Permittee shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings or other data recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

C. All required records shall be maintained either in an unchangeable electronic format or in a handwritten logbook utilizing indelible ink.

XIV. REPORTING REQUIREMENTS [PCC 17.12.180.A.5]

The Permittee shall submit the following reports:

A. Compliance certifications in accordance with Section VII of Attachment "A".

B. Excess emission; permit deviation, and emergency reports in accordance with Section XII of Attachment "A".

C. Other reports required by any condition of Attachment "B".

XV. DUTY TO PROVIDE INFORMATION [PCC 17.12.180.A.8.e, PCC 17.12.160.G and PCC 17.12.160.H]

A. The Permittee shall furnish to the Control Officer, within a reasonable time, any information that the Control Officer may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, the Permittee shall also furnish to the Control Officer copies of records required to be kept by the permit. For information claimed to be confidential, the Permittee shall furnish an additional copy of such records directly to the Administrator along with a claim of confidentiality.

B. If the Permittee has failed to submit any relevant facts or has submitted incorrect information in the permit application, the Permittee shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information.

XVI. PERMIT AMENDMENT OR REVISION [PCC 17.12.245, PCC 17.12.255 and PCC 17.12.260]

The Permittee shall apply for a permit amendment or revision for changes to the facility which do not qualify for a facility change without revision under Section XVII, as follows:

A. Administrative Permit Amendment (PCC 17.12.245);

B. Minor Permit Revision (PCC 17.12.255); and

C. Significant Permit Revision (PCC 17.12.260)

The applicability and requirements for such action are defined in the above referenced regulations.

XVII. FACILITY CHANGE WITHOUT A PERMIT REVISION [PCC 17.12.230]

A. The Permittee may make changes at the permitted source without a permit revision if all of the following apply:

1. The changes are not modifications under any provision of Title I of the Act or under ARS § 49-401.01(19);

2. The changes do not exceed the emissions allowable under the permit whether expressed therein as a rate of emissions or in terms of total emissions;

3. The changes do not violate any applicable requirements or trigger any additional applicable requirements;

4. The changes satisfy all requirements for a minor permit revision under PCC 17.12.255; and

5. The changes do not contravene federally enforceable permit terms and conditions that are monitoring (including test methods), record keeping, reporting, or compliance certification requirements.

B. The substitution of an item of process or pollution control equipment for an identical or substantially similar item of process or pollution control equipment shall qualify as a change that does not require a permit revision, if it meets all of the requirements of Conditions XVII.A and XVII.C of this Attachment.

C. For each change under Conditions XVII.A and XVII.B above, a written notice by certified mail or hand delivery shall be received by the Control Officer and the Administrator a minimum of 7 working days in advance of the change. Notifications of changes associated with emergency conditions, such as malfunctions necessitating the replacement of equipment, may be provided less than 7 working days in advance of the change, but must be provided as far in advance of the change, as possible or, if advance notification is not practicable, as soon after the change as possible.

D. Each notification shall include:

1. When the proposed change will occur;

2. A description of the change;

3. Any change in emissions of regulated air pollutants; and

4. Any permit term or condition that is no longer applicable as a result of the change.

E. The permit shield described in PCC 17.12.310 shall not apply to any change made under this Section, other than implementation of an alternate to Conditions XVII.A and XVII.B above.

F. Except as otherwise provided for in the permit, making a change from one alternative operating scenario to another as provided under PCC 17.12.180.A.11 shall not require any prior notice under this Section.

G. Notwithstanding any other part of this Section, the Control Officer may require a permit to be revised for any change that, when considered together with any other changes submitted by the same source under this Section over the term of the permit, do not satisfy Condition XVII.A above.

XVIII. TESTING REQUIREMENTS [PCC 17.12.050]

A. The Permittee shall conduct performance tests as specified in the permit and at such other times as may be required by the Control Officer.

B. Operational Conditions during Testing

Tests shall be conducted during operation at the maximum possible capacity of each unit under representative operational conditions unless other conditions are required by the

applicable test method or in this permit. With prior written approval from the Control Officer, testing may be performed at a lower rate. Operations during periods of start-up, shutdown, and malfunction (as defined in PCC 17.04.340.A) shall not constitute representative operational conditions unless otherwise specified in the applicable standard.

C. Tests shall be conducted and data reduced in accordance with the test methods and procedures contained in the Arizona Testing Manual unless modified by the Control Officer pursuant to PCC 17.12.050.B.

D. Test Plan

At least 14 calendar days prior to performing a test, the Permittee shall submit a test plan to the Control Officer in accordance with PCC 17.12.050.D and the Arizona Testing Manual. This test plan must include the following:

1. Test duration;
2. Test location(s);
3. Test method(s); and
4. Source operation and other parameters that may affect test results.

E. Stack Sampling Facilities

The Permittee shall provide, or cause to be provided, performance testing facilities as follows:

1. Sampling ports adequate for test methods applicable to the facility;
2. Safe sampling platform(s);
3. Safe access to sampling platform(s); and
4. Utilities for sampling and testing equipment.

F. Interpretation of Final Results

Each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic mean of the results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs is required to be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Permittee's control, compliance may, upon the Control Officer's approval, be determined using the arithmetic mean of the results of the other two runs. If the Control Officer or the Control Officer's designee is present, tests may only be stopped with the Control Officer's or such designee's approval. If the Control Officer or the Control Officer's

designee is not present, tests may only be stopped for good cause. Good cause includes: forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Permittee's control. Termination of any test without good cause after the first run is commenced shall constitute a failure of the test. Supporting documentation, which demonstrates good cause, must be submitted.

G. Report of Final Test Results

A written report of the results of all performance tests shall be submitted to the Control Officer within 30 days after the test is performed. The report shall be submitted in accordance with the Arizona Testing Manual.

XIX. PROPERTY RIGHTS [PCC 17.12.180.A.8.d]

This permit does not convey any property rights of any sort, or any exclusive privilege.

XX. SEVERABILITY CLAUSE [PCC 17.12.180.A.7]

The provisions of this permit are severable. In the event of a challenge to any portion of this permit, or if any portion of this permit is held invalid, the remaining permit conditions remain valid and in force.

XXI. PERMIT SHIELD [PCC 17.12.310]

Compliance with the conditions of this permit shall be deemed compliance with all applicable requirements identified in the portions of this permit subtitled "Permit Shield". The permit shield shall not apply to minor revisions pursuant to Condition XVI.B of this Attachment and any facility changes without a permit revision pursuant to Section XVII of this Attachment.

XXII. PROTECTION OF STRATOSPHERIC OZONE [40 CFR Part 82]

If this source becomes subject to the provisions of 40 CFR Part 82, then the Permittee shall comply with these provisions accordingly.

ATTACHMENT "B": SPECIFIC CONDITIONS
Air Quality Control Permit No. 42862
for
Freeport-McMoRan Sierrita, Inc.

I. RELATIONSHIP OF PERMIT TO APPLICABLE STATE IMPLEMENTATION PLAN [ARS § 49-404.c and -426]

This permit is issued pursuant to the provisions of the Arizona Revised Statutes (ARS) and constitutes an Installation Permit for the purpose of the applicable State Implementation Plan.

II. FACILITY-WIDE REQUIREMENTS

A. The Permittee shall have on site or on call a person certified in EPA Reference Method 9. [PCC 17.12.180.A.3.c]

B. At the time the compliance certifications required by Condition VII of Attachment "A" are submitted, the Permittee shall submit reports of all monitoring activities required by this Attachment performed in the same six month period as applies to the compliance certification period. [PCC 17.12.180.A.5.a]

C. The Permittee shall keep a log of all emission related maintenance activities performed at the facility. [PCC 17.12.180.A.3.c]

D. The Permittee shall operate all air pollution control and monitoring equipment identified in Attachment "C" in accordance with vendor-supplied operations and maintenance instructions. If vendor-supplied operations and maintenance instructions are not available, the Permittee shall prepare an Operation and Maintenance Plan, which provides adequate information to properly operate and maintain the equipment in good working order. In the absence of vendor-supplied operations and maintenance instructions, the Permittee shall operate the equipment in accordance with the Operation and Maintenance Plan. [PCC 17.12.180.A.2]

E. Visibility Limiting Standard [Pima County State Implementation Plan Rule 343]

1. The Permittee shall not cause, suffer, allow, or permit diffusion of visible emissions, including fugitive dust, beyond the property boundary line within which the emissions become airborne. Sources may be required to cease temporarily the activity or operation which is causing or contributing to the emissions until reasonably necessary and feasible precautions are taken.

2. Condition II.E.1 shall not apply when wind speeds exceed twenty-five (25) miles per hour (using the Beaufort Scale of Wind-Speed Equivalents, or as recorded by the National Weather Service). This exception does not apply if control measures have not been taken or were not commensurate with the size or scope of the emission source.

3. Condition II.E.1 shall not apply to the generation of airborne particulate matter from undisturbed land.

F. The following requirements apply to the operation, maintenance, monitoring, and testing of all process and control equipment subject to New Source Performance Standards (NSPS) as indicated in Attachment "C". In order to comply with NSPS, the Permittee shall comply with the General Provisions of 40 CFR Part 60, Subpart A.

[PCC 17.16.490.A & B and 40 CFR 60, Subpart A]

1. All requests, reports, applications, submittals, and other communications to the Control Officer pursuant to A.A.C. R18-2-901, -902, and 40 CFR Part 60 shall be

submitted in duplicate to the EPA Region 9 office.

[[PCC 17.16.490.A & B, and 40 CFR 60.4(a)]

2. The Permittee shall comply with the general notification requirements contained in 40 CFR 60.7(a), including but not limited to:

[PCC 17.16.490(1) and 40 CFR 60.7(a)]

   a. Notification of the date of construction of units that are subject to NSPS, as indicated in Attachment "C". Notification shall be postmarked no later than 30 days after such date.

   b. Notification of the actual date of initial startup of such equipment postmarked within 15 days of after such date.

   c. A notification of the anticipated date for conducting the opacity observations required by §60.11(e)(1) of 40 CFR Subpart A. The notification shall also include, if appropriate, a request for the Department to provide a visible emissions reader during a performance test. The notification shall be postmarked not less than 30 days prior to such date.

3. The Permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.

[PCC 17.16.490(1) and 40 CFR 60.7(b)]

4. The Permittee shall submit excess emissions and monitoring systems performance reports and/or summary report forms on a semiannual basis as required by 40 CFR 60.7(c) and (d). [PCC 17.16.490(1), 40 CFR 60.7(c), and (d)]

5. The Permittee shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required in a permanent form suitable for inspection. The file shall be retained for at least two years following the date of such measurements, maintenance, reports, and records. [PCC 17.16.490(1) and 40 CFR 60.7(f)]

6. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall*, to the extent practicable, maintain and *operate* this facility including associated *air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.* Determination of whether acceptable operating and maintenance procedures are being used shall be based on information available to the Control Officer and the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. [PCC 17.12.350.A.3.d, PCC 17.16.490(1) and 40 CFR 60.11(d)]

[Material Permit Conditions are indicated by underline and italics]

7. For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard in 40 CFR Part 60, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

[PCC 17.16.490(1) and 40 CFR 60.11(g)]

8. The Permittee shall not build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission, which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with opacity standard or with a standard, which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

[PCC 17.16.490(1) and 40 CFR 60.12]

9. The Permittee shall comply with the "General notification and reporting requirements" found in 40 CFR 60.19. [PCC 17.16.490(1) and 40 CFR 60.19]

G. The following requirements apply to all operations not subject to NSPS as indicated in Attachment "C"., ~~Tables C-1 and C-2~~.

1. Except as provided in Condition II.G.2, compliance with the emission limits established in this permit shall be determined by the performance tests specified in this permit. [PCC 17.12.050.G]

2. In addition to performance tests, compliance with specific emission limits may be determined by: [PCC 17.12.050.H]

   a. Opacity tests;

   b. Emission limit compliance tests specifically designated as such in the regulation establishing the emission limit to be complied with;

   c. Continuous emission monitoring, where applicable quality assurance procedures are followed and where it is designated in the permit or in an applicable requirement to show compliance.

3. Nothing in this permit shall be so construed as to prevent the utilization of measurements from emissions monitoring devices or techniques not designated as performance tests as evidence of compliance with applicable good maintenance and operating requirements. [PCC 17.12.190 and PCC 17.12.050.I]

H. General Requirements for Compliance Assurance Monitoring (CAM) [40 CFR 64.7(c)]

1. For emission units identified in Attachment "C" as subject to CAM, the Permittee shall conduct the monitoring required by this permit condition upon issuance of the renewal permit, except that if a monitoring device must be installed on existing equipment, the Permittee is allowed 180 days following

permit issuance to install such device. The Permittee shall conduct the monitoring required by this permit condition upon commencement of operation of new equipment identified in Attachment "C" as being subject to the CAM program under 40 CFR 64. At all times, the owner or operator shall maintain the required monitoring activities, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment.

2. Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the Permittee shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the emission units are operating. Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities shall not be used for purposes of this part, including data averages and calculations, or fulfilling a minimum data availability requirement, if applicable. The Permittee shall use all the data collected during all other periods in assessing the operation of the control device and associated control system. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.

3. Response to excursions

   a. Upon detecting an excursion or exceedance, the Permittee shall restore operation of the emission unit (including the control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include minimizing the period of any startup, shutdown, or malfunction, and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Such actions may include initial inspection and evaluation, recording that operations returned to normal without operator action, or any necessary follow-up actions to return operations to within the indicator range, designated condition, or below applicable emission limitation or standard, as applicable. [40 CFR 64.7(d)(1)]

   b. Determination of whether the Permittee has used acceptable procedures in response to an excursion or exceedance shall be based on information available, which may include but is not limited to, monitoring results, review of operation, and maintenance procedures and records, and inspection of the control device, associated capture system, and process. [40 CFR 64.7(d)(2)]

4. After approval of monitoring under this Part, if the Permittee identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing

document a need to modify the existing indicator ranges or designated conditions, the Permittee shall promptly notify the Department, and if necessary, submit a proposed modification to this permit to address the necessary monitoring changes. Such a modification may include, but is not limited to, re-establishing indicator ranges or designated conditions, modifying the frequency of conduction monitoring and collecting data, or the monitoring of additional parameters. [40 CFR 64.7(e)]

5. Excursions shall be reported as required by Condition VII.B.4 of Attachment "A" of this permit. The report shall include, at a minimum, the following:
[A.A.C. R18-2-309(2)(c)(iii)]

   a. Summary information on the number, duration and cause (including unknown cause, if applicable) of excursion or exceedances, as applicable, and the corrective actions taken; and [40 CFR 64.9(a) (2)(i)]

   b. Summary information on the number, duration and cause (including unknown cause, if applicable) for monitoring downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable). [40 CFR 64.9(a) (2)(ii)]

   c. Based on the results of the determination required by Condition II.H.3.b, the Permittee may be required to develop a Quality Improvement Plan (QIP). If a QIP is required, the Permittee shall include a description of the actions taken to implement a QIP during the reporting period as specified in 40 CFR 64.8. Upon completion of a QIP, the Permittee shall include in the next summary report documentation that the implementation of the plan has been completed and reduced the likelihood of similar levels of excursions or exceedances occurring.
[40 CFR 64.9(a)(2)(iii)]

6. General Recordkeeping Requirements

   a. The Permittee shall comply with the recordkeeping requirements specified in this permit. The Permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan required pursuant to 40 CFR 64.8 and any activities undertaken to implement a quality improvement plan, and other supporting information required to be maintained by this permit (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions). [40 CFR 64.9(b)(1)]

   b. The Permittee may maintain records required by this permit condition on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. [40 CFR 64.9(b)(2)]

7. CAM Plans

a. Wet Scrubbers (Equipment ID ~~113, 075, 002-007, 008, 112, 121, 116,~~ 053, and 054)

i. Indicators: Scrubber liquid flow rate and pressure differential; [40 CFR 64.3(a)(1)]

ii. Monitoring Approach:

Scrubber flow rate and pressure differential shall be measured at least once per hour. Three-hour block averages shall be determined using the one-hour readings. [40 CFR 64.3(b)(4)(iii)]

iii. Quality Assurance/Quality Control (QA/QC): Operate and maintain flow/pressure indicators in a manner consistent with good air pollution control practices. [40 CFR 64.3(b)(3)]

iv. Indicator Range/Threshold: [40 CFR 64.3(b)(2) & (3)]

(1) For scrubber flow rate, the range shall be ±30% of the average obtained during the most recent performance test.

(2) For pressure differential, the range shall be ±30 percent from the average obtained during the most recent performance test.

v. Excursions Determinations: An excursion event is any of the following conditions: [40 CFR 64.6(c)(2)]

(1) A 3-hour block during which the average scrubber pressure differential differs from the average obtained during the most recent performance test by more than ±30 percent.

(2) A 3-hour block during which the average liquid flow rate is more than ±30 percent of the average obtained during the most recent performance test.

b. Cartridge Dust Collectors, ~~Baghouses,~~ the Copper Sulfate Product Recovery Collector and the Copper Sulfate Plant Baghouse (Equipment ID 009-017, 122A & B, 201-204, 301-312, ~~401-403~~)

i. Indicators: Pressure differential and opacity; [40 CFR 64.3(a)(1)]

ii. Monitoring Approach: [40 CFR 64.3(b)(4)(iii)]

(1) Pressure differential across the baghouse/cartridge dust collector shall be measured by a pressure gauge. Pressure differential readings shall be taken and recorded daily.

(2) Visible emissions from the control equipment shall be

monitored according to the procedure outlined in Condition II.I, except that at least one reading shall be taken on each day of operation.

iii. Quality Assurance/Quality Control (QA/QC): Operate and maintain pressure indicators in a manner consistent with good air pollution control practices. [40 CFR 64.3(b)(3)]

iv. Indicator Range/Threshold: [40 CFR 64.3(a)(2) & (3)]

(1) Pressure differential range for baghouses shall be 1.5 to 4.4 inches of water.

(2) Pressure differential for the cartridge dust collectors shall be 1.5 to 5 inches of water.

(3) Pressure differential for the copper sulfate product recovery collector and the copper sulfate plant baghouse shall be 1.0 to 6.0 inches of water.

(4) For opacity from cartridge dust collectors and the copper sulfate product recovery collector, the threshold shall be any visible emission.

(5) For opacity from ~~baghouses~~ the copper sulfate plant baghouse, the threshold shall be any visible emission that exceeds the applicable opacity baseline level.

v. Excursion/Exceedance Determinations: An excursion event is any of the following conditions: [40 CFR 64.6(c)(2)]

(1) Any pressure differential reading outside the indicator range is an excursion.

(2) For cartridge dust collectors and the copper sulfate product recovery collector, any visible emission is an excursion.

(3) For ~~baghouses~~ the copper sulfate plant baghouse, any visible emission that exceeds the applicable opacity baseline level is an excursion.

c. Electrostatic Precipitator (Equipment ID 058)

i. Indicators: Primary current and primary voltage [40 CFR 64.3(a)(1)]

ii. Monitoring Approach: [40 CFR 64.3(b)(4)(iii)]

Primary current shall be continuously measured by an ammeter. Primary voltage shall be continuously measured by a voltmeter.

The data acquisition and handling system shall compute one-hour averages of the continuous readings.

iii. Quality Assurance/Quality Control (QA/QC): Operate and maintain voltage/current indicators in a manner consistent with good air pollution control practices. [40 CFR 64.3(b)(3)]

iv. Indicator Range/Threshold: [40 CFR 64.3(a)(2) & (3)]

(1) For primary current, at least two fields are operated at greater than 25 amps in one electrostatic precipitator when feed is entering one roaster and at least two fields are operated at greater than 25 amps in two electrostatic precipitators when feed is entering two roasters.

(2) For primary voltage, at least two fields are operated at greater than 200 volts in one electrostatic precipitator when feed is entering one roaster and at least two fields are operated at greater than 200 volts in two electrostatic precipitators when feed is entering two roasters.

v. Excursions Determinations: An excursion event is any of the following conditions: [40 CFR 64.6(c)(2)]

(1) Any one-hour average primary current reading that is outside the indicator range.

(2) Any one-hour average primary voltage reading that is outside the indicator range.

vi. Secondary voltage and secondary current (or power) may be used as indicators in place of primary current and primary voltage, if the Permittee submits a written request to the Control Officer which includes proposed indicator ranges/thresholds and supporting information and if the Control Officer provides written approval. If the Permittee receives such approval, the Permittee shall use the same monitoring approach, quality assurance/quality control, and excursion determination procedures as would apply to primary current and voltage.

I. Periodic Opacity Monitoring Procedure [PCC 17.12.180.A.3.c]

1. Unless otherwise noted elsewhere in the permit, this permit condition applies to all non-fugitive emission units that are vented outdoors and that are subject to an opacity standard.

2. Visible Emission Observation Plan

a. Observation Plan

The Permittee shall maintain on site a copy of the most recently approved visible emissions observation plan that includes the following:

i. A list of emission units that are subject to this permit condition; and

ii. Each unit's baseline visible emission level and applicable opacity limit, except that a baseline visible emission level is not required for those generators which are subject to the annual operating hour limits of Condition XV.B (i.e., baseline level is required only for the magnetic steel recovery plant generator, the portable screen plant generator, and the primary crushing plant generator).

iii. For existing particulate matter emission units, which have not previously undergone a baseline visible emission analysis and for which a baseline visible emission level is required, the Permittee shall complete the visible emission analysis during the first visible emission survey conducted after permit issuance in accordance with Condition II.I.3.a.

b. New Equipment

i. Within 180 days following startup of a new particulate matter emission unit or a new particulate matter control device, the Permittee shall conduct a certified Method 9 observation. The result of this initial Method 9 observation shall be the baseline opacity level for the new emission unit or control device. Within 10 days of establishing the baseline opacity, the Permittee shall report the baseline opacity to the Control Officer and shall update the observation plan.

ii. Following startup of a new particulate matter emission unit or particulate control device, but prior to the Method 9 observation required above (Condition II.I.2.b.i), the Permittee shall assume that the baseline opacity level is equal to the opacity limit. Any exceedance of the opacity limit shall be reported in accordance with Attachment "A", Condition XII.

3. Visible Emission Observation Procedures

a. Unless identified elsewhere in the permit, a certified Method 9 observer shall conduct, in accordance with the approved observation plan, bi-weekly surveys of visible emissions from all listed emission units. Surveys shall be conducted when the emission unit is in operation but the Permittee need not operate the equipment for survey purposes only. The results of each required survey shall be recorded and kept on site. [PCC 17.12.050]

b. If the observer, during the visual survey, does not see visible emissions

that on an instantaneous basis appears to exceed the baseline level previously established, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.

c. If the observer sees visible emissions that on an instantaneous basis appear to exceed the baseline level, then the observer shall if practicable take a six-minute Method 9 observation of the plume.

d. If the six-minute opacity of the plume exceeds the baseline level but is less than the opacity standard, the Permittee shall initiate corrective action, as necessary, to reduce opacity to or below the baseline level. The Permittee shall make a record of the following:

   i. Location, date, and time of the test; and

   ii. The results of the Method 9 observation.

e. If the six-minute opacity of the plume exceeds both the baseline level and the opacity standard, then the Permittee shall do the following:

   i. Adjust or repair the controls or equipment to reduce opacity to or below the baseline level; and

   ii. Report the event as an excess emission for opacity under Attachment "A", Condition XII.

f. If the six-minute opacity of the plume is less than the baseline, the observer shall make a record of the following:

   i. Location, date, and time of the test; and

   ii. The results of the Method 9 observation.

g. If corrective actions fail to reduce opacity to or below the baseline level, the Permittee shall adopt the following course of action:

   i. Document all corrective action taken; and

   ii. Initiate procedures to re-establish the baseline within 48 hours in accordance with Condition II.I.3.h.

h. If necessitated by the results of the opacity monitoring, the Permittee may reestablish the baseline opacity level. Reestablishment of the baseline shall be performed utilizing the same procedures used in setting the initial baseline level. Within 30 days of re establishing the baseline opacity, the Permittee shall report the results to the Control Officer. The report shall also contain a description of the need for re-establishing the baseline(s).

3. Except for changes to the baseline level necessitated by the results of the biweekly observations, changes to the observation plan shall not be made without the prior approval of the Control Officer.

J. Facility-wide Sulfur Dioxide (SO_2) Limitation [PCC 17.12.190 and PCC 17.12.195 (A)]
[Material Permit Conditions are indicated by underline and italics]

1. *The Permittee shall not cause to be discharged into the atmosphere from the following emission units SO_2 emissions in excess of 240 tons per year, calculated monthly as a rolling 12-month total.*

   Source ID 058, Molybdenum Roasting

   Source ID 122, Copper Sulfate Plant Dryer

   Source ID 062, Natural Gas Heaters and Boilers

   Source ID 126, Stationary Engines ~~(Source IDs 124, 125 and 126)~~

2. Monitoring, Recordkeeping, and Reporting
   [PCC 17.12.180.A.3, 4, & 5, and PCC 17.12.195(C)]

   a. The Permittee shall compute the monthly and 12-month rolling total SO_2 emission rate using the following procedure:

      i. The Permittee shall use the SO_2 continuous emission monitoring system (CEMS) data in order to compute the monthly SO_2 emission rate (in tons) from Source ID 058, Molybdenum Roasting.

      ii. The Permittee shall calculate the monthly SO_2 emission rate for Source ID 062, Natural Gas Heaters and Boilers, using the procedure described in Condition XI. The Permittee shall calculate the monthly SO_2 emission rate for all stationary engines using the procedure described in Condition XV. For Source ID 122, copper sulfate plant, the Permittee shall compute the monthly SO_2 emission rate according to the procedure of Condition **X**.

      iii. Using the data of condition II.J.2.a.i and II.J.a.ii, above, the Permittee shall compute the total SO_2 emission rate for the site for each month.

      iv. The monthly total shall be added to the monthly total for each of the previous 11 months in order to compute the 12-month rolling total SO_2 emission rate.

   b. The calculations required by Condition II.J.2.a shall be performed and results documented by the 30th day of each calendar month for the previous 12-month period.

c. Any exceedance of the rolling total 12-month SO_2 emission limit of Condition II.J.1 shall be reported to the Control Officer in accordance with Condition XII of Attachment "A".

d. Each individual monthly and 12-month rolling total SO_2 emission rate in the reporting period shall be included in the semiannual monitoring report required by Condition II.B.

K. Facility-wide Particulate Matter (PM) and Particulate Matter Less than 10 Microns (PM_{10}) Limitation

1. Emission Limitation [Material Permit Conditions are indicated by underline and italics]

The Permittee shall not cause to be discharged into the atmosphere non-fugitive source PM or PM_{10} emissions in excess of 230 tons per year, calculated monthly as a rolling 12-month total. [PCC 17.12.190, 17.12.195 (A), and 17.12.350.A.3.a]

2. Monitoring, Recordkeeping, and Reporting [PCC.17.12.180A.3, 4, & 5, and 17.12.195(C)]

a. The Permittee shall utilize all monthly PM and PM_{10} emission rate data required by this permit to calculate and record the monthly and rolling 12-month total PM and PM_{10} emission rate for all non-fugitive emission units. For purposes of completing the rolling 12-month PM and PM_{10} emission calculations, the Permittee shall assume that PM and PM_{10} emission rates are equal, unless the Permittee has demonstrated otherwise through performance testing.

b. The calculations required by Condition II.K.2.a shall be performed and results documented by the 30th day of each calendar month for the previous 12-month period.

c. Any exceedance of the rolling total 12-month PM or PM_{10} emission limit of Condition II.K.1 shall be reported to the Control Officer in accordance with Condition XII of Attachment "A".

d. Each individual monthly and 12-month rolling total PM and PM_{10} emission rate in the reporting period shall be included in the semiannual monitoring report required by Condition II.B.

L. Permit Shield [PCC 17.12.310]

Compliance with the requirements of Condition II shall be deemed compliance with Pima County Code 17.16.050(D).

III. GENERAL REQUIREMENTS FOR METALLIC MINERAL PROCESSES SUBJECT TO 40 CFR 60 SUBPART LL

A. Applicability

This Section applies to all equipment subject to NSPS as indicated in Sections I through IX in Tables C-1 and C-2 of Attachment "C". The requirements of this Section are in addition to the source-specific requirements included elsewhere in the permit.

B. Emission Limits and Standards [40 CFR 60.382(a)(1)]

1. The Permittee shall not cause to be discharged into the atmosphere from an affected facility any stack emissions that contain PM in excess of 0.05 grams per dry standard cubic meter (0.022 grains per dry standard cubic foot ~~meter~~).

2. Visible Emissions - Opacity Standard

[40 CFR 60.382(a)(2) & (b), and PCC 17.12.350.a.3.f]
[Material Permit Conditions are indicated by underline and italics]

a. *The Permittee shall not cause to be discharged into the atmosphere from an affected facility any stack emissions that exhibit greater than 7 percent opacity, unless the stack emissions are discharged using a wet scrubber emission control device;*

b. *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, the Permittee shall not cause to be discharged into the atmosphere from an affected facility any process fugitive (including fugitive emissions from a process building) emissions that exhibit greater than 10 percent opacity.*

C. Monitoring, Recordkeeping, and Reporting

1. *For each scrubber, the Permittee shall install, calibrate,* maintain, and operate a *monitoring device for the continuous measurement of the change in pressure of the gas stream through the scrubber. The monitoring device must be certified by the manufacturer to be accurate within ±250 Pascals (±1 inch water) gauge pressure and must be calibrated on an annual basis in accordance with the manufacturer's instructions.* [40 CFR 60.384(a) and PCC 17.12.350.A.3.c]

[Material Permit Conditions are indicated by underline and italics]

2. *For each scrubber, the Permittee shall install, calibrate,* maintain, and operate a *monitoring device for the continuous measurement of the scrubbing liquid flow rate to the scrubber. The monitoring device must be certified by the manufacturer to be accurate within ±5 percent of the design scrubbing liquid flow rate and must be calibrated on an annual basis in accordance with the manufacturer's specifications.* [40 CFR 60.384(b) and PCC 17.12.350.A.3.c]

[Material Permit Conditions are indicated by underline and italics]

3. The Permittee shall submit semi-annual reports to the Control Officer and the Administrator of occurrences when the measurements of the scrubber pressure loss (or gain) or liquid flow rate differ by more than ±30 percent from the average obtained during the most recent performance test. These reports shall be postmarked within 30 days following the end of the second and fourth calendar quarters. [40 CFR 60.385(c) & (d)]

4. The Permittee shall comply with the fugitive source monitoring procedures described in Condition XIX. [PCC 17.12.180.A.3.c]

D. Performance Test Specifications

This condition describes the testing requirements for wet scrubbers subject to NSPS. Additional requirements are included in other Performance Testing conditions of the permit.

1. The sample volume for each run shall be at least 1.70 dry standard cubic meters (dscm) (60 dry standard cubic feet). 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 shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 121°C (250 °F)) in order to prevent water condensation on the filter. [40 CFR 60.386(b)(1)]

2. During each performance test of the wet scrubber the Permittee shall record the measurements of both the change in pressure of the gas stream across the scrubber and the scrubbing liquid flow rate. [40 CFR 60.385(b)]

3. To comply with the semi-annual reporting requirement of Condition III.C.3, the Permittee shall use the monitoring devices in Conditions III.C.1 and III.C.2 to determine the pressure loss of the gas stream through the scrubber and scrubbing liquid flow rate at any time during each particulate matter run, and the average of the three determinations shall be computed. [40 CFR 60.386(c)]

E. Permit Shield [PCC 17.12.310]

Compliance with conditions of Condition III shall be deemed compliance with 40 CFR 60.382(a)(1), (a)(2), and (b), 40 CFR 60.384(a) and (b), 40 CFR 60.385(b) through (d), 40 CFR 60.386 (b) and (c).

IV. GENERAL REQUIREMENTS FOR NON-FERROUS METAL INDUSTRIAL PROCESSES SUBJECT TO STATE SIP R9-3-521 AND PIMA COUNTY CODE (PCC) 17.16.360

A. Applicability

This Section applies to all equipment not subject to NSPS as indicated in Sections I through IX in Tables C-1 and C-2 of Attachment "C". The requirements of this Section are in addition to the source-specific requirements included elsewhere in the permit.

B. Particulate Matter/Opacity Standard

1. Emission Limits and Standards

   a. The Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by one of

the following equations:

For Process Sources Having Process Weight Rates of 30 Tons per Hour or Less:

$E = 3.59P^{0.62}$

For Process Sources Having a Process Weight Rate Greater than 30 Tons per Hour:

$E = 17.31P^{0.16}$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour

P = the process weight rate in tons-mass per hour. The total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter.

[State SIP R9-3-521.A and Pima County Code 17.16.360(B)]

b. Visible Emissions - Opacity Standard

i. The opacity of emissions from any of the equipment into the atmosphere shall not be greater than 20 percent as measured by EPA Reference Method 9.

ii. Where the presence of uncombined water is the only reason for the exceedance of this visible emissions requirement, such exceedance shall not constitute a violation.

[P.C.C. 17.16.130, PCC 17.16.130.B and.C]

2. Monitoring, Record Keeping and Reporting Requirements

a. The Permittee shall record the daily process rates and hours of operation of all material handling facilities. For the purpose of this permit condition material handling facilities shall mean those pieces of equipment marked with a "Y" in the "Material Handling Facility" column of Attachment "C" of this permit. [PCC 17.16.360.F]

b. The Permittee shall comply with the fugitive source monitoring procedures described in Condition XIX. [PCC 17.12.180.A.3.c]

3. Performance Testing Requirements

a. The reference methods in 40 CFR 60, Appendix A shall be used to determine compliance with the standards prescribed in Condition IV.B as

follows:

i. Method 5 for the concentration of particulate matter and the associated moisture content;

ii. Method 1 for sample and velocity traverses;

iii. Method 2 for velocity and volumetric flow rate;

iv. Method 3 for gas analysis and calculation of excess air, using the integrated sample technique.

b. For Method 5, Method 1 shall be used to select the sampling site and the number of traverse sampling points. The sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, may be approved by the Control Officer. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature no greater than 160^0 C. (320^0F). [PCC 17.16.360.H]

4. Permit Shield [PCC 17.12.310]

Compliance with the requirements of Condition IV shall be deemed compliance with Arizona SIP Rule R9-3-521(A), PCC 17.16.130(B) & (C), PCC 17.16.360(B) & (H)

V. SPECIFIC REQUIREMENTS FOR THE PRIMARY CRUSHING CIRCUITS

A. Applicability

This Section is applicable to the equipment listed under Section II of Attachment "C", Tables C-1 and C-2.

B. Operating Limitations

1. Material Throughput Limitations [PCC 17.12.190 and 17.12.350.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

~~a. *Before the Permittee has replaced the control devices associated with Source IDs 113, 002-008, 112, 121, 116, 009-017 with cartridge dust collectors and before the Permittee has completed successful performance testing on such dust collectors, the total combined amount of material throughput for the primary crushing operations shall not exceed 43,800,000 tons per year, calculated on a 12-month rolling total basis.*~~

~~*a. After the Permittee has replaced controls associated with Source IDs 113, 002-008, 112, 121, 116, 009-017 with cartridge dust collectors and after the Permittee has successfully completed initial performance testing*~~

~~on such dust collectors.~~ *The total combined amount of material throughput for the primary crushing operations shall not exceed 55,845,000 tons per year, calculated on a 12-month rolling total basis.*

2. Throughput Monitoring, Recordkeeping, and Reporting Requirements

[PCC 17.12.180.A.3.c]

a. The Permittee shall maintain a record of the following:

i. ~~The date on which the Permittee is no longer subject to the material throughput limit of Condition V.B.1.a and is instead subject to the throughput limit of Condition V.B.1.b.~~

ii. An up-to-date description of the control device(s) and their configuration used to meet the particulate matter limits for each primary crusher

iii. The total material throughput measured for each primary crusher during each day of operation.

b. The Permittee shall use the daily material throughput data required by Condition V.B.2.a.iii to compute and record the total amount of material processed in each crusher and the combined total amount processed in both crushers during each month. Using the results of the monthly material throughput calculation, the Permittee shall compute and record the total amount of material processed during each rolling 12-month period.

c. The calculations required by Condition V.B.2.b, shall be performed and results recorded by the 30th day of each calendar month for the previous 12-month period.

d. Any calendar month during which the combined rolling 12-month total material throughput exceeds the limitation in Condition V.B.1.a ~~or b~~, shall constitute an exceedance and shall be reported in accordance with Condition XII of Attachment "A".

C. Particulate Matter and Opacity Limits

1. Emission Limitations/Standards

a. The Permittee shall not cause to be discharged into the atmosphere PM emissions in excess of the limitations shown in Condition III.B.

[40 CFR 60.382(a)(1), (a)(2), & (b)]

~~b. *The Permittee shall not cause to be discharged into the atmosphere from any collection of emission units controlled by a wet scrubber gases that contain PM or PM_{10} in excess of 0.001 pounds per ton of material processed in both primary crushers.* [PCC 17.12.190.A and 17.12.350.A.3.a]~~

~~[Material Permit Conditions are indicated by underline and italics]~~

b. *The Permittee shall not cause to be discharged into the atmosphere from any emission unit controlled by a cartridge dust collector, gases that contain PM or PM_{10} in excess of 0.0005 pounds emitted per ton of material processed in the associated primary crusher.*

[PCC 17.12.190.A and PCC 17.12.350.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

2. Air Pollution Control Requirements

[Material Permit Conditions are indicated by underline and italics]

a. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable,* maintain and *operate* each primary crusher and the associated ~~*wet scrubber or cartridge dust collector in a manner consistent with good air pollution control practice for minimizing particulate matter emissions*~~.

[40 CFR 60.11(d) and PCC 17.12.350.A.3.e]

b. *The Permittee shall* maintain and *operate ancillary pollution control devices including spray bars, duct work and hoods used to capture particulate matter emissions, to meet the emission standards in Conditions III.B and V.C.1.* [PCC 17.12.180.A.2 and 17.12.350.A.3.e]

3. Monitoring, Record Keeping and Reporting Requirements

a. Monthly Emission Calculations [PCC 17.12.180.A.3 and PCC 17.12.195(C)]

In order to complete the calculations required by Condition II.K, the Permittee shall calculate and record monthly PM and PM_{10} emissions from each primary crushing emission unit according to the following procedures.

i. The Permittee shall compute the pounds of PM and PM_{10} emitted from each emission unit during each month as the product of the material throughput for the month (Condition V.B.2.b expressed in tons) and the average emission factor determined using the procedure of Condition V.C.4 (expressed as pounds of PM and PM_{10} emitted per ton of material throughput). If an emission factor has not yet been determined, the Permittee shall assume that the emission factor is equal to the applicable limit shown in Condition V.C.1.b (wet scrubber) or V.C.1.c (cartridge dust collector). The Permittee shall convert the pounds of PM and PM_{10} emitted per month to tons of PM and PM_{10} emitted per month for the primary crushing circuits.

~~ii. During the implementation phase of the equipment changes described in Section II of Attachment "C", Tables C-1 and C-2 (i.e., replacement of the wet scrubber with two cartridge dust collectors), the Permittee shall determine the daily PM and PM_{10} emission rates by computing the product of the daily material throughput (Condition V.C.4) and the appropriate emission~~

~~factor or the appropriate emission limit from Condition V.C.1.b or c if no factor is available. The Permittee shall compute the PM and PM_{10} emission rates for each month of implementation as the sum of the daily emission rates. Daily emission rate calculations are only required for emission units that are affected by control system changes. In addition, such calculations are only required during the month(s) that new control systems are installed on the affected emission unit(s).~~

ii. The Permittee shall maintain a record of all monthly calculations and resulting monthly emission rates for each emission unit.

iii. The Permittee shall use the emission rates computed for each emission unit and for each month (tons PM and PM_{10} emitted per month) in order to compute the facility-wide monthly and 12-month rolling total PM and PM_{10} emission rate required by Condition II.K.2.a.

b. For each primary crushing circuit and associated control device(s), the Permittee shall comply with the monitoring, recordkeeping, and reporting requirements of this permit, including Conditions II.H.1 through II.H.6, II.H.7.a or b (as applicable), II.I, and III.C.

[PCC 17.12.180.A.3.b]

4. Performance Testing Requirements

a. For each primary crusher, the Permittee shall conduct PM performance tests in order to determine the pounds of PM emitted per hour, the grams emitted per dry standard cubic meter, and the emission factor (pounds of PM emitted per ton of material processed). The results of the test shall be used to determine whether the Permittee is in compliance with Conditions III.B.1 and V.C.1. Tests shall be conducted according to the following schedule: [PCC 17.12.180.A.3.c and PCC 17.12.050]

~~i. Wet Scrubber for Primary Crushers (Attachment "C", ID 113): Performance testing shall be conducted annually with the first test occurring within the first 365 day period following permit issuance and subsequent tests occurring annually with at least 9 months between tests.~~

i. Cartridge Dust Collectors for the Primary Crushers (Attachment "C", ID 113): The initial performance test shall be conducted within 180 days after initial start-up of each dust collector. Subsequent tests shall be conducted annually with at least 9 months between tests.

b. These performance tests required for the ~~wet scrubbers and~~ cartridge dust collectors (ID 113) shall be conducted in accordance with Reference Method 5 or 17 in 40 CFR 60, Appendix A and the specifications included in Condition III.D. [PCC 17.12.180.A.3.c and PCC 17.12.050]

c. During each performance test, the Permittee shall monitor and record the material throughput to each crusher. The Permittee shall record the total throughput for each test run and the average hourly throughput for the three test runs. [PCC 17.12.180.A.2 and PCC 17.12.050]

d. The Permittee shall determine the emission factor (pounds PM emitted per ton of material processed) for each emission unit by dividing the pound-per-hour PM emission rate for the unit determined in accordance with Condition V.C.4.a by the average hourly material throughput for the associated crusher(s) (tons material throughput per hour) determined according to Condition V.C.4.c. The Permittee shall also determine the average emission factor for each emission unit by computing the average of all emission factors determined since issuance of this permit.

[PCC 17.12.180.A.2 and PCC 17.12.050]

e. The Permittee shall keep a record of the emission factor and the average emission factor shall include it in the test report required by Attachment "A", Condition XVIII.G. [PCC 17.12.180.A.2 and PCC 17.12.050]

f. The average emission factor (or the emission factor if only a single factor is available) determined according to Condition V.C.4.d shall be used to compute the monthly PM emission rate according to the procedure of Condition V.C.3.a. [PCC 17.12.180.A.2 and PCC 17.12.050]

g. If the PM emission rate (grams per dry standard cubic meter) exceeds the limit of Condition III.B.1, the Permittee shall report the excess emission in accordance with Attachment "A", Condition XII. If the PM emission factor (not the average emission factor) determined during the test exceeds the limit of Condition V.C.1, then the Permittee shall report the excess emission in accordance with Attachment "A", Condition XII.

[PCC 17.12.180.A.2]

h. Optional PM_{10} Testing

The Permittee may conduct PM_{10} emission testing according to EPA Reference Method 201A in order to develop a unit-specific PM_{10} emission factor for use in computing the unit-specific and facility-wide PM_{10} emission rates in accordance with Conditions V.C.3.a and II.K. If a PM_{10} emission test is not conducted, the Permittee shall assume that the PM_{10} emission rate is equal to the PM emission rate.

[PCC 17.12.180.A.2]

i. Visible Emissions [PCC 17.12.050]

During each PM performance test required by Condition V.C.4, the Permittee shall conduct one six-minute Method 9 performance test on the emission unit to measure the opacity of non-fugitive emissions subject to the opacity limitations of Condition III.B.2. Any exceedance of the applicable opacity limitation shall be reported as an excess emission in accordance with Attachment "A", Condition XII.

5. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.382(a)(1), (a)(2), & (b), for the equipment subject to this section.

VI. SPECIFIC REQUIREMENTS FOR THE FINE ORE CRUSHING OPERATION

A. Applicability

This Section is applicable to the equipment listed under Section IV of Attachment "C", ~~Table C-1 and C-2.~~

B. Particulate Matter and Opacity Limits

1. Emission Limitations/Standards

[Material Permit Conditions are indicated by underline and italics]

a. *The Permittee shall not cause to be discharged into the atmosphere from the Fine Ore Crushing Operation, PM emissions in excess of the limitations shown in Condition III.B.*

[40 CFR 60.382(a)(1), (a)(2), & (b), and PCC 17.12.350.A.3.a]

b. *The Permittee shall not cause to be discharged into the atmosphere emissions that contain PM or PM_{10} in excess of the following:*

[PCC 17.12.190 and PCC 17.12.195]

Source ID	Emission Factor Limitation (Pounds of PM or PM_{10} per Ton of Material Throughput)
~~002-007~~	~~0.003 (combined for all emission units)~~
~~008~~	~~0.00015~~
~~075~~	~~0.0002~~
~~112~~	~~0.002~~
~~121~~	~~0.0018~~
201	0.0006 (vented inside building)
202	0.0006 (vented inside building)
203	0.0012
204	0.0012
301	0.001 (vented inside building)
302	0.002
303	0.001 (vented inside building)
304	0.002
305	0.001 (vented inside building)
306	0.002
307	0.001 (vented inside building)
308	0.002
309	0.001 (vented inside building)
310	0.002

Source ID	Emission Factor Limitation (Pounds of PM or PM_{10} per Ton of Material Throughput)
311	0.0003
312	0.00015
~~401~~	~~0.0005~~
~~402~~	~~0.0005~~
~~403~~	~~0.00006~~

~~e. *The Permittee shall not begin operation of the high pressure grinding roll crushing operation (Source IDs 401, 402, and 403) until cartridge dust collectors have replaced the existing control devices on Source IDs 113, 002-008, 112, 121, 116, and 009-017 and performance testing has demonstrated that such dust collectors are capable of meeting the emission limits included in this permit.*~~

~~[PCC 17.12.190, 306.02, and 17.12.350.A.3.e]~~

c. *Exhaust from the new cartridge dust collectors associated with Source IDs 201, 202, 301, 303, 305, 307, and 309 shall be vented inside a building.* [PCC 17.12.190 and PCC 17.12.195]

2. Air Pollution Control Requirements

[Material Permit Conditions are indicated by underline and italics]

~~a. *The Permittee shall install cartridge dust collectors to control particulate matter emissions from Source IDs 401, 402, and 403 in a manner consistent with good air pollution practice for minimizing particulate matter emissions.*~~

[40 CFR 60.11(d), PCC 17.12.190.A, and 17.12.350.A.3.d]

b. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable,* maintain and *operate the secondary and tertiary~~, and High Pressure Grinding Roll (HPGR, quaternary)~~ crushing circuits and the associated ~~wet scrubbers or~~ cartridge dust collectors in a manner consistent with good air pollution control practice for minimizing particulate matter emissions.*

[40 CFR 60.11(d), PCC 17.12.190.A, and 17.12.350A.3.e]

c. *The Permittee shall* maintain and *operate ancillary pollution control devices including spray bars, duct work and hoods used to capture particulate matter emissions, to meet the emission standards in Conditions III.B and VI.B.1.* [PCC 17.12.180.A.2 and 17.12.350.A.3.e]

3. Monitoring, Recordkeeping, and Reporting

a. Monthly Emission Rate Calculations

In order to complete the calculations required by Condition II.K.1, the Permittee shall compute the monthly emission rate for each emission unit

listed in Section IV of Attachment "C", ~~Tables C-1 and C-2.~~

~~i. The following material throughput and emission rate recordkeeping requirements apply prior to implementation of the process changes described in Section IV of Attachment "C", Tables C-1 and C-2. [PCC 17.12.180.A]~~

~~(1) Each day of operation, the Permittee shall measure and record the material throughput for the following emission units:~~

~~Source ID 002-007 Sierrita Fine Crushing Operations~~

~~Source ID 008, Fine Ore Transfer Building~~

~~Source ID 075, Sierrita Scalping Screens;~~

~~Source ID 112, Tertiary Crushers, Associated Screens, and Transfer Point; and~~

~~Source ID 121, Tertiary Crushers, Associated Screens, #3 Tertiary Discharge Screen and Three Conveyor Transfer Points;~~

~~(2) The Permittee shall use the daily material throughput data to compute the total tons of material processed in each of the emission units listed above for each month.~~

~~(3) The Permittee shall calculate monthly PM and PM_{10} emissions from each emission unit using the following procedure:~~

~~(a) The Permittee shall compute the pounds of PM and PM_{10} emitted from each emission unit during each month as the product of the material throughput for the month (Condition VI.B.3.a.i.(2) expressed in tons) and the average emission factor determined using the procedure of Condition VI.B.4.d. If more than one emission factor has been determined since issuance of this permit, the Permittee shall use the average of all such emission factors. If a source-specific emission factor has not yet been determined, the Permittee shall assume that the emission factor is equal to the applicable limit shown in Condition VI.B.1.b).~~

~~(b) The Permittee shall convert the pounds of PM and PM_{10} emitted per month to tons of PM and PM_{10} emitted per month.~~

~~ii. The following material throughput and emission rate recordkeeping requirements apply after implementation of the process changes described in Section IV of Attachment "C", Tables C-1 and C-2.~~

i. Each day of operation, the Permittee shall measure and record the material throughput for the following emission units:

Source ID 201, #1 Secondary Crushing Line

Source ID 202, #2 Secondary Crushing Line

Source ID 203, #3 Secondary Crushing Line

Source ID 204, #4 Secondary Crushing Line

Source ID 301, #1 Tertiary Crushing Line

Source ID 302, #2 Tertiary Crushing Line

Source ID 303, #3 Tertiary Crushing Line

Source ID 304, #4 Tertiary Crushing Line

Source ID 305, #5 Tertiary Crushing Line

Source ID 306, #6 Tertiary Crushing Line

Source ID 307, #7 Tertiary Crushing Line

Source ID 308, #8 Tertiary Crushing Line

Source ID 309, #9 Tertiary Crushing Line

Source ID 310, #10 Tertiary Crushing Line

Source ID 311, Conveyor Transfer points

Source ID 312, Fine Ore Transfer Building

~~Source ID 401, #1 High Pressure Grinding Roll (HPGR) Crushing (Quaternary Crushing)~~

~~Source ID 402, #2 HPGR Crushing (Quaternary Crushing)~~

~~Source ID 403, HPGR Conveyor Transfer Point~~

ii. The Permittee shall use the daily material throughput data to compute the total amount of material processed in each month for each of the emission units listed above.

iii. The Permittee shall calculate monthly PM and PM_{10} emissions from each emission unit using the following procedure.

[PCC 17.12.180.A]

(1) The Permittee shall compute the pounds of PM and PM_{10} emitted from each emission unit during each month as the product of the material throughput for the month (Condition VI.B.3.a.ii.(2) expressed in tons) and the emission factor determined using the procedure of Condition VI.B.4.d (expressed as pound of PM and PM_{10} emitted per ton of material throughput). If more than one emission factor has been determined since issuance of this permit, the Permittee shall use the average of all such emission factors. If a source-specific emission factor has not yet been determined, the Permittee shall assume that the emission factor is equal to the applicable limit shown in Condition VI.B.1.b.

(2) The Permittee shall convert the pounds of PM and PM_{10} emitted per month to tons of PM and PM_{10} emitted per month.

~~iii. The following material throughput and emission calculation requirements apply during the implementation phase of the process changes described by Section IV of Attachment "C", Tables C-1 and C-2.~~

~~(1) The Permittee shall maintain a list showing the processes and equipment in operation and the control equipment which serves each piece of process equipment. The list shall be updated when a change is made such that, at all times, the list accurately describes the equipment and control configuration of the Fine Ore Crushing operation. [PCC 17.12.180.A.4]~~

~~(2) The Permittee shall monitor and record the total daily material throughput associated with each emission unit.~~

~~[PCC 17.12.180.A.3.a.iii and R18-2-306.A.4]~~

~~(3) The Permittee shall calculate monthly PM and PM_{10} emissions from each emission unit using the following procedure.~~

~~(a) The Permittee shall compute the pounds of PM and PM_{10} emitted from each emission unit during each day as the product of the material throughput for the day (Condition VI.B.3.a.iii.(2) expressed in tons) and the appropriate emission factor determined using the procedure of Condition VI.B.4.d (expressed as~~

~~pound of PM and PM_{10} emitted per ton of material throughput. If more than one emission factor has been determined since issuance of this permit, the Permittee shall use the average of all such emission factors. The daily emission rates for the month(s) of implementation shall be summed to compute the monthly PM and PM_{10} emission rates. Daily emission rate calculations are only required for emission units that are affected by control system changes. In addition, such calculations are only required during the month(s) that new control systems are installed on the affected emission unit(s).~~

~~(b) Where an emission factor is not yet available, the Permittee shall assume, for emission calculation purposes, that the emission factor is equal to the limit in Condition VI.B.1.b.~~

~~(c) The Permittee shall convert the pounds of PM and PM_{10} emitted per month to tons of PM and PM_{10} emitted per month.~~

~~(d) The Permittee shall use the monthly emission rate for each emission unit (tons PM and PM_{10} emitted per month) in order to compute the facility-wide monthly and 12-month rolling total PM and PM_{10} emission rate required by Permit Condition II.K.2.a.~~

~~[PCC 17.12.180.A.3.a.iii and R18-2-306.A.4]~~

b. The Permittee shall comply with the monitoring, recordkeeping, and reporting requirements of this permit, including Conditions II.H.1 through II.H.6, II.H.7.a or b (as applicable), II.I, and III.C, for each piece of process and control equipment. [PCC 17.12.180.A.3.b]

4. Performance Testing Requirements

a. For each Fine Ore Crushing Operation control device, the Permittee shall conduct PM performance tests in order to determine the pounds of PM emitted per hour, the grams emitted per dry standard cubic meter, and the control device emission factor (pounds of PM emitted per ton of material processed). The results of the test shall be used to determine whether the Permittee is in compliance with Conditions III.B.1 and VI.B.1. Tests shall be conducted according to the following schedule:

[PCC 17.12.180.A.3.c and PCC 17.12.050]

Emission Unit	**Required Testing Frequency**

Emission Unit	Required Testing Frequency
~~Source ID 112, Tertiary Crushers, Associated Screens, and Transfer Point~~	~~Annual[1]~~
~~Source ID 121, Tertiary Crushers, Screens, and Transfer Points~~	~~Annual[1]~~
~~Source ID 008, Fine Ore Transfer Building~~	~~Biennial[2]~~
~~Source ID 075, Scalping screens~~	~~Biennial[2]~~
~~Source ID 002-007, Sierrita Fine Crushing~~	~~Annual[1]~~
Source ID 203 and 204 Secondary Crushing Operations	Initial test and one representative test per year on a rotating basis[3]
Source ID 302, 304, 306, 308, and 310, Tertiary Crushing Operations	Initial test and two representative tests per year on a rotating basis[3]
Source ID 312, Fine Ore Transfer Building	Initial test and biennial thereafter[2, 3]
Source ID 311, Conveyor transfer points	Initial test and biennial testing thereafter[2, 3]
~~Source ID 401 and 402~~	~~Initial test and annual testing thereafter[1, 3]~~
~~Source ID 403~~	~~Initial test and biennial testing thereafter[1, 3]~~

1 Annual tests shall be conducted at least nine months apart, with the first test occurring within 365 days of permit issuance.

2 Biennial tests shall be conducted every other calendar year, with the first test occurring within 24 months following permit issuance.

3 Initial testing shall be conducted within 180 days after initial startup of the new control system.

b. These performance tests required shall be conducted in accordance with Reference Method 5 or 17 in 40 CFR 60, Appendix A and the specifications included in Condition III.D.

[PCC 17.12.180.A.3.c and 17.12.050]

c. During each performance test, the Permittee shall monitor and record the material throughput to the associated process. The Permittee shall record the total throughput for each test run and the average hourly throughput

for the three test runs.

[PCC 17.12.180.A.3.a.iii, -306.A.3.c, 17.12.180.A.4 and 17.12.050]

d. The Permittee shall determine the emission factor (pounds PM emitted per ton of material processed) for each emission unit by dividing the pound-per-hour PM emission rate for the emission unit determined in accordance with Condition VI.B.4.a by the average hourly material throughput for the associated emission unit(s) (tons material throughput per hour) determined according to Condition VI.B.4.c. The Permittee shall also determine the average emission factor for each emission unit by computing the average of all emission factors determined since issuance of this permit. [PCC 17.12.180.A.2 and PCC 17.12.050]

e. The Permittee shall keep a record of each emission factor and the average emission factor and shall include it in the test report required by Attachment "A", Condition XVIII.G. [PCC 17.12.180.A.4 and PCC 17.12.050]

f. The average emission factor (or the emission factor if only a single factor is available) determined according to Condition VI.B.4.d shall be used to compute the monthly PM and PM_{10} emission rate according to the procedure of Condition VI.B.3.a.

[PCC 17.12.180.A.2, -306.A.3.c, and PCC 17.12.050]

g. If the PM emission rate (grams per dry standard cubic meter) exceeds the limit of Condition III.B.1, the Permittee shall report the excess emission in accordance with Attachment "A", Condition XII. If the PM emission factor (not the average emission factor) determined during the test for the emission unit exceeds the applicable limit of Condition VI.B.1.b, then the Permittee shall report the excess emission in accordance with Attachment "A", Condition XII. [PCC 17.12.180.A.2]

h. Optional PM_{10} Testing [PCC 17.12.180.A.3]

The Permittee may conduct PM_{10} emission testing according to the EPA Reference Method 201A in order to develop a unit-specific PM_{10} emission factor for use in computing the unit-specific and facility-wide PM_{10} emission rates in accordance with Conditions II.K and VI.B.3.a. If a PM_{10} emission test is not conducted, the Permittee shall assume that the PM_{10} emission rate is equal to the PM emission rate.

i. Visible Emissions [PCC 17.12.050]

During the PM performance test required by Condition VI.B.4.a, the Permittee shall conduct one six-minute Method 9 performance test on the emission unit to measure the opacity of non-fugitive emissions subject to the opacity limitations of Condition III.B.2. Any exceedance of the applicable opacity limitation shall be reported as an excess emission in accordance with Attachment "A", Condition XII.

5. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this section shall be deemed compliance with 40 CFR 60.382(a)(1), (a)(2), and (b), for the equipment subject to this section.

VII. SPECIFIC REQUIREMENTS FOR FINE ORE STORAGE AND HANDLING EQUIPMENT SUBJECT TO NSPS 40 CFR 60 SUBPART LL

A. Applicability

This condition is applicable to the equipment listed under Section V of Attachment "C", ~~Table C-1 and C-2~~ as being subject to NSPS.

B. Particulate Matter (PM/PM_{10}) and Opacity

1. Emission Limitations/Standards

a. For Fine Ore Storage and Handling equipment that is subject to NSPS as indicated in Section V of Attachment "C", Table C-1 (Source IDs 009 through 017), the Permittee shall not cause to be discharged into the atmosphere emissions in excess of the limitations shown in Condition III.B. [40 CFR 60.382(a)(1), (a)(2), & (b)]

~~b. *Before cartridge dust collectors are installed to replace baghouses that serve source IDs 009 through 017 the Permittee shall not cause to be discharged into the atmosphere emissions that contain PM or PM_{10} in excess of the following:* [PCC 17.12.190, 306.02, and 17.12.350.A.3.a]~~

~~[Material Permit Conditions are indicated by underline and italics]~~

~~Source ID~~	~~Emission Factor Limitation (Pounds of PM or PM_{10} per Ton of Material Throughput)~~
~~*009*~~	~~*0.0007*~~
~~*010-017*~~	~~*0.00045*~~

b. ~~*After cartridge dust collectors are installed to replace baghouses that serve source IDs 009 through 017*~~ *The Permittee shall not cause to be discharged into the atmosphere emissions that contain PM or PM_{10} in excess of the following:* [PCC 17.12.190, -306.02, and 17.12.350.A.3.a]

Source ID	Emission Factor Limitation (Pounds of PM or PM_{10} per Ton of Material Throughput)
009	*0.0001*
010-017	*0.00025*

2. Air Pollution Control Requirements

[Material Permit Conditions are indicated by underline and italics]

a. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable,* maintain and *operate the fine ore storage and handling equipment listed in Section V of Attachment "C" and the associated ~~baghouses, or~~ cartridge dust collectors* in a manner consistent with good air pollution control practice *for minimizing particulate matter emissions.*

[40 CFR 60.11(d), PCC 17.12.180.A.2, and 17.12.350.A.3.e]

b. *The Permittee shall* maintain and *operate all ancillary pollution control devices including spray bars, duct work and hoods used to capture particulate matter emissions, to meet the emission standards in Conditions III.B, IV.B and VII.B.1.* [PCC 17.12.180.A.2, and 17.12.350.A.3.e]

3. Monitoring, Recordkeeping, and Reporting

a. Monthly Emission Rate Calculations

In order to complete the calculations required by Condition II.K.1, the Permittee shall compute the monthly emission rate for Source IDs 009-017 listed in Section V of Attachment "C", Table C-1 using throughput, emission factor.

i. Material Throughput Recordkeeping

The Permittee shall monitor and record the daily material throughput for Source IDs 009-017 listed in Section V of Attachment "C", Table C-1 and shall sum the daily material throughput data to compute the total material throughput for each month.

ii. The Permittee shall calculate monthly PM and PM_{10} emissions from Source IDs 009-017 listed in Section V of Attachment "C", ~~Table C-1~~ using the following procedure:

(1) If a unit-specific emission factor has been developed through performance testing, the Permittee shall calculate the monthly controlled PM and PM_{10} emission

rate using the unit-specific emission factor (Condition VII.B.4.a) and the monthly material throughput (Condition VII.B.3.a.i). If more than one emission factor has been determined since issuance of this permit, the Permittee shall use the average of all such emission factors. [PCC 17.12.180.A.3]

(2) If a unit-specific emission factor has not been developed, the Permittee shall compute the pounds of PM and PM_{10} emitted from each emission unit during each month as the product of the material throughput for the month (Condition VII.B.3.a.i expressed in tons) and the associated emission limit from Condition VII.B.1.b ~~or c (as applicable).~~ [PCC 17.12.180.A.3]

(3) The Permittee shall convert the pounds of PM and PM_{10} emitted per month to tons of PM and PM_{10} emitted per month. [PCC 17.12.180.A.2]

b. The Permittee shall comply with the additional monitoring, recordkeeping, and reporting requirements of this permit including the following: [PCC 17.12.180.A.3.b]

i. For Source IDs 009 through 017, the Permittee shall comply with the monitoring, recordkeeping, and reporting requirements of Condition III.

ii. For Source IDs 009 through 017, the Permittee shall comply with Conditions II.H.1 through II.H.6, II.H.7.b (Cartridge Dust Collectors ~~and baghouses~~), and II.I.

4. Performance Testing Requirements

a. For each Fine Ore Storage and Handling emission unit, the Permittee shall conduct PM performance tests in order to determine the pounds of PM emitted per hour and the grams emitted per dry standard cubic meter. For Source IDs 009-017, the Permittee shall also determine the unit-specific emission factor (pounds of PM emitted per ton of material processed). The results of the test shall be used to determine whether the Permittee is in compliance with Conditions VII.B.1 (unit-specific limits) and III.B.1 (NSPS emission limits). Tests shall be conducted according to the following schedule:

Emission Unit	**Required Testing Frequency**
Source ID 009-017, Fine Ore Bins	Initial test of each cartridge dust collector[1] Two representative emission units shall be tested each year on a rotating basis. (Initial tests can be used to satisfy this

Emission Unit	Required Testing Frequency
	annual requirement.)

[1] Initial testing shall be conducted within 180 days following initial startup of the control system.

[PCC 17.12.180.A.3.c and PCC 17.12.050]

b. The performance tests required for Source IDs 009 through 017, shall be conducted in accordance with Reference Method 5 or 17 in 40 CFR 60, Appendix A and the specifications included in Condition III.D.

[PCC 17.12.180.A.3.c and PCC 17.12.050]

c. Source-Specific Emission Factor Determination:

For Source IDs 009-017, the Permittee shall develop a unit-specific PM emission factor for use in emission calculations as follows:

i. Monitor and record the material throughput to the associated emission unit during each test run. [PCC 17.12.180.A.3.a]

ii. Record the total material throughput for each test run and the average hourly throughput for the three test runs.

[PCC 17.12.180.A.3.a]

iii. Determine the emission factor (pounds PM emitted per ton of material processed) for the emission unit by dividing the pound-per-hour PM emission rate determined in accordance with Condition VII.B.4.a by the average hourly material throughput for the associated emission units(s) (tons material throughput per hour) determined according to Condition VII.B.4.c.ii. The Permittee shall also determine the average emission factor for each emission unit by computing the average of all emission factors determined since issuance of this permit.

[PCC 17.12.180.A.3.a]

iv. The Permittee shall keep a record of each emission factor and average emission factor and shall include such information in the test report required by Attachment "A", Condition XVIII.G.

[PCC 17.12.180.A.4 and PCC 17.12.050]

v. The average emission factor (or the emission factor if only a single factor is available) determined according to Conditions VII.B.4.c.iii shall be used to compute the monthly PM and PM10 emission rate according to the procedure of Condition VII.B.3.a.

[PCC 17.12.180.A.3.a and PCC 17.12.050]

d. If the PM emission rate (grams per dry standard cubic meter) exceeds the applicable limit of Conditions III.B, the Permittee shall report the excess emission in accordance with Attachment "A", Condition XII. If the PM emission factor (not the average emission factor) for the unit exceeds the applicable limit of Condition VII.B,1.b ~~or c (as applicable)~~, then the Permittee shall report the excess emission in accordance with Attachment "A", Condition XII.

[PCC 17.12.180.A.5.b, 1777.12.040.A, and B]

e. Optional PM_{10} Testing

The Permittee may conduct PM_{10} emission testing according to EPA Reference Method 201A in order to develop a unit-specific PM_{10} emission factor for use in computing the unit-specific and facility-wide PM_{10} emission rates in accordance with Condition II.K. If a PM_{10} emission test is not conducted, the Permittee shall assume that the PM_{10} emission rate is equal to the PM emission rate. [PCC 17.12.180.A.3]

f. Visible Emissions

During each PM performance test required by Condition VII.B.4, the Permittee shall conduct one six-minute Method 9 performance test on the emission unit to measure the opacity of non-fugitive emissions subject to the opacity limitations of Condition III.B. Any exceedance of the applicable opacity limitation shall be reported as an excess emission in accordance with Attachment "A", Condition XII. [PCC 17.12.050]

5. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this section shall be deemed compliance with 40 CFR 60.382(a)(1), (a)(2), and (b) for the equipment subject to this section.

VIII. SPECIFIC REQUIREMENTS FOR FINE ORE STORAGE AND HANDLING EQUIPMENT NOT SUBJECT TO NSPS 40 CFR 60 SUBPART LL

A. Applicability

This Section is applicable to the equipment listed under Section V of Attachment "C", ~~Table C-1 and C-2~~ as not subject to NSPS. ~~Exhaust for Source ID 116 is approved for re-routing to the control device associated with Source ID 009. When that occurs, Source ID 116 shall instead follow all requirements of Section VII that apply to Source ID 009.~~

B. Particulate Matter (PM/PM_{10}) and Opacity

1. Emission Limitations/Standards

a. For Source IDs ~~116,~~ 018 through 033, and 063, the Permittee shall not cause to be discharged into the atmosphere emissions in excess of the limitations shown in Condition IV.B. [State SIP R9-3-521.A.2.b]

[PCC 17.16.130.B, and C, 17.16.360(B), and 17.16.130]

b. *The Permittee shall not cause to be discharged into the atmosphere from all combined Source IDs 018-033 emissions that contain PM or PM_{10} in excess of 0.0019 pounds of PM or PM_{10} per ton of material throughput.*

[PCC 17.12.190, 17.12.195, and 17.12.350.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

2. Air Pollution Control Requirements

~~a. Emissions from Source ID 116 shall be vented to one of the following:~~

~~i. Existing wet scrubber;~~

~~ii. Baghouse;~~

~~iii. Cartridge dust collector. [PCC 17.12.180.A.2]~~

b. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable,* maintain and *operate the fine ore storage and handling equipment listed in Section V of Attachment "C" and the associated wet scrubbers.* in a manner consistent with good air pollution control practice *for minimizing particulate matter emissions.*

[PCC 17.12.180.A.2 and 17.12.350.A.3.e]
[Material Permit Conditions are indicated by underline and italics]

c. *The Permittee shall* maintain and *operate all ancillary pollution control devices including spray bars, duct work and hoods used to capture particulate matter emissions, to meet the emission standards in Conditions IV.B and VIII.B.1.* [PCC 17.12.180.A.2 and -17.12.350.A.3.e]

[Material Permit Conditions are indicated by underline and italics]

3. Monitoring, Recordkeeping, and Reporting

a. Monthly Emission Rate Calculations

In order to determine whether the Permittee is in compliance with Condition II.K.1, the Permittee shall compute the monthly emission rate for each process listed in Section V of Attachment "C", Table C-1 using throughput and emission factor data.

i. Material Throughput Recordkeeping

The Permittee shall monitor and record the daily material throughput for emission units ~~116,~~ 018-033, and 063 listed in Section V of Attachment "C"~~, Table C-1~~ and shall sum the daily material throughput data to compute the total material throughput for each month.

ii. The Permittee shall calculate monthly PM and PM_{10} emissions from each emission unit (~~116,~~ 018-033, and 063) listed in Section V of Attachment "C"~~, Table C-1~~ using the following procedure:

(1) If a unit-specific emission factor has been developed through performance testing, the Permittee shall calculate the monthly controlled PM and PM_{10} emission rate using the unit-specific emission factor (Condition VIII.B.4.a) and the monthly material throughput (Condition VIII.B.3.a.i). If more than one emission factor has been determined since issuance of this permit, the Permittee shall use the average of all such emission factors. [PCC 17.12.180.A.3]

(2) If a unit-specific emission factor has not been developed for Source IDs 018-033, the Permittee shall compute the pounds of PM and PM_{10} emitted from each emission unit during each month as the product of the material throughput for the month (Condition VIII.B.3.a.i expressed in tons) and the associated emission limit from Condition VIII.B.1.b. [PCC 17.12.180.A.3]

~~(3) If a unit-specific emission factor has not been developed for Source ID 116, the Permittee shall compute the monthly controlled PM and PM_{10} emission rate from Source ID 116 as the product of the material throughput for the month (Condition VIII.B.3.a.i expressed in tons) and the emission factor of 0.0005 pounds of PM and PM_{10} per ton of material processed (from USEPA Publication Number AP-42, "Compilation of Air Pollutant Emission Factors"). After PM and PM_{10} emissions from Source ID 116 have been re-routed to Source ID 009, emission calculations for Source ID 009 shall account for PM and PM_{10} emissions from Source ID 116.~~

(3) If a unit-specific emission factor has not been developed for Source ID 063, the Permittee shall compute the monthly controlled PM emission rates from Source ID 063 as the product of the material throughput for the month (Condition VIII.B.3.a.i expressed in tons) and the emission factor of 0.0048 pounds of PM per ton of material processed (from USEPA Publication Number AP-42, "Compilation of Air Pollutant Emission Factors"). For this calculation, the PM_{10} emission rate shall be assumed to equal the PM emission rate unless otherwise demonstrated through performance testing.

(4) The Permittee shall convert the pounds of PM and PM_{10} emitted per month to tons of PM and PM_{10} emitted per month. [PCC 17.12.180.A.2]

b. The Permittee shall comply with the additional monitoring, recordkeeping, and reporting requirements of this permit including the

following: [PCC 17.12.180.A.3.b]

i. For Source IDs ~~116,~~ 018 through 033, and 063, the Permittee shall comply with the monitoring, recordkeeping, and reporting requirements of Condition IV.

~~ii. For Source ID 116, the Permittee shall comply with Conditions II.H.1 through II.H.6, II.H.7.a (wet scrubbers), and II.I.~~

ii. For non-fugitive emissions from Source IDs 018 through 033 and 063, the Permittee shall comply with Conditions II.I.

iii. For Source ID 063, the Permittee shall develop and submit an operation and maintenance plan that describes the acceptable ranges of pressure differential and liquid flowrate necessary to meet the applicable emission limits. The ranges are to be based on performance test data, manufacturer specifications, or engineering calculations. The plan shall be submitted within 180 days following permit issuance.

iv. The Permittee shall measure and record the scrubber liquid flow rate and pressure differential for Source ID 063 during each day of operation.

4. Performance Testing Requirements

a. For each Fine Ore Storage and Handling emission unit, the Permittee shall conduct PM performance tests in order to determine the pounds of PM emitted per hour and the grams emitted per dry standard cubic meter. For Source IDs 063 and 018-033, the Permittee shall also determine the unit-specific emission factor (pounds of PM emitted per ton of material processed). The results of the test shall be used to determine whether the Permittee is in compliance with Conditions VIII.B.1 (unit-specific limits) and IV.B (non-NSPS emission limits) as applicable. Tests shall be conducted according to the following schedule:

[PCC 17.12.180.A.3.c and PCC 17.12.050]

Emission Unit	**Required Testing Frequency**
Source IDs 018 through 033 (Wet Scrubber #0 to #15) Mill Feed Belt System	Four tested per year on a rotating basis
~~Source ID 116, Sierrita 8B to 8C Conveyor Transfer~~	~~Biennial~~[1]
Source ID 063, Lime handling	Once every five years. The first test following permit issuance shall be conducted within five years after the most

Emission Unit	Required Testing Frequency
	recent test or within 365 days after permit issuance, whichever is earlier.

~~1 Biennial tests shall be conducted every other calendar year, with the first test occurring within 24 months following permit issuance. If the emission unit is not operated or the exhaust has been re-routed by the 24th month after issuance, the Permittee is not required to conduct a test.~~

b. The performance tests required for Source IDs 018 through 033~~, and 116~~ shall be conducted in accordance with Condition IV.B.3.

[PCC 17.12.180.A.3.c and PCC 17.12.050]

c. Source-Specific Emission Factor Determination:

For Source IDs 063 and 018-033, the Permittee shall develop a unit-specific PM emission factor for use in emission calculations as follows:

i. Monitor and record the material throughput to the associated emission unit during each test run. [PCC 17.12.180.A.3.a]

ii. Record the total material throughput for each test run and the average hourly throughput for the three test runs.

[PCC 17.12.180.A.3.a]

iii. Determine the emission factor (pounds PM emitted per ton of material processed) for the emission unit by dividing the pound-per-hour PM emission rate determined in accordance with Condition VIII.B.4.a by the average hourly material throughput for the associated emission units(s) (tons material throughput per hour) determined according to Condition VIII.B.4.c.ii. The Permittee shall also compute the average emission factor for the unit using all emission factors determined since issuance of this permit. [PCC 17.12.180.A.3.a]

iv. Determine the combined emission factor for source IDs 018-033 (pounds PM emitted per ton of material processed) by computing the average emission factor for all units tested since permit issuance. For units in this grouping (018-033) which have been tested more than once, the Permittee shall use the most recent test results to compute the average emission factor. For Source IDs 018-033, the average emission factor shall be used in the monthly PM emission rate calculations.

v. The Permittee shall keep a record of each emission factor, and average emission factor and shall include the information in the test report required by Attachment "A", Condition XVIII.G.

[PCC 17.12.180.A.4 and PCC 17.12.050]

vi. The average emission factor (or the emission factor if only one test has been conducted) determined according to Conditions

VIII.B.4.a shall be used to compute the monthly PM and PM_{10} emission rate according to the procedure of Condition VIII.B.3.a.

[PCC 17.12.180.A.3.a and PCC 17.12.050]

e. If the PM emission rate (grams per dry standard cubic meter) exceeds the applicable limit of Conditions IV.B, the Permittee shall report the excess emission in accordance with Attachment "A", Condition XII. If the PM emission factor (combined emission factor for Source IDs 018-033) for the unit (pounds PM emitted per ton of material throughput) exceeds the applicable limit of Condition VIII.B.1 then the Permittee shall report the excess emission in accordance with Attachment "A", Condition XII.

[PCC 17.12.180.A.5.b, 17.12.040.A, and .B]

f. Optional PM_{10} Testing [PCC 17.12.180.A.3]

The Permittee may conduct PM_{10} emission testing according to EPA Reference Method 201A in order to develop a unit-specific PM_{10} emission factor for use in computing the facility-wide PM_{10} monthly and 12-month rolling totals in accordance with Condition II.K.2.a. If a PM_{10} emission test is not conducted, the Permittee shall assume that the PM_{10} emission rate is equal to the PM emission rate.

g. Visible Emissions

During each PM performance test required by Condition VIII.B.4, the Permittee shall conduct one six-minute Method 9 performance test on the emission unit to measure the opacity of non-fugitive emissions subject to the opacity limitations of Condition IV.B. Any exceedance of the applicable opacity limitation shall be reported as an excess emission in accordance with Attachment "A", Condition XII. [PCC 17.12.050]

5. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this section shall be deemed compliance with Arizona SIP Rule R9-3-521(A), PCC 17.16.360(B) and (H), A.A.C. R18-2-702(B) & (C), Pima County Code 17.16.360(B), and 17.16.130 for the equipment subject to this section.

IX. SPECIFIC REQUIREMENTS FOR THE MOLYBDENUM PLANT

A. Applicability

This condition applies to all equipment under Section VI of Attachment "C", ~~Table C-1~~.

B. Particulate Matter and Opacity

1. Emission Limitations/Standards

a. The Permittee shall not cause to be discharged into the atmosphere from

the Molybdenum Plant (Source IDs 117, 118, 119, 041, 042, 044, 044A, 045, 048, 053, 054, 058, and 059) PM emissions in excess of the limits included in Condition IV.B.

[Pima County Code 17.16.360(B) and State SIP R9-3-521.A]

b. *The Permittee shall not cause to be discharged into the atmosphere from the Molybdenum Roaster (Source ID 058) emissions in excess of 7.0 pounds of PM or PM_{10} per hour.* [PCC 17.12.190 and 17.12.350.A.3.a]

[Material Permit Conditions are indicated by underline and italics]

2. Air Pollution Control Requirements

[Material Permit Conditions are indicated by underline and italics]

a. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall* maintain *and operate the molybdenum plant and the associated cartridge dust collector, wet scrubbers, baghouses, cyclones, mist eliminators, and electrostatic precipitators* in a manner consistent with good air pollution control practices *for minimizing particulate matter emissions.* [PCC 17.12.180.A.2 and 17.12.350.A.3.e]

b. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable,* maintain *and operate ancillary control devices including spray bars, duct work and hoods in a manner consistent with good air pollution control practices for minimizing particulate matter emissions.* [PCC 17.12.180.A.2 and 17.12.350.A.3.e]

c. Specific Air Pollution Control System Requirements for Molybdenum Roasting

i. *Roof mode operation is prohibited. Roof mode means to vent roaster off-gas directly to the atmosphere through stacks in the roof of each roaster.* [PCC 17.12.180.A.2, 17.12.350.A.3.a, & e]

ii. *Bypassing molybdenum roasting pollution control devices (i.e., diverting molybdenum roaster off-gas such that the off-gas fails to pass through a cyclone, an electrostatic precipitator, a wet scrubber, and a mist eliminator) on a roaster is prohibited until that roaster has ceased operating (for purposes of this permit condition only, a roaster has "ceased operating" when at least 24 consecutive hours have elapsed since any feed has entered that roaster). The Permittee shall not use the molybdenum roaster maintenance stack to vent roaster off-gas to the atmosphere. Any ducting to the molybdenum roaster maintenance stack shall be disconnected, thereby eliminating the possibility of routing roaster off-gas to the atmosphere through the maintenance stack.* [PCC 17.12.180.A.2, -17.12.350.A.3.a, & e]

3. Monitoring, Recordkeeping and Reporting Requirements

a. Compliance with particulate matter standards shall be determined as

follows:

i. Conducting a PM and/or PM_{10} performance test on the emission unit in accordance with the test methods and procedures of Attachment "A", Section XVIII and Condition IX.B.4, Performance Testing Requirement in order to determine whether the Permittee complies with Condition IX.B.1. Any exceedance of the emission limits included in IX.B.1 shall be reported as an excess emission in accordance with the procedures of Attachment "A", Condition XII. [PCC 17.12.050.G]

ii. In order to determine compliance with Condition IX.B.1.a, any credible evidence or information relevant to whether a molybdenum roaster would have been in compliance with the particulate matter standard if the performance test referred to above had been performed may be used. [PCC 17.12.050.I]

b. The following procedures shall be used to compute the monthly PM and PM_{10} emission rate for each emission unit at the Molybdenum Plant. These monthly emission rates shall be used to complete the calculations required by Condition II.K.2.

i. Material Throughput Recordkeeping

The Permittee shall monitor and record the daily material throughput for each emission unit listed in Section VI of Attachment "C"~~, Table C-1~~. [PCC 17.12.180.A.3.a and -17.12.180.A.4.a]

ii. Emission Calculations [PCC 17.12.180.A.3.a and -17.12.180.A.4.a]

The Permittee shall calculate monthly PM and PM_{10} emissions from each emission unit listed in Section VI of Attachment "C"~~, Table C-1~~ using the following procedure:

(1) The Permittee shall calculate the monthly controlled emission rate from each emission unit listed in Attachment "C", Section VI as the product of the material throughput for the month (Condition IX.B.3.b.i expressed in tons) and the appropriate unit-specific emission factor (pounds of PM or PM_{10} per ton of material throughput) developed through performance testing (Condition IX.B.4). If more than one emission factor has been determined since issuance of this permit, the Permittee shall use the average of all such emission factors.

(2) For emission units which have not undergone performance testing to determine a unit-specific emission factor, the Permittee shall calculate the monthly controlled emission rate using the associated

emission factor from the table below:

Source ID	Emission Factor
041	0.76 pounds of PM or PM_{10} per hour
042	0.001 pounds of PM per ton of material processed
044A	0.0001 pounds of PM per ton of material processed
048	0.31 pounds of PM per hour
053	0.78 pounds of PM per hour
054	0.78 pounds of PM per hour
058	7.0 pounds of PM or PM_{10} per hour
059	0.0012 pounds of PM or PM_{10} per ton of material processed

c. General Monitoring, Recordkeeping, and Reporting Requirements

i. The Permittee shall comply with the Compliance Assurance Monitoring Requirements of Conditions II.H.1 through II.H.6 for the wet scrubbers of Source IDs 053 and 054, and the Electrostatic precipitators of Source ID 058. [PCC 17.12.180.A.3]

ii. For the wet scrubbers of Source IDs 053 and 054, the Permittee shall comply with the Compliance Assurance Monitoring Plan included in Condition II.H.7.a. [PCC 17.12.180.A.3]

iii. For the electrostatic precipitators of Source ID 058, the Permittee shall comply with the Compliance Assurance Monitoring Plan included in Condition II.H.7.c. [PCC 17.12.180.A.3]

iv. The Permittee shall comply with the Non-NSPS monitoring, recordkeeping, and reporting requirements of Condition **IV.B** for all emission units at the Molybdenum Plant. For non-fugitive

particulate matter emission units at the Molybdenum Plant, the Permittee shall comply with the opacity monitoring requirements of Condition II.I. [PCC 17.12.180.A.3]

4. Performance Testing Requirements [PCC 17.12.180.A.3.c and PCC 17.12.050]

a. The Permittee shall conduct performance testing as described in the following table. For Source ID 041, 53, 54, and 058, testing shall be conducted to determine the pounds of PM and PM_{10} (filterable and condensable) emitted per hour and the unit-specific PM and PM_{10} emission factor (pounds emitted per ton of material throughput). For all other sources listed in the table below, testing shall be conducted to determine the pounds of PM emitted per hour and the unit-specific emission factor. The tests shall be conducted in accordance with the following schedule:

Emission Unit	Performance Testing Frequency
Source ID 058, Main Roasting	Annual[1]
Source ID 041, Molybdenum plant – unleached molybdenum sulfide dryers	Initial test within 180 days following permit issuance and biennial testing thereafter.
Source ID 042, Leached & Unleached Molybdenum Sulfide Storage, Screening, and Handling	Once every five years. The first test following permit issuance shall be conducted within five years after the most recent test or within 365 days after permit issuance, whichever is earlier.
Source ID 044A, Molybdenum Sulfide Dump Hopper Baghouse	Once every five years. The first test following permit issuance shall be conducted within five years after the most recent test or within 365 days after permit issuance, whichever is earlier.
Source IDs 053 and 054, Molybdenum plant leach dryers	Biennial[2]
Source ID 048, Molybdenum oxide storage screening and handling	Biennial[2]
Source ID 059, Molybdenum packaging and handling system, cannery	Initial test conducted within 180 days after initial startup of the new control system; subsequent tests every five years.

[1] Annual tests shall be conducted at least nine months apart with the first test occurring within 365 days of permit issuance.

[2] Biennial tests shall occur every other calendar year with the first occurring within 24 months following permit issuance.

b. The reference methods in 40 CFR 60, Appendix A shall be used to determine compliance with the standards prescribed in Conditions IX.B.1 as follows:

i. EPA Reference Method 5 for the concentration of particulate matter and the associated moisture content;

ii. EPA Reference Method 201 or 201A for determination of filterable PM_{10}

iii. EPA Reference Method 202 for determination of condensable PM_{10} concentration

iv. EPA Reference Method 1 for sample and velocity traverses;

v. EPA Reference Method 2 for velocity and volumetric flow rate;

vi. EPA Reference Method 3 or 3A for gas analysis and calculation of excess air, using the integrated sample technique;

c. Unit-Specific Emission Factor Determination:

For Source IDs 058, 041, 042, 044A, 053, 054, 048, and 059, the Permittee shall develop a unit-specific PM emission factor for use in emission calculations. For Source IDs 041, 053, 054, and 058, the Permittee shall also develop a unit-specific PM_{10} emission factor for use in emission calculations. The following procedures shall be used in developing these unit-specific emission factors:

i. Monitor and record the material throughput to the associated emission unit during each test run.

ii. Record the total material throughput for each test run and the average hourly throughput for the three test runs

iii. Determine the emission factor (pounds PM/PM_{10} emitted per ton of material processed) for emission unit by dividing the pound-per-hour PM/PM_{10} emission rate determined using the results of the performance test by the average hourly material throughput for the associated emission unit (tons material throughput per hour) determined according to Condition IX.B.4.c.i. If more than one test has been conducted since issuance of this permit, the Permittee shall also compute the average emission factor for the emission unit using all emission factor data collected since issuance of this permit. [PCC 17.12.190 and 17.12.050]

iv. The Permittee shall keep a record of each emission factor and average emission factor and shall include it in the test report required by Attachment "A", Condition XVIII.G.

[PCC 17.12.190 and 17.12.050]

v. The average emission factor (or emission factor if only one test has been conducted) calculated according to this permit condition shall be used to compute the monthly PM and PM_{10} emission rate according to the procedure of Condition IX.B.3.b.

[PCC 17.12.190 and 17.12.050]

5. Permit Shield [PCC 17.12.310]

Compliance with conditions of this permit condition shall be deemed compliance with Arizona SIP Rule R9-3-521(A), A.A.C. R18-2-702(B) & (C), PCC 17.16.360(B) & (H), and Pima County Code 17.16.360(B) for the equipment subject to Condition **IX**.

C. Sulfur Dioxide and Reduced Sulfur

1. Emission Limitations/Standards

a. Sulfur Dioxide [PCC 17.12.190 and 17.12.350.A.3.a]

The Permittee shall not cause to be emitted in to the atmosphere from the Molybdenum Roaster (Source ID 058) SO_2 emissions in excess of 220 tons per year calculated monthly as a 12-month rolling total.

b. Reduced Sulfur

The Permittee shall not cause, allow or permit to be discharged into the atmosphere from any dryer or roaster the operating temperature of which exceeds 700°F, reduced sulfur in excess of ten percent of the sulfur entering the process as feed. Reduced sulfur includes sulfur equivalent from all sulfur emissions including sulfur dioxide, sulfur trioxide, and sulfuric acid. [PCC 17.16.360.E]

2. Air Pollution Control Requirements

[Material Permit Conditions are indicated by underline and italics]

. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall* maintain and *operate the molybdenum plant and the associated lime slurry scrubbers (Source ID 058) in a manner consistent with good air pollution control practices for minimizing SO_2 and reduced sulfur emissions.* [PCC 17.12.180.A.2 and 17.12.350.A.3.e]

b. *At all times, including periods of startup, shutdown, and malfunction, the*

Permittee shall, to the extent practicable, maintain *and operate molybdenum plant duct work and hoods in a manner consistent with good air pollution control practices for minimizing SO_2 and reduced sulfur emissions.* [PCC 17.12.180.A.2 and 17.12.350.A.3.e]

3. Monitoring, Recordkeeping and Reporting Requirements

[PCC 17.12.180.A.3.a, -c, -d, and -17.16.360.G]

a. The Permittee shall calculate SO_2 mass emissions in units of tons per month and tons per rolling 12-month period using data from the Continuous Emission Monitoring System (CEMS). Any 12-month period during which total SO_2 emission exceeds the limit of Condition IX.C.1 is an exceedance of such limit that shall be reported in accordance with Condition XII of Attachment "A".

b. With the exception of the molybdenum roaster operating condition referred to in Condition IX.C.3.c below, the reduced sulfur standard in Condition IX.C.1.b above applies to each individual molybdenum roaster separately (i.e., the Permittee shall not discharge into the atmosphere from No. 1 Molybdenum Roaster reduced sulfur in excess of ten percent of the sulfur entering No. 1 Molybdenum Roaster as feed, and the Permittee shall not discharge into the atmosphere from No. 2 Molybdenum Roaster reduced sulfur in excess of ten percent of the sulfur entering No. 2 Molybdenum Roaster as feed).

c. If, during any period, all of the off-gas from one molybdenum roaster combines with all of the off-gas from the other molybdenum roaster before being released into the atmosphere through the main stack, then the reduced sulfur standard in Condition IX.C.1.b applies to the molybdenum roasters jointly for that period only (i.e., the Permittee shall not discharge into the atmosphere from Nos. 1 and 2 Molybdenum Roasters through the main stack reduced sulfur in excess of ten percent of the sulfur entering Nos. 1 and 2 Molybdenum Roasters as feed).

d. Compliance with the reduced sulfur and SO_2 standard in Condition IX.C.1.b shall be determined by:

   i. Conducting a performance test on the molybdenum roaster(s) in accordance with the test methods and procedures of Attachment "A", Condition XVIII and Condition IX.C.4, Performance Testing Requirements; or

   ii. Continuous emissions monitoring, as set forth in Condition IX.C.3.h, Continuous Emission Monitoring System Requirements for SO_2; or

   iii. Any credible evidence or information relevant to whether a molybdenum roaster would have been in compliance with the reduced sulfur standard if the performance test had been performed.

e. Using the procedures of Conditions IX.C.3.f and g, the Permittee shall determine compliance with the reduced sulfur standard in Condition IX.C.1.b for each hour of roaster operations (i.e., each hour in which roasting off-gas is routed to the main stack from any roaster), in accordance with the following equations:

SO_2 percent removed = 100 x [1- {SO_2 Mass Emission Determination / SO_2 Generation Determination}]

Where: SO_2 Mass Emission Determination = $\left[\sum_{i=hr1}^{hr=3} (SO_2)\, i\right] / 3$

Where $(SO_2)_i$ = mass emissions for hour i (calculated using the CEMS data) and at least three hours have elapsed since startup of roaster operations (for the purposes of this and the following equation only, startup of roaster operations occurs immediately upon resumption of feed after there has been at least eleven consecutive hours when no feed has entered the roaster).

SO_2 Generation Determination = $\left[\sum_{j=hr1}^{hr=x} (SO_2)\, j\right] / x$

Where: x = hours of operation since startup of roaster operation and

$x \leq 12$ hours

$(SO_2)\, j = S_{input}$ x 2000 pounds per ton x 2 pounds SO_2 per pound S

Where: $S_{input} = F_{tph}$ x (1- F_{H2O}) x $S_{percent}$

F_{tph} = concentrate feed to roaster in tons per hour;
F_{H2O} = percent moisture in concentrate feed to roaster;
$S_{percent}$ = percent sulfur in concentrate feed to roaster.

An SO_2 percent removed value from the above equation that is less than 90 percent shall constitute a violation of the reduced sulfur standard in and shall be reported as excess emissions according to Attachment "A", Condition XII and as part of the CEMS Excess Emissions and Monitoring System Performance Report in Attachment "D". The Permittee shall use all valid measurements or data points collected to calculate both the SO_2 Generation Determinations and the SO_2 Mass Emissions Determinations.

f. SO_2 Generation Determination

i. 24-Hour Composite Sampling Percent Sulfur in Feed Determination

(1) Each day the roaster is operating, beginning at approximately 6:00 A.M. and ending between 4:00 A.M. and 6:00 A.M. the following day (the "24-Hour Composite Sampling Period"), the Permittee shall collect one roaster feed sample during each consecutive two-hour period (for a total of 12 samples collected for each 24-Hour Composite Sampling Period) from the discharge of the load cell feed bin that is currently feeding the roaster. If there is no roaster feed at 6:00 A.M., sample collection shall begin no later than two hours after feed begins and continue during each two-hour period remaining in the 24-Hour Composite Sampling Period. Although the Permittee is required to collect one valid roaster feed sample for each two-hour period, the Permittee's failure to do so shall not invalidate any valid samples collected for that same 24-hour period. All collected individual samples, whether one or more shall be used as the 24-hour composite sample. Until the Permittee determines the percent sulfur and percent moisture content in the feed in accordance with the procedures set forth below, or when no valid samples or data exist for a 24-Hour Composite Sampling Period, the Permittee shall substitute, as applicable, 24.6 percent sulfur in feed and 10 percent moisture content in feed for that 24-Hour Composite Sampling Period for the sole purpose of calculating the SO_2 Generation Determination, and, if applicable, complying with the reporting requirements of this permit and Attachment "A", Condition XII. The use of substitute data neither relieves nor excuses the Permittee from complying with the sample or data collection requirements provided herein.

(2) The Permittee shall store the samples in a single sealed compositing container.

(3) Following collection of the last sample of the 24-Hour Composite Sampling Period, the Permittee shall transport the sealed compositing container to a laboratory, where the laboratory shall prepare and analyze the 24-hour composite sample, recording the analysis as percent sulfur in feed on a dry weight basis for the 24-Hour Composite Sampling Period.

(4) The Permittee shall determine the percent sulfur in feed for each 24-Hour Composite Sampling Period within 72 hours of receipt by the on-site laboratory. If an off-site laboratory is used, the determination shall be made

within 10 days of receipt of the sample by the off-site laboratory.

(5) During multiple roaster operations, the Permittee shall duplicate the above procedures (i.e., the 24-hour composite sampling percent sulfur in feed on a dry weight basis shall be determined individually for each roaster).

ii. 24-Hour Composite Sampling Percent Moisture Content in Feed Determination

(1) Using a portion of the sample collected for the 24-hour composite sampling percent sulfur in feed determination in step i) above, the Permittee shall determine the moisture content in the feed for the 24-Hour Composite Sampling Period by laboratory analysis. Such analysis shall be recorded as the percent moisture content in feed for that 24-Hour Composite Sampling Period.

(2) The Permittee shall determine the percent moisture content in feed for each 24-Hour Composite Sampling Period within 72 hours of receipt by an on-site laboratory. If an off-site laboratory is used, the determination shall be made within 10 days of receipt of the sample by the off-site laboratory.

iii. Feed Weight and Hourly Feed Determination

(1) Feed Weight

The Permittee shall perform daily inspections of all load cells associated with the four molybdenum roaster feed weigh bins to ensure that the load cells are operating normally. To ensure feed weigh bin accuracy, the Permittee shall calibrate the load cell system at least once per calendar year using load cell manufacturer's calibration guidelines. If, during annual calibration, a load cell is found not to meet calibration criteria, the Permittee shall undertake corrective action as soon as practicable and verify that the corrective action is successful and that the load weigh bin cells are performing within manufacturer's calibration guidelines. Verification of calibrations and corrective actions shall be performed and documented by a third-party technician, registered with the Arizona Department of Weights and Measures. Documentation shall contain reference to the specific NIST standard used for

calibration. The Permittee shall ensure that the feed weigh bin load cells, as well as the associated automated data acquisition and handling systems, are operating and monitoring at all times, except during periods of calibration, quality assurance, preventive maintenance, or repair of these systems. The Permittee shall not disrupt the feed weigh bin load cells or any portion thereof, and thereby avoid performing the monitoring and recording required by this Condition IX.C.3. When the feed weigh bin load cell system is unable to obtain valid measurements of feed to the molybdenum roaster(s), the Permittee shall obtain a valid measurement of feed data by manually calibrating the feed screw speed.

(2) The Permittee shall weigh all feed entering each roaster using load cell feed bins as described above.

(3) Hourly Feed Determination

During each clock hour, the Permittee shall total and record the feed entering each roaster during the past hour. When no valid data exist for an hourly feed period, the Permittee shall substitute feed data from the average of the most recent valid hourly feed periods previous to and subsequent to the missing data period for the sole purpose of calculating the SO_2 Generation Determination, and, if applicable, reporting excess emissions pursuant to the semiannual CEMS reporting requirements of Condition IX.C.3.h and Attachment "A", Condition XII. This procedure to substitute feed data shall not be used for periods of missing hourly feed values longer than three hours. When no valid data exist for an hourly feed period, but there exists credible evidence that there was no feed, the hourly feed value is deemed to be zero (0) tons per hour. The use of substitute data neither relieves nor excuses the Permittee from complying with the sample or data collection requirements provided herein.

(4) Upon receipt of the "24-hour Composite Sampling Percent Moisture Content in Feed" determination in Condition IX.C.3.f.ii above, the Permittee shall correct each hourly wet feed value to a dry feed value using the corresponding 24-hour composite sampling percent moisture content in feed determination.

iv. Hourly SO_2 Generation Determination

Upon receipt of the 24-hour composite sampling percent sulfur in feed determination and the hourly feed determination, the Permittee shall input these determinations and the eleven immediately preceding hourly SO_2 Generation Determinations into the equation in Condition IX.C.3.e to determine compliance with the reduced sulfur standard in Condition **IX.C.1**.

g. SO_2 Mass Emissions Determination

i. The Permittee shall measure the concentration of SO_2, volumetric flow rate, and stack temperature in off-gas from the roaster operations by a CEMS on the main stack (refer to Condition IX.C.3.h).

ii. The Permittee shall use data acquired by the CEMS to calculate hourly SO_2 mass emissions. The CEMS shall be operated in accordance with Condition IX.C.3.h. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. All data points required to be collected during an hour shall be, to the extent practicable, evenly spaced over the hour. The Permittee shall calculate hourly SO_2 mass emissions measurements, expressed as pounds SO_2 per hour, by totaling each 15-minute period of CEMS mass emissions data for each hour. When no valid data exist for a 15-minute period, the Permittee shall substitute data from the average of the most recent valid 15-minute periods previous to and subsequent to the missing data period for the sole purpose of calculating the SO_2 Mass Emissions Determination, and, if applicable, reporting excess emissions pursuant to the Semiannual CEMS Reporting Requirement of Condition IX.C.3.h and Attachment "A", Condition XII. The use of substitute data neither relieves nor excuses the Permittee from complying with the sample or data collection requirements provided herein.

iii. The Permittee shall input the current and two immediately preceding hourly SO_2 mass emissions measurements from Condition IX.C.3.g.ii, above into the equation in Condition IX.C.3.d to determine compliance with the reduced sulfur standard in Condition IX.B.3.

h. Continuous Emission Monitoring System (CEMS) Requirements for SO_2
[PCC 17.12.180.A.3]

i. *The Permittee shall install, calibrate, maintain,* and operate, *as well as conduct quality assurance and quality control*

procedures for, a CEMS on the main stack in accordance with the requirements specified below. The Permittee shall ensure that the CEMS, as well as the associated automated data acquisition and handling systems, are operating and monitoring at all times, except during periods of system breakdown, calibration, zero and span adjustments, quality assurance, preventive maintenance, or repair of these systems, or after seven consecutive days have elapsed since any feed has entered either roaster. The Permittee shall not disrupt the CEMS or any portion thereof, and thereby avoid performing the monitoring and recording required by Condition IX.C.3.

[PCC 17.16.360.G and 17.12.350.A.3.c]
[Material Permit Conditions are indicated by underline and italics]

ii. The CEMS shall monitor SO_2, volumetric flow rate, and stack temperature from the outlet of the main stack.

iii. The output from the SO_2 analyzer, flow monitor, and the temperature sensor shall be transmitted directly to a data acquisition system. The system shall calculate the mass output of SO_2 from the main stack. The system shall be capable of reading all values over the full range of each measurement device. In addition, the data acquisition system shall create a record of all required data for storage, review, and reporting. Data from these monitors shall be used to calculate and record pounds of SO_2 emitted for each 15 minute period.

iv. The system shall be equipped to provide daily zero and span checks of both the SO_2 monitor and the flow measurement device.

v. SO_2 emissions shall be monitored using a continuous SO_2 analyzer. The sample shall be drawn from the manifold through the analyzer by a sample pump.

vi. The velocity shall be measured in actual feet per second. Volumetric flow shall be converted to dry standard cubic feet per minute using the stack diameter, the gas temperature, and any necessary pressure adjustments. Preliminary moisture measurements shall be conducted to determine a moisture correction factor B_{ws}. The flow monitoring system may also require developing a polynomial adjustment coefficient (K factor) so that the flow monitor measurements agree with the reference method. The flow monitor shall be designed and equipped to allow for a daily calibration error test consisting of at least two reference values: 0% to 20% of span or an equivalent reference value (e.g., pressure pulse or electronic signal) and 50% to 70% of span. Flow monitor response, both before and after any adjustment, shall be capable of being recorded by the data acquisition and handling system. The flow monitor shall be designed to allow a daily calibration error test

of the entire flow monitoring system, from the outlet of the probe tip through and including the data acquisition and handling system, or the flow monitoring system from and including the transducer through and including the data acquisition and handling system.

vii. Temperature shall be measured using a thermocouple mounted in a thermowell installed near the location of the flow monitor. Temperature data shall be reduced to 1-minute averages, clock basis.

viii. Routine Operation and Calibration

(1) CEMS Daily Checks

The Permittee shall inspect the CEMS each day for the correct flow settings for the sample collection system and the dry air supply. The Permittee shall inspect the sample collection system for proper operation, check calibration gas supply, review daily zero span results, and complete the CEMS log.

(2) SO_2 Analyzer Daily Checks

The Permittee shall inspect the CEMS each day to assess CEMS operation. The assessment shall include checking the daily zero and span of the monitor, reviewing fault alarms, and performing routine maintenance. The CEMS is capable of automatic zero and spans of the SO_2 monitoring system. The low-level calibration standard should be between 0% and 20% of analyzer full scale, and the high-level calibration standard should be between 50% and 70% of analyzer full scale. The absolute difference of the monitor response to the calibration gases must not be greater than 2.5% of the span value of the instrument. If this limit is not met, the Permittee shall perform a manual calibration of the system to verify the results of the automatic calibration. The Permittee shall verify that there is sufficient gas flow, that there are no leaks in the system, and that the correct cylinder concentration was used. If the system checks all show that the analyzer span or zero has drifted, the Permittee shall adjust the analyzer. The Permittee shall record all repairs and adjustments in the CEMS log.

(3) Flow Daily Checks

The Permittee shall log automatic daily checks of the flow monitor zero and span. The Permittee shall perform daily automatic blow back and pluggage checks

of the CEMS.

ix. Quality Assurance and Quality Control (QA/QC): SO_2 CEMS Relative Accuracy Test Audit ("RATA")

(1) At least once per calendar year, but not less than six months after the previous RATA, the Permittee shall conduct a CEMS RATA. The Administrator and the Control Officer shall be notified in writing at least 21 days prior to the initiation of testing.

(2) EPA RM test procedures that shall be implemented to accomplish the RATA are as follows:

RM 2 "Determination of Stack Gas Velocity and Volumetric Flow Rate (Type-S Pitot Tube)";

RM 4 "Determination of Moisture Content in Stack Gases"; and

RM 6 or 6C "Determination of Sulfur Dioxide Emissions from Stationary Sources" or "Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)", except that under either RM 6 or 6C each test run shall be 15 minutes and coincide with the CEMS 15-minute data points.

(3) A minimum of nine acceptable RM tests shall be conducted to demonstrate the accuracy of the CEMS at the stack test location. The RA of the SO_2 monitoring system must be no greater than 20% of the mean value of the RM test data or 10% of the applicable standard, whichever is greater, in terms of pounds SO_2 emitted for each 15 minute period.

x. SO_2 Monitor Daily Calibration

The Permittee shall check the SO_2 monitor calibration drift ("CD") on a daily basis as follows:

(1) Calibration of SO_2 monitors shall be conducted daily for the determination of instrument zero and span CD on all instrument ranges.

(2) For instruments utilizing calibration gas, the calibration gas must be introduced as close to the sampling point as possible.

(3) The CEMS must be adjusted whenever the zero or span CD exceeds the performance standards.

(4) The zero drift check must be conducted at a measurement level at or between 0% and 20% of the instrument range. The value selected must be lower than the lowest value that would be expected under normal emission unit operating conditions.

(5) The span drift check must be conducted at a measurement level at or between 50% and 70% of the instrument range unless an alternative concentration can demonstrate better representation of normal source operating levels.

(6) If either the zero (or low-level) or high-level CD result exceeds 5.0% of the span value for five, consecutive, daily periods, the CEMS is out-of-control. If either the zero (or low-level) or high-level CD result exceeds 10% of the span value during any CD check, the CEMS is out-of-control. The beginning of the out-of-control period is the time corresponding to the completion of the fifth, consecutive, daily CD check with a CD in excess of two times the allowable limit, or the time corresponding to the completion of the daily CD check that results in a CD in excess of four times the allowable limit. The end of the out-of-control period is the time corresponding to the completion of the CD check following corrective action that results in the CD's at both the zero and high-level measurement points being within the corresponding allowable CD limit.

xi. Quarterly Auditing. The Permittee shall comply with the following procedures for quarterly calibration error checks of the SO_2 monitors:

(1) A Cylinder Gas Audit ("CGA") or Relative Accuracy Audit ("RAA") shall be performed once per calendar quarter except the calendar quarter in which an annual RATA is conducted. A CGA or RAA shall be conducted in three consecutive calendar quarters. The fourth calendar quarter audit shall consist of a RATA;

(2) A CGA may be conducted in three of four calendar quarters, but no more than three quarters in succession.

(3) A CGA shall be conducted by challenging the CEMS with an audit gas of known concentration at two points within the following ranges:

(a) The CGA high-level measurement values must be between 50% and 60% of the instrument span;

(b) The CGA low-level measurement range must be between 20% and 30% of the instrument range.

(4) If the RA determined by the CGA exceeds + 15% of the average audit value or + 5 ppm, whichever is greater, the CEMS is out-of-control.

(5) The RAA shall be conducted in the same manner as the RATA, described above, except that only three sets of RM test runs shall be performed.

(6) If the RA determined by the RAA exceeds + /-15% of the three-run average or +/- 7.5% of the applicable standard, whichever is greater, the CEMS is out-of-control.

(7) The beginning of the out-of-control period is the time corresponding to the completion of the sampling for the CGA or RAA. The end of the out-of-control period is the time corresponding to the completion of the sampling for the subsequent successful audit.

xii. Data Acquisition

(1) Data Validation Criteria

The Permittee shall retain all measurements related to the CEMS for five years. However, emission data obtained during periods when the CEMS is out-of-control shall not be used in the calculation of reported emissions for that period nor be used to determine the total data availability of the reporting period.

(2) The Permittee shall conduct a RATA each calendar year. Data for the following calendar year shall be considered invalid until a successful RATA is initiated.

xiii. Preventive Maintenance

(1) To ensure the collection of quality data and reduce instrument downtime, the Permittee shall take corrective action in the following circumstances:

(a) Instrument "out-of-control" as determined by the daily zero and span CD checks; and

(b) Instrument malfunction as determined during review of daily zero and span CD check information.

(2) If an instrument problem is detected as described above,

the Permittee shall initiate corrective action immediately. If plant personnel observe an analyzer malfunction, a work order shall be initiated. The Permittee shall be responsible for correcting the malfunctioning instrument. In the event that the repair cannot be accomplished by the Permittee's personnel, the manufacturer or other qualified firm shall be contracted as required to provide on-site or remote remedial repair services, whichever is deemed necessary.

(3) When the corrective action has been completed, and the analyzer is deemed to be operating properly, appropriate test procedures that document the system's proper operation shall be implemented and fully documented. This shall be accomplished by repeating the procedure or CD check that was conducted when the malfunction or "out-of-control" condition was initially detected. If the post-maintenance zero or CD checks demonstrate drift in excess of twice the applicable performance specifications, the instrument shall be re-calibrated in accordance with the quarterly calibration error check procedures detailed above. Calibrations may be conducted in-situ.

xiv. Gas Cylinder Certification

The calibration gas standards used for daily calibration, CGAs, RAAs, and RATAs shall be prepared and traceable to EPA Protocol specifications. The calibration gas standards used for all audits (CGA, RAA, and RATA) shall not be used for daily zero and span CD checks.

xv. Semiannual CEMS Report [PCC 17.12.180.A.4]

(1) The Permittee shall submit CEMS Reports to the Control Officer and the Administrator semiannually, using the form provided in Attachment "D" (or other form approved by the Control Officer and the Administrator). The semiannual reporting period and submittal deadlines shall coincide with the Compliance Certification requirements of Attachment "A", Condition VII.

(2) If (i) the total duration of excess emissions for the reporting period is less than one percent of the total operating time for the reporting period, (ii) the total SO_2 Generation Determination (see below) downtime for the reporting period is less than five percent of the total operating time for the reporting period, and (iii) the total CEMS downtime for the reporting period is less than five percent of the total operating time for the reporting period, then only a summary report described below

shall be submitted, unless either the Control Officer or the Administrator requests an excess emissions report.

(3) "SO_2 Generation Determination downtime" means:

(a) Each two-hour period when there was a failure to collect or retain a valid feed sample,

(b) Each 24-hour period when the composite sample was invalid or lost, or when there was a failure to determine the percent sulfur in feed or moisture content in feed, and

(c) Each one-hour period when there was a failure to collect or retain valid feed weigh bin data, correct the wet feed value to a dry feed value, or determine the SO_2 generated.

(4) The summary report shall include all of the following:

(a) The date and time identifying each period during which (i) less than 12 samples were used for a 24-hour composite sample and the reason(s) for failure to obtain all 12 samples; (ii) the roaster feed weigh bin load cell system was inoperative and the nature of system repairs or adjustments; and (iii) the missing data procedures of Condition IX.C.3.f and/or g were used and the reason(s) for such use.

(b) When no excess emissions have occurred; when the CEMS or the feed weigh bin load cells, as well as the associated data acquisition and handling systems, have not been inoperative, repaired, or adjusted; or when the missing data procedures of Condition IX.C.3.f and g have not been used, such information shall be stated in the report.

(c) All information needed to complete the report form included in Attachment "D".

(5) If (i) the total duration of excess emissions for the reporting period is one percent or greater of the total operating time for the reporting period, (ii) the total SO_2 Generation Determination downtime for the reporting period is five percent or greater of the total operating time for the reporting period, or (iii) the total CEMS downtime for the reporting period is five percent or greater of the total operating time for the reporting period, then the summary report and the CEMS Excess

Emissions and Monitoring System Performance Report described in the following section shall both be submitted.

(6) The CEMS Excess Emissions and Monitoring System Performance Report shall include all of the following:

(a) The magnitude of excess emissions, the date and time of commencement and completion of each time period of excess emissions, and the process operating time during the reporting period.

(b) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the roaster operations, including the nature and cause of any malfunction (if known), the corrective action taken, or the preventative measures adopted.

(c) The date and time identifying each period during which the CEMS, including the CEMS data acquisition and handling system, was inoperative, except for zero and span checks; the nature of any CEMS repairs or adjustments; and the pH of the scrubber slurry underflow during such periods.

i. Lime Slurry Scrubber Monitoring (Source ID 058) [PCC 17.12.180.A.3]

i. The pH of each scrubber underflow shall be measured four times per operating day. If the pH of the scrubber underflow is below 3.5 standard units (s.u.), the Permittee shall conduct a confirming pH measurement within three minutes. If that measurement is below pH 3.5 s.u., the Permittee shall discontinue molybdenum sulfide feed to the affected roaster and emissions from the affected roaster shall be vented to the unaffected roaster off-gas system as soon as possible. Within 30 minutes after repairs are completed and normal operations begins, the Permittee shall make a thorough inspection of all equipment in the roaster off-gas system, consisting of the roaster and each piece of subsequent control equipment, to confirm equipment settings. This shall include verification that exhaust is vented properly, the scrubber slurry pumps are in operation and the scrubber pH level is greater than 3.5 s.u. The results of the inspection and the pH measurement(s) shall be recorded.

ii. For each missing CEMS data period, the Permittee shall continuously record the pH of the scrubber slurry underflow during the entire period to ensure proper operation of the scrubber.

j. Specific Recordkeeping Requirements for the Molybdenum Plant

[PCC 17.12.180.A.3 and -17.12.180.A.4]

The Permittee shall record and maintain all of the following information:

i. A log of roaster operations and the operation of each component of roaster off-gas system, including the hours of the day that the roasters and their associated air pollution control equipment were in operation; the occurrence and duration of any startup, shutdown, or malfunction in roaster operations; and the occurrence and duration of any malfunction of the roaster operations air pollution control equipment.

ii. The pH of each scrubber underflow and the results of the inspections required by Condition IX.C.4.i.

iii. The date, time, and duration of when feed to a roaster is discontinued and when feed is resumed.

iv. All records related to the SO_2 Generation Determinations, including the following:

(1) All sampling and analysis records for each 24-Hour Composite Sampling Period, which shall include all the information, required by Attachment "A", Condition XIII.

(2) All data/inputs and results/outputs of the equation in Condition IX.C.3.e, including feed sulfur content, feed moisture content, corrections of wet feed value to dry feed value, feed rate, and all information necessary for conversion of data to pounds SO_2 generated per hour, as required by Condition IX.C.3.g.

(3) All records related to the roaster feed weigh bin load cells, including daily inspection logs, data and results of all calibrations, and any corrective action taken.

(4) For each period when no valid samples or data exist for a 24-Hour Composite Sampling Period or when the feed weigh bin load cell system is unable to obtain valid measurements of feed to the molybdenum roaster(s) (regardless of whether valid measurements of feed data has been obtained by manually calibrating the feed screw speed), the date, time, and duration of any such periods; the reasons why no valid samples, data, or measurements are available for such periods; any corrective action taken; and whether the missing data procedures were implemented.

v. All records related to the SO_2 Mass Emissions Determinations or

the operations of the CEMS, including the following:

(1) The date, time, and duration of any periods during which the CEMS is inoperative, and all records of the pH of the scrubber slurry underflow during such periods.

(2) All measurements from the CEMS, including concentration of SO_2, volumetric flow rate, and stack temperature.

(3) All valid CEMS data, reasons and time periods for invalid CEMS data, and whether the missing data procedures were used.

(4) Data and results for CEMS tests, audits, and calibrations, and copies of CEMS testing protocol and performance testing reports.

(5) Records of CEMS repairs, adjustments, or maintenance, and any corrective action taken with regard to the CEMS.

(6) All information necessary for conversion of data to pounds of SO_2 mass emissions per hour.

vi. All records related to the comparison of the SO_2 Generation Determinations with the corresponding SO_2 Mass Emissions Determinations, and copies of each CEMS Excess Emissions and Monitoring System Performance Report of Attachment "D".

4. Performance Testing Requirements [PCC 17.12.180.A.3.c, 17.12.050, and -17.16.360.H]

a. The Permittee shall conduct performance testing on Source ID 058. Testing shall be conducted annually to determine the pounds of sulfur and SO_2 emitted per hour. Annual tests shall be conducted at least nine months apart with the first test occurring within 365 days of permit issuance.

b. A sample of the inlet molybdenum sulfide feed shall be obtained during the performance test. The sample of the inlet molybdenum sulfide feed shall be analyzed for sulfur content. The roaster performance tests shall be conducted in accordance with Reference Method 6 in 40 CFR 60, Appendix A.

c. The satisfactory completion of annual RATA testing may be used to satisfy the performance-testing requirement.

d. The pH of the scrubber slurry underflow shall be recorded during the performance test and reported as part of the test results.

e. The test methods and procedures required by this Condition are as

follows:

i. The reference methods in 40 CFR 60, Appendix A shall be used to determine compliance with the standards prescribed in Conditions IX.C.1 as follows:

EPA Reference Method 1 for sample and velocity traverses;

EPA Reference Method 2 for velocity and volumetric flow rate;

EPA Reference Method 3 or 3A for gas analysis and calculation of excess air, using the integrated sample technique;

EPA Reference Method 6 or 6C for concentration of SO_2.

ii. For EPA Reference Method 6, the sampling site shall be the same as that selected for Method 5.

iii. For EPA Reference Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.

5. Permit Shield [PCC 17.12.310]

Compliance with conditions of this permit condition shall be deemed compliance with Arizona PCC 17.16.360(E), (F), (G), and (H), for the equipment subject to Condition IX.C.

D. Volatile Organic Compounds and Hazardous Air Pollutants

At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and *operate the molybdenum leach plant fume scrubber (Source ID 118) in a manner consistent with good air pollution control practices for minimizing volatile organic compound and hazardous air pollutant (chlorine and hydrochloric acid) emissions.* [PCC 17.12.180.A.2 and 17.12.350.A.3.e]

[Material Permit Conditions are indicated by underline and italics]

X. SPECIFIC REQUIREMENTS FOR THE DECANT SOLIDS HANDLING OPERATION, MAGNETIC STEEL RECOVERY PLANT, AND COPPER SULFATE PLANT

A. This Condition is applicable to Source IDs 122, 123, and 125 under Sections VII, VIII, and IX of Attachment "C", ~~Table C-1~~.

B. Operating Limitations [PCC 17.12.180.A.2]

The Permittee shall burn only natural gas or propane in the copper sulfate plant dryer (Source ID 122).

C. Particulate Matter and Opacity Limits

1. Emission Limitations/Standards

   a. For ~~Decant Solids Handling and~~ Magnetic Steel Recovery equipment that is subject to NSPS as indicated in Sections ~~VII and~~ VIII of Attachment "C"~~, Table C-1~~ (Source IDs ~~123 feed hopper, and~~ 125), the Permittee shall not cause to be discharged into the atmosphere emissions in excess of the limitations shown in Condition III.B.

   [40 CFR 60.382(a)(1), (a)(2), and (b)]

   b. For Copper Sulfate Plant and Decant Solids Handling equipment that is not subject to NSPS as indicated in Section IX of Attachment "C", Table C-1 (Source IDs 122 and 123 ~~screw conveyor and~~ loader), the Permittee shall not cause to be discharged into the atmosphere emissions in excess of the limitations shown in Condition IV.B. [State SIP R9-3-521.A.2.b]

   [PCC 17.16.130.B & C, 17.16.360(B),]

2. Air Pollution Control Requirements

   a. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable,* maintain and *operate the Copper Sulfate Plant equipment and the associated copper sulfate product recovery cyclone, collector, and baghouse (Source ID 122A & B)* in a manner consistent with good air pollution control practice *for minimizing particulate matter emissions.* [40 CFR 60.11(d)]

   [PCC 17.12.180.A.2, -17.12.190, and 17.12.195]
   [Material Permit Conditions are indicated by underline and italics]

   b. *The Permittee shall* maintain and *operate all ancillary pollution control devices including spray bars, duct work and hoods used to capture particulate matter emissions, to meet the emission standards in Conditions III.B and IV.B.* [PCC 17.12.180.A.2]

   [Material Permit Conditions are indicated by underline and italics]

   c. The Permittee shall ensure that the coarse ore material is adequately wet to prevent particulate matter emissions in excess of the emission and opacity limitations shown in Condition III.B prior to entering the Magnetic Steel Recovery System. [PCC 17.12.180.A.2]

3. Monitoring, Recordkeeping, and Reporting [PCC 17.12.180.A.3.a]

   a. Monthly Particulate Matter Emission Rate Calculations

   In order to determine whether the Permittee is in compliance with Condition II.K.1, the Permittee shall compute the monthly emission rate for each process listed in Sections VII, VIII, and IX of Attachment "C", ~~Table C-1~~ using throughput, emission factor, and control efficiency data.

   i. The Permittee shall monitor and record the daily material

throughput for each emission unit listed in Sections VII, VIII, and IX of Attachment "C", ~~Table C-1~~.

ii. Emission Calculations

The Permittee shall calculate monthly PM and PM_{10} emissions from each emission unit listed in Sections VII, VIII, and IX of Attachment "C", Table C-1 using the following procedure.

(1) The Permittee shall compute the pounds of PM and PM_{10} emitted from each emission unit during each month as the product of the material throughput for the month (Condition X.C.3.a.i expressed in tons) and the unit-specific emission factor, if such factor is available. If more than one emission factor has been determined since issuance of this permit, the Permittee shall use the average of all such emission factors. If a unit-specific emission factor has not been developed, the Permittee shall instead use the following emission factors:

(a) Source ID 122 - 0.00014 pounds of PM per ton of material processed (From USEPA's AP-42 Compilation of Air Pollutant Emission Factors, Table 11.24-2 with 99% removal due to cyclone and product recovery collector operated in series)

(b) Source ID 125 - 0.000092 pounds of PM per ton of material processed (From ADEQ's Crushing and Screening Plant General Permit. 0.000046 pounds of PM_{10} per ton of material, assuming that the quantity of PM is twice that of PM_{10})

(2) The Permittee shall convert the pounds of PM emitted per month to tons of PM emitted per month and shall calculate PM_{10} emissions assuming that PM and PM_{10} emission rates are equal (unless the Permittee demonstrates otherwise through performance testing).

[PCC 17.12.180.A]

b. The Permittee shall comply with the additional monitoring, recordkeeping, and reporting requirements of this permit including the following: [PCC 17.12.180.A.3.b]

i. Portions of Source ID 123 ~~and 125~~ are subject to NSPS as indicated in Sections ~~VII~~ and VIII ~~of Table C-1~~ of Attachment "C". For these emission units, the Permittee shall comply with the monitoring, recordkeeping, and reporting requirements of Condition III.

ii. Source ID 122A & B and portions of Source IDs 123 and 125

are not subject to NSPS as indicated in Sections VII, VIII, and IX ~~of Table C-1~~ of Attachment "C". For these emission units, the Permittee shall comply with the monitoring, recordkeeping, and reporting requirements of Condition IV.

iii. Source IDs 123 and 125 are not subject to CAM as indicated in ~~Table C-1 of~~ Attachment "C". For these emission units, the Permittee shall comply with Conditions II.I.

iv. Source ID 122A & B (Copper Sulfate Product Recovery Collector and Copper Sulfate Plant Baghouse) are subject to CAM as indicated in ~~Table C-1 of~~ Attachment "C". For this emission unit, the Permittee shall comply with Conditions II.H.1 through II.H.6, II.H.7.b (cartridge dust collectors and baghouses), II.I.

4. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this section shall be deemed compliance with 40 CFR 60.382(a)(1), (a)(2), & (b), Arizona SIP Rule R9-3-521(A)(2)(b), A.A.C. R18-2-702.(B) & (C), -721(B) & (F), and PCC 17.16.360(B) & 17.16.130 for the equipment subject to this section.

D. Sulfur Dioxide

1. Monitoring, Recordkeeping, and Reporting [PCC 17.12.180.A.3.a]

a. The Permittee shall monitor and record the monthly fuel use for the Copper Sulfate Plant Dryer (Source ID 122).

b. The Permittee shall compute the pounds of SO_2 emitted from the copper sulfate plant dryer (Source ID 122) during each month using the monthly fuel use data (Condition X.D.1.a) and assuming that all of the sulfur in the fuel is emitted as SO_2. The Permittee shall add to the SO_2 emitted as a result of fuel use, the quantity of SO_2 emitted as a result of the drying process to compute the total quantity of SO_2 emitted from the dryer.

c. The Permittee shall convert the pounds of SO_2 emitted per month to tons of SO_2 emitted per month and shall include this emission rate in the calculation required by Condition II.J.2.

XI. REQUIREMENTS FOR THE NATURAL GAS FIRED HEATERS AND BOILERS

A. Applicability

This Section applies to natural gas fired heaters and boilers listed in Attachment "C", Section X.

B. Operating Limitations [PCC 17.12.180.A.2]

The Permittee shall burn only natural gas or propane as fuel in the heaters and boilers.

C. Particulate Matter (PM/PM_{10}) and Opacity

1. Emission Limitations/Standards [PCC 17.16.165.C.1]

a. The Permittee shall not cause, allow or permit the emission of particulate matter, caused by combustion of fuel in the heaters or boilers in excess of the amount calculated by the following equation:

$$E = 1.02\ Q^{0.769}$$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.

Q = the heat input in million Btu per hour.

b. Visible Emissions - Opacity Standard [PCC 17.16.165.J]

The Permittee shall not cause, allow or permit to be emitted into the atmosphere from the heaters or boilers, smoke which exceeds 15 percent opacity.

2. Monitoring, Record Keeping and Reporting

a. The Permittee shall report all six-minute periods in which the opacity of any plume or effluent exceeds 15 percent from the heaters and boilers. [PCC 17.16.165.J]

b. The Permittee shall monitor and record the monthly usage of natural gas for use in emission calculation purposes. [PCC 17.12.180.A.3]

c. The Permittee shall compute the monthly PM emission rate for the heaters and boilers listed in Section X of Attachment "C", Table C-1 as the product of the monthly natural gas use and 7.6 pounds of PM per million standard cubic foot of natural gas used (emission factor from EPA Publication No. AP-42 "Compilation of Air Pollutant Emission Factors"). The PM emission rate shall be expressed as tons per month and shall be used in conducting the calculations of Condition II.K.2.a. The Permittee shall compute PM_{10} emissions (tons per month) for use in the calculation required by Condition II.K.2.a assuming that the PM_{10} emission rate is equal to the PM emission rate. [PCC 17.12.180.A.3]

d. The Permittee shall conduct opacity monitoring in accordance with Condition II.I. Heaters and boilers which are rated at less than one million British thermal units per hour are exempt from the requirements of this permit condition.

3. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this Section shall be deemed compliance with

PCC 17.16.165(c)(1) and (J), for the equipment subject to this Part.

D. Sulfur Dioxide [PCC 17.12.180.A.3]

1. The Permittee shall maintain a vendor-approved copy of that part of the Federal Energy Regulatory Commission (FERC) approved Tariff agreement that contains the sulfur content and the lower heating value of the pipeline quality natural gas.

2. The Permittee shall compute the monthly SO_2 emission rate for the heaters and boilers listed in Section X of Attachment "C", Table C-1 as the product of the monthly natural gas use and 0.6 pounds of SO_2 per million standard cubic foot of natural gas used (from EPA Publication No. AP-42 "Compilation of Air Pollutant Emission Factors"). The SO_2 emission rates shall be expressed as tons per month and shall be used in conducting the calculations of Conditions II.J.2.a. The Permittee may compute a combined emission rate for all natural gas fired heaters and boilers.

XII. REQUIREMENTS FOR THE PORTABLE SCREENING PLANT, THE ION EXCHANGE PLANT, AND MISCELLANEOUS SCREENS AND GRIZZLIES

A. Applicability

This Section applies to the Portable Screening Plant (Source ID 124~~, excluding the generator~~), the ion exchange plant (Source ID 128) and miscellaneous screens and grizzlies (Source ID 120) listed in Attachment "C", Section XII.

B. Particulate Matter (PM/PM_{10}) and Opacity

1. Emission Limitations/Standards [State SIP R9-3-522.A.2.a & -b, and P.C.C. 17.16.370]

a. The Permittee shall not cause, suffer, allow or permit the discharge of particulate matter into the atmosphere except as fugitive emissions, in any one hour from any gravel or crushed stone processing plant in total quantities in excess of the amount calculated by the equation set forth below:

For Process Sources Having Process Weight Rates of 30 Tons per Hour or Less:

$E = 3.59P^{0.62}$

For Process Sources Having a Process Weight Rate Greater than 30 Tons per Hour:

$E = 17.31P^{0.16}$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour

P = the process weight rate in tons-mass per hour. The total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter.

b. Visible Emissions - Opacity Standard [PCC 17.16.130.B]

The opacity of emissions from any of the equipment into the atmosphere shall not be greater than 20 percent as measured by EPA Reference Method 9.

2. Air Pollution Control Requirements

[Material Permit Conditions are indicated by underline and italics]

a. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall install,* maintain, and *operate the baghouse associated with the lime silo of Source ID 128 in a manner consistent with good air pollution control practices for minimizing particulate matter emissions.*

[PCC 17.12.180.A.2 and 17.12.350.A.3.d and e]

3. Monitoring, Recordkeeping, and Reporting Requirements [PCC 17.12.180.A.3.a]

a. The Permittee shall record the daily production weight of the Portable Screening Plant (Source ID 124~~, excluding the generator~~), the ion exchange plant (Source ID 128) and miscellaneous screens and grizzlies (Source ID 120).

[PCC 17.16.370.G]

b. The Permittee shall monitor and record the monthly production rate for use in emission calculation purposes.

c. Opacity Monitoring Requirement

The Permittee shall conduct opacity monitoring for non-fugitive emission units associated with Source IDs 120, 124, and 128 in accordance with Condition II.I. The Permittee shall conduct opacity monitoring for fugitive emission units associated with Source IDs 120, 124, and 128 in accordance with Condition XIX.B.3.d.

d. The Permittee shall compute the monthly non-fugitive source PM emission rate for the conveyor transfer points of Source IDs 120, and 124 as the product of the monthly production weight and 0.000092 pounds PM per ton of material processed. The Permittee shall compute the monthly PM_{10} emission rate by assuming that PM and PM_{10} emissions are equal unless otherwise demonstrated. For Source ID 128, the Permittee shall assume that the monthly PM emission rate is equal to 0.00031 tons per month and that the monthly PM10 emission rate is equal to 0.00016 tons per month.

e. The PM emission rate for each source shall be expressed as tons per month and shall be used in conducting the calculations of Condition

4. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this Part shall be deemed compliance with the State SIP R9-3-522-A.2.a & b, PCC 17.16.130(B), PCC 17.16.370(D) & (G), and P.C.C. 17.16.370 for the equipment subject to this Part.

XIII. REQUIREMENTS FOR THE SOLUTION EXTRACTION AND ELECTROWINNING (SX/EW) PROCESS, THE TWIN BUTTES ELECTROWINNING TANKHOUSE PROCESS, ~~AND~~ THE SEQUENTIAL METAL EXTRACTION PLANT AND THE BIOSULFATE PLANT

A. Applicability

This Section applies to the SX/EW, Twin Buttes Electrowinning Tankhouse process (Source IDs 076 and 105, respectively), ~~and~~ the Sequential Metal Extraction Plant (SME) (Source ID 127) and the Biosulfate Plant (Source ID 129) listed in Attachment "C", Section XII.

B. Volatile Organic Compounds (VOCs), Hydrogen Sulfide, and Other Miscellaneous Emissions

1. Emission Limitations/Standards

a. The Permittee shall not cause the emission of gaseous or odorous materials from equipment and operations associated with the processes described in Source IDs 076, 105, 127 and 129 of Attachment "C"~~, Table C-1,~~ Section XII, in such quantities or concentrations as to cause air pollution. [PCC 17.16.430.D]

b. Materials including solvents or other volatile compounds, acids, and alkalies utilized in the processes described in Source IDs 076, 105, 127 and 129 of Attachment "C"~~, Table C-1~~, Section XII shall be processed, stored, used, and transported in such a manner and by such means that they will not evaporate, leak, escape or be otherwise discharged into the ambient air so 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, the installation and use of such control methods, devices, or equipment shall be mandatory. [PCC 17.16.430.F]

c. Where a stack, vent or other outlet is at such a level that fumes, gas, mist, odor, smoke, vapor, or any combination thereof constituting air pollution is discharged to adjoining property, the Control Officer may require the installation of abatement equipment or the alteration of such stack, vent or other outlet by the Permittee thereof to a degree that will adequately dilute, reduce or eliminate the discharge of air pollution to the adjoining property. [PCC 17.16.430.G]

d. The Permittee shall not allow hydrogen sulfide to be emitted from any location in such manner and amount that the concentration of such emissions into the ambient air at any occupied place beyond the premises on which the source is located exceeds 0.03 parts per million by volume for any averaging period of 30 minutes or more. [PCC 17.16.430.H]

2. Air Pollution Control Requirements [PCC 17.12.180.A.2 and 17.12.350.A.3.e]
[Material Permit Conditions are indicated by underline and italics]

a. *The Permittee shall maintain the existing covers on the mixer settler tanks to control emissions from the Solution Extraction Plant (Source ID 076).*

b. *The Permittee shall use one or more of the following methods to control emissions from the Electrowinning Tankhouse (Source ID 105):*

i. *Foam;*

ii. *Blankets;*

iii. *Surfactants;*

iv. *Thermal retention balls*; or

v. *Other effective means of controlling sulfuric acid emissions approved by the Control Officer.*

c. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall install*, maintain, and *operate the dry media scrubbers associated with the sequential metal extraction tanks (Source ID 127)and the bleed scrubber, ventilation scrubber and ground flare associated with the biosulfate plant (Source ID 129) in a manner consistent with good air pollution control practices for minimizing hydrogen sulfide emissions.*

3. Monitoring, Recordkeeping, and Reporting Requirements
[PCC 17.12.180.A.2, A.3.c and17.12.350.A.3.c]
[Material Permit Conditions are indicated by underline and italics]

a. The Permittee shall maintain a record of the control measures used at the SX/EW (Source IDs 076 and 105) plant.

b. *At all times, including periods of startup, shutdown, and malfunction, the permittee shall install* and maintain *the hydrogen sulfide monitors in the vent line of each set of the sequential metal extraction tanks(Source ID 127) for detecting emission of hydrogen sulfide.*

c. *At all times, including periods of startup, shutdown, and malfunction, the Permittee shall install* and maintain *ambient monitors for monitoring hydrogen sulfide in the SME plant (Source ID 127).*

4. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this Part shall be deemed compliance with PCC 17.16.430(D), (F), (G), and (H) for the equipment subject to this Part.

XIV. REQUIREMENTS FOR THE GASOLINE TANKS

A. Applicability

This Section applies to the gasoline storage tanks listed in Attachment "C", Section XII, Source ID 078.

B. Operating Limitations

1. Operational Requirements

a. The Permittee shall equip all gasoline tanks with a submerged filling device, or acceptable equivalent, for the control of hydrocarbon emissions. [PCC 17.16.230.B]

b. After January 10, 2011, the Permittee shall comply with 40 CFR 63.111116 by not allowing gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:

i. Minimize gasoline spills;

ii. Clean up spills as expeditiously as practicable;

iii. Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use;

iv. Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.

[40 CFR 63.11116(a) and 63.11117(a)]

c. After January 10, 2011, the Permittee shall comply with 40 CFR 63.11117 for storage tanks with a monthly gasoline throughput of 10,000 gallons or more by loading gasoline with submerged filling that meets one the following: [40 CFR 63.11117(b)]

i. Submerged fill pipes installed on or before November 9, 2006, shall be no more than 12 inches from the bottom of the storage tank.

ii. Submerged fill pipes installed after November 9, 2006, shall be no more than 6 inches from the bottom of the storage tank.

d. All pumps and compressors that handle gasoline shall be equipped with mechanical seals or other equipment of equal efficiency to prevent

release of organic contaminants into the atmosphere. [PCC 17.16.230.D]

2. Monitoring and Recordkeeping Requirements

a. The Permittee shall, for the gasoline storage tanks, maintain a file of the typical Reid vapor pressure of gasoline stored and of dates of storage. Dates on which the storage vessel is empty shall be shown. [PCC 17.16.230.E.1]

b. The Permittee shall record the average monthly temperature, and true vapor pressure of gasoline stored at such temperature, if the true vapor pressure is greater than 470 mmHg (9.1 psia) and the gasoline is stored in a storage vessel other than one equipped with a vapor recovery system or its equivalent. [PCC 17.16.230.E.2.b]

c. The average monthly storage temperature shall be an arithmetic average calculated for each calendar month, or portion thereof if storage is for less than a month, from bulk liquid storage temperatures determined at least once every seven days. [PCC 17.16.230.E.3]

d. The true vapor pressure shall be determined by the procedures in American Petroleum Institute Bulletin 2517, amended as of February 1980 (and no future editions), which is incorporated herein by reference and on file with the Office of the Secretary of State. This procedure is dependent upon determination of the storage temperature and the Reid vapor pressure, which requires sampling of the petroleum liquids in the storage vessels. Unless the Control Officer requires in specific cases that the stored petroleum liquid be sampled, the true vapor pressure may be determined by using the average monthly storage temperature and the typical Reid vapor pressure. For those liquids for which certified specifications limiting the Reid vapor pressure exist, the Reid vapor pressure may be used. For other liquids, supporting analytical data must be made available upon request to the Control Officer when typical Reid vapor pressure is used. [PCC 17.16.230.E.4]

e. After January 10, 2011, the Permittee shall, upon request by the Control Officer, demonstrate that their average monthly throughput is less than the following thresholds: [40 CFR 63.11111(e) and (b)]

i. 10,000 gallons for gasoline tank SP-13; and

ii. 100,000 gallons for gasoline tanks ML-11(1) and ML-11(2)

f. For all gasoline tanks, the Permittee shall have records documenting the gasoline throughput available within 24 hours of a request by the Control Officer and the Administrator. [40 CFR 63.11111(e) and (b)]

g. For gasoline tanks with a monthly gasoline throughput of 10,000 gallons or more but less than 100,000 gallons, the Permittee shall submit the notifications listed below to the Control Officer and the Administrator of

the USEPA. Such notifications shall be submitted by January 10, 2011:

i. Initial notification that the gasoline tanks are subject to 40 CFR 63.11117 to include the name and address of the Permittee, the address (physical location) of the gasoline dispensing facilities, and a statement that the notification is being submitted in response to 40 CFR 63 Subpart CCCCCC. The initial notification shall also indicate that the facility is subject to 40 CFR 63.11117(a), (b), (d), and (e).

ii. Notification of Compliance Status to be signed by the responsible official and certified to be accurate. Such notification shall indicate whether the Permittee has complied with the requirements of 63 Subpart CCCCCC. If the facility is in compliance with 40 CFR 63 Subpart CCCCCC at the time of the initial notification, the Notification of Compliance Status may be submitted in lieu of the initial notification provided it contains the information required to be included in the initial notification. [40 CFR 63.11124(a)(1) and (2)]

3. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 63.11111(e), 63.11113(b), 63.11116(a) & (b), 63.11117(a), (b), (d), & (e), 63.11124(a), A.A.C. R18-2-710.B, D, E.1, E.2.b, E.3, and E.4, for the equipment subject to this Part.

XV. GENERAL REQUIREMENTS FOR STATIONARY ENGINES

A. Applicability:

This Section is applicable to all stationary engines listed in Attachment "C", ~~Table C-1,~~ Section XI.

B. Operating Limitations

1. *The Permittee shall not operate any single stationary engine listed in the table below more than 1000 hours per 12-month rolling period*:

[PCC 17.12.190 and 17.12.350.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

Table XV-1

Description	Serial Number
Tailings thickener emergency power generator (diesel)	*48104*

Description	Serial Number
Mill reservoir emergency fire water pump (natural gas)	*905553002*
Moly maintenance emergency power generator for roaster (natural gas)	*6034810*
Continuous emission monitoring system emergency power generator(natural gas)	*6034820*
Hydromet, Twin Buttes emergency fire water backup (diesel)	*72015015*
Radio hill backup power (propane)	*826088*
~~*West robo shack backup power (propane)*~~	~~*826089*~~
~~*Truck shop backup power (propane)*~~	~~*826090*~~
~~*Love shack backup power (propane)*~~	~~*834015*~~
Dispatch tower #1 backup power (propane)	*834016*
Mine eng backup power (propane)	*834017*
Administration building backup power (natural gas)	*Not available*
Mine maintenance truck shop fire water pump (diesel)	*Not available*
SCC Emergency Generator	*Not Available*
Twin Buttes Administration (Sand Castle) building backup power (propane)	*Not Available*
Twin Buttes Radio Hill backup power (propane)	*Not Available*
Tailings Pump Station backup power (diesel)	
Dispatch Tower #2 backup power	

Description	Serial Number
(propane)	
Sierrita Health Clinic backup power (propane)	
Sierrita Mobile Radio Tower backup power (diesel)	
Sierrita Administrative Communications Room backup power (Natural Gas)	

2. *The Permittee shall not operate the Hydromet #3 emergency headwall diesel generator (Source ID 126) more than 1,500 hours per 12-month rolling period.*

[PCC 17.12.190 and 17.12.350.A.3.a]
[Material Permit Conditions are indicated by underline and italics]

C. Monitoring, Recordkeeping, and Reporting [PCC 17.12.180.A.3.a]

1. The Permittee shall monitor and record the monthly hours of operation for use in emission calculation purposes.

2. By the 30th day of each month, the Permittee shall monitor and record the monthly and 12-month rolling hours of operation for all generators listed in Table XV-1 and the Hydromet #3 emergency headwall diesel generator.

3. The Permittee shall compute the monthly PM and PM_{10} emission rate for the stationary engines listed in Section XI of Attachment "C", ~~Table C-1~~ as follows:

   a. For engines that are subject to NSPS 40 CFR 60 Subpart IIII, the PM emission rate shall be calculated as the product of the hours of operation (hours per month), the capacity of the engine (horsepower) and the engine's applicable emission limit (grams per horsepower-hour).

   b. For engines that are not subject to NSPS 40 CFR 60 Subpart IIII, the PM and PM_{10} emission rates shall be calculated using the hours of operation data and the PM/PM_{10} emission factor from EPA Publication No. AP-42 "Compilation of Air Pollutant Emission Factors", Chapter 3, Stationary Internal Combustion Sources. The emission factors of Chapter 3, Section 3.3 (0.000721 pounds of PM_{10} horsepower-hour for gasoline and 0.0022 pounds of PM_{10} per horsepower-hour for diesel) shall be used for engines less than 600 horsepower. The emission factor of Chapter 3, Section 3.4 (0.0007 pounds of PM_{10} per horsepower-hour for diesel) shall be used for engines greater than or equal to 600 horsepower. The emission factor of 6.5 x 10-7 pounds PM_{10} per horsepower-hour shall be used for natural gas and propane fired engines (emission factor from AP-42 Chapter 3, Section 3.2-2 converted to pounds PM_{10} per horsepower-hour). The Permittee shall assume that PM and PM_{10} emission rates are equal.

c. The PM and PM_{10} emission rate for each engine shall be expressed as tons per month and shall be used in conducting the calculations of Condition II.K.2.a.

4. The Permittee shall compute the monthly SO_2 emission rate for the stationary engines listed in Section XI of Attachment "C", ~~Table C-1~~ using the monthly hours of operation the emission factors listed in the table below. The SO_2 emission rate for each engine shall be expressed as tons per month and shall be used in conducting the calculations of Condition II.J.2.a.

Engine Type	**Emission Factor (pounds SO_2 emitted per horsepower-hour)**
Diesel engine less than or equal to 600 horsepower	0.00205
Diesel engine greater than 600 horsepower	0.00728
Natural gas engine	5×10^{-6}

For propane-fired engines, the SO_2 emission rate shall be calculated assuming maximum fuel use during the hours of operation and assuming that all of the sulfur content in the propane is converted to SO_2.

5. The Permittee shall conduct quarterly opacity surveys on the engines identified in Condition XV.B in accordance with Condition II.I.

XVI. REQUIREMENTS FOR STATIONARY ENGINES SUBJECT TO STATE RULES AND COUNTY RULES

A. Applicability

This Section applies to stationary engines listed in Attachment "C", Table C-1, Section XI.

B. Fuel Limitations

[P.C.C. 17.16.340.F & H, 17.16.340.F, and H]

The Permittee shall use only natural gas, propane or low sulfur oil (to include diesel fuel) in the stationary engines. When low sulfur oil is fired, stationary engines shall burn fuel which limits the emission of sulfur dioxide to 1.0 pound per million Btu heat input.

C. Particulate Matter and Opacity Limits

1. Emission Limitation/Standards

The Permittee shall not allow or permit the emission of particulate matter, caused by combustion of fuel, from any stationary engine in excess of the amounts calculated by one of the following equations:

a. For equipment having a heat input rate of 4200 million Btu per hour or less, the maximum allowable emissions shall be determined by the following equation:

$E = 1.02Q^{0.769}$

where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.

Q = the heat input in million Btu per hour.

b. For equipment having a heat input rate greater than 4200 million Btu/hr., the maximum allowable emissions shall be determined by the following equation:

$E = 17.0Q^{0.432}$

where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.

Q = the heat input in million Btu per hour.

[P.C.C. 17.16.340.C and 17.16.340.C]

c. The Permittee shall not allow or permit to be emitted into the atmosphere from any stationary rotating machinery, smoke for any period greater than 10 consecutive seconds which exceeds 40% opacity. Visible emissions when starting cold equipment shall be exempt from this requirement for the first 10 minutes.

[P.C.C. 17.16.340.E and 17.16.340.E]

d. For purposes of this condition, the heat input shall be the aggregate heat content of all fuels whose products of combustion pass through a stack or other outlet. The total heat input of all operating fuel-burning units on a plant or premises shall be used for determining the maximum allowable amount of particulate matter which may be emitted.

[P.C.C. 17.16.340.B and 17.16.340.B]

2. Monitoring, Recordkeeping and Reporting Requirements

The Permittee shall keep records of fuel supplier specifications. The specifications shall contain information regarding the name of fuel supplier and higher heating value of the fuel. These records shall be made available to ADEQ upon request. [PCC 17.12.180.A.3.c]

3. Permit Shield [PCC 17.12.310]

Compliance with the terms of this section shall be deemed compliance with PCC 17.16.340.B, C, & E and P.C.C.17.16.340.B, C, E, F, & H.

D. Sulfur

1. Monitoring, Recordkeeping and Reporting Requirements

a. The Permittee shall maintain a record of the fuel sulfur content and lower heating value of the fuel. [P.C.C. 17.16.340.I and 17.16.340.I]

b. The Permittee shall report to the Control Officer any daily period during which the sulfur content of the fuel being fired in the machine exceeds 0.8%.

[P.C.C. 17.16.340.J and 17.16.340.J]

c. The methods listed in PCC 17.16.340.K shall be used should the Permittee be required to conduct testing to demonstrate compliance with this condition. [P.C.C. 17.16.340.K and 17.16.340.K]

2. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this Section shall be deemed compliance with PCC 17.16.340.F, H, I, J, & K, and P.C.C.17.16.340.F, H, I, J, & K for the activities subject to this Part.

XVII. REQUIREMENTS FOR STATIONARY COMPRESSION IGNITION ENGINES SUBJECT TO 40 CFR 60 SUBPART IIII

A. Applicability

This condition applies to stationary compression ignition internal combustion engines listed as subject to NSPS 40 CFR 60 Subpart IIII in Table C-1 of Attachment "C", Section XI.

B. Operating Limitations

1. The Permittee shall operate and maintain the engine according to the manufacturer's written instructions or procedures developed by the Permittee that are approved by the engine manufacturer. A copy of the instructions or procedures shall be kept on site and made available to ADEQ upon request.
[40 CFR 60.4211(a) and PCC 17.12.180.A.3]

2. The Permittee shall only change those engine settings that are permitted by the manufacturer. [40 CFR 60.4211(a)]

3. The Permittee shall meet the requirements of 40 CFR Parts 89, 94, or 1068, as they apply. [40 CFR 60.4211(a)]

4. The Permittee shall operate and maintain the internal combustion engine according to the manufacturer's written instructions or procedures according to the manufacturer's written instructions or procedures developed by the Permittee that are approved by the engine manufacturer over the entire life of the engine. [40 CFR 60.4206]

5. Fuel Requirements [40 CFR 60.4207(b)]

   a. On and before October 1, 2010, the Permittee shall use diesel fuel that meets the following requirements of 40 CFR 80.510(a):

      i. Maximum sulfur content of 500 parts per million (ppm) and

      ii. Minimum centane index of 40 or a maximum aromatic content of 35 volume percent.

   b. After October 1, 2010, an engine that uses diesel fuel and has a displacement of less than 30 liters per cylinder, shall use diesel fuel that meets the following requirements of 40 CFR 80.510(b):

   c. Maximum sulfur content of 15 parts per million (ppm) and

   d. Minimum centane index of 40 or a maximum aromatic content of 35 volume percent.

6. Additional Emergency Engine Requirements [40 CFR 60.4211(e) and 60.4209(a)] [PCC 17.12.180.A.3.c, -306.A.4, and 17.12.350.A.3.c]

   a. This Condition applies to the generators in Table C-1, Section XI labeled as emergency generators subject to 40 CFR 60 Subpart IIII.

   b. *The Permittee shall install a non-resettable hour meter prior to startup of the engine.* [PCC 17.12.350.A.3.c]

   [Material permit conditions are indicated by underline and italics]

   c. Emergency internal combustion engines may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine.

   d. The Permittee shall not operate the emergency engine for the purposes of maintenance checks and readiness testing for more than 100 hours per year unless the Permittee maintains records identifying the Federal, State, or local standards that require maintenance and testing of emergency internal combustion engines beyond 100 hours per year. Copies of such records shall be provided to ADEQ upon request.

   e. The Permittee may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the Permittee maintains records indicating that Federal, State, or local standards require maintenance and testing of

emergency internal combustion engines beyond 100 hours per year.

f. The Permittee shall not operate emergency engines except for emergency purposes, and maintenance and testing. There is no limit of the use of the engine in emergency situations (except as indicated in Condition XV.B).

g. The Permittee shall maintain monthly records of engine operation. The records shall include the purpose of operation and the duration of time the engine was operated. The record shall identify whenever the operation of the engine was for emergency purposes.

C. Emission Limitations and Standards

1. Non-Emergency Engines

2007 model year and later non-emergency internal combustion engines with a displacement of less than 30 liters per cylinder shall comply with the appropriate emission limitation as follows:

a. 2007 model year and later engines with a maximum engine power less than or equal to 3000 horsepower and a displacement of less than 10 liters per cylinder shall meet the emission standards for new nonroad compression ignition engines in 40 CFR 89.112, 89.113, 1039.101, 1039.102, 1039.104, 1039.105, 1039.107 and 1039.115 as applicable for all pollutants for the same model year and maximum engine power. [40 CFR 60.4201(a)]

b. 2007 through 2010 model year engines with a maximum power greater than 3,000 horsepower and a displacement of less than 10 liters per cylinder shall meet the emission standards in Conditions XVII.F.1.a, XVII.G.1, XVII.H.1, and XVII.I, for all pollutants, for the same maximum engine power.

c. 2011 model year and later engines with a maximum engine power greater than 3,000 horsepower and a displacement of less than 10 liters per cylinder shall meet the emission standards for new nonroad engines in 40 CFR 1039.101, 1039.102, 1039.104, 1039.105, 1039.107, and 1039.115, as applicable for all pollutants for the same maximum engine power. [40 CFR 60.4201(d)]

2. Emergency Engines

2007 model year and later emergency internal combustion engines with a displacement of less than 30 liters per cylinder that are not fire pump engines shall comply with the appropriate emission limitation as follows: [40 CFR 60.4205(b)]

a. 2007 model year and later engines with a maximum engine power less than or equal to 3,000 horsepower and a displacement of less than 10 liters per cylinder shall meet the emission standards specified below:

[40 CFR 60.4202(a)]

i. 2007 model year engines with a maximum engine power less than 50 horsepower shall meet the emission standards for new nonroad compression ignition engines in 40 CFR 89.112 and 40 CFR 89.113, for all pollutants, for the same model year and maximum engine power. [40 CFR 60.4202(a)(1)]

ii. 2008 model year and later engines with a maximum engine power of less than 50 horsepower shall meet the emission standards for new nonroad compression ignition engines in 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, 40 CFR 1039.115, and Table 2 to 40 CFR Part 60, Subpart IIII. [40 CFR 60.4202(a)(1)]

iii. 2007 model year and later engines with a maximum engine power greater than or equal to 50 horsepower, shall meet the emission standards for new nonroad compression ignition engines in 40 CFR 89.112 and 40 CFR 89.113, for all pollutants, for the same model year and maximum engine power. [40 CFR 60.4202(a)(2)]

b. 2007 model year and later engines with a maximum engine power greater than 3,000 horsepower and a displacement of less than 10 liters per cylinder shall meet the emission standards specified below:

i. 2007 through 2010 model year engines shall meet the emission standards in Conditions XVII.F.1.a, XVII.G.1, XVII.H.1, and XVII.I, for all pollutants for the same maximum engine power.

ii. 2011 model year and later engines shall meet the emission standards for new nonroad compression ignition engines in 40 CFR 89.112 and 40 CFR 89.113, for all pollutants for the same model year and maximum engine power. [40 CFR 60.4202(b)]

D. Monitoring and Recordkeeping Requirements

1. For 2007 model year and later internal combustion engines required to comply with the emission standards in Conditions XVII.C.1 or XVII.C.2, the Permittee shall comply by purchasing an engine certified to meet the applicable emission standards in Condition XVII.C, for the same model year and maximum power. The engine shall be installed and configured according to the manufacturer's specifications. [40 CFR 60.4211(c)]

2. For any fire pump that is manufactured during or after the model year that applies to the fire pump engine power (EP) rating in the following table and is required to comply with the emission standards in Conditions XVII.F.1.b, XVII.G.2, and XVII.H.2, shall comply by purchasing an engine certified to meet such emission standards, as applicable, for the same model year and National Fire Protection Association (NFPA) nameplate engine power. The engine shall be installed and

configured according to the manufacturer's specifications. [40 CFR 60.4211(c)]

Engine Power (EP) (horsepower)	Model Year
EP < 100	2011
100 ≤ EP < 175	2010
175 ≤ EP < 750	2009
EP ≥ 750	2008

3. For pre-2007 model year stationary compression ignition internal combustion engines that are required to comply with the emission standards specified in Conditions XVII.F.1.a, XVII.G.1, XVII.G.3, XVII.H.1, and XVII.I, the Permittee shall demonstrate compliance according to one of the methods specified below: [40 CFR 60.4211(b)]

   a. Purchasing an engine certified according to 40 CFR Part 89 or 40 CFR Part 94, as applicable, for the same model year and maximum engine power. The engine shall be installed and configured according to the manufacturer's specifications.

   b. Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test shall have been conducted using the methods specified in 40 CFR 60.4212 or 60.4213, and the methods shall have been followed correctly.

   c. Keeping records of engine manufacturer data indicating compliance with the standards.

   d. Keeping records of control device vendor data indicating compliance with the standards.

   e. Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in 40 CFR 60.4212, as applicable.

4. For any fire pump engine that is manufactured prior to 2008, and is required to comply with the emission standards in Conditions XVII.F.1.b, XVII.G.2, and XVII.H.2, the Permittee shall demonstrate compliance according to one of the methods specified in Condition XVII.D.3.a through e. [40 CFR 60.4211(b)]

5. For any internal combustion engine that is required to comply with the emission standards specified in Condition XVII.G.3, the Permittee shall demonstrate compliance according to the following requirements: [40 CFR 60.4211(d)]

   a. Conducting an initial performance test to demonstrate initial compliance with the emission standards as specified in 40 CFR 60.4213.

   b. For engines with a displacement of greater than or equal to 30 liters per cylinder, conducting annual performance tests to demonstrate continuous compliance with the emission standards as specified in 40 CFR 60.4213.

6. The Permittee shall maintain a copy of engine certifications or other documentation demonstrating that each engine complies with the applicable standards in this permit, and shall make the documentation available to ADEQ upon request. [PCC 17.12.180.A.4]

E. Testing Requirements [60.4212 and 60.4213]

If the Permittee conducts performance testing on any internal combustion engine with a displacement of less than 30 liters per cylinder in order to demonstrate compliance with emission standards, such test shall be conducted according to 40 CFR 60.4212.

F. Particulate Matter

1. Emission Limits and Standards

a. Pre-2007 model year engines with a displacement of less than 10 liters per cylinder shall meet the following particulate matter emission standards:

Maximum Engine Power (EP) (horsepower)	Emission Limit (grams/horsepower-hour)
EP < 11	0.75
11≤ EP < 50	0.60
50 ≤ EP < 175	N/A
EP ≥ 175	0.40

[40 CFR 60.4204(a) and 60.4205(a)]

b. Fire pump engines with a displacement of less than 30 liters per cylinder shall meet the following particulate matter emission standards:

Maximum Engine Power (EP) (horsepower)	Model Year	Emission Limit (grams/horsepower-hour)
EP <11	2010 and earlier	0.75
	2011 and later	0.30
11 ≤ EP < 25	2010 and earlier	0.60
	2011 and later	0.30
25 ≤ EP < 50	2010 and earlier	0.60
	2011 and later	0.22
50 ≤ EP < 75	2010 and earlier	0.60
	2011 and later	0.30
75 ≤ EP < 100	2010 and earlier	0.60
	2011 and later	0.30
100 ≤ EP < 175	2009 and earlier	0.60
	2010 and later	0.22
175 ≤ EP < 300	2008 and earlier	0.40
	2010 and later	0.15

Maximum Engine Power (EP) (horsepower)	Model Year	Emission Limit (grams/horsepower-hour)
300 ≤ EP < 600	2008 and earlier	0.40
	2009 and later	0.15
600 ≤ EP < 750	2008 and earlier	0.40
	2009 and later	0.15
EP ≥ 750	2007 and earlier	0.40
	2008 and later	0.15

[40 CFR 60.4205(c)]

i. For model years 2011 through 2013, fire pump engines that are greater than 50 horsepower, but less than 100 horsepower with a rated speed of greater than 2,650 revolutions per minute (rpm) may comply with the emission limitations for 2010 model year engines. [Note 1 to Table 4 to 40 CFR 60 Subpart IIII]

ii. For model years 2009 through 2012, fire pump engines that are greater than 100 horsepower, but less than 175 horsepower with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2009 model year engines. [Note 1 to Table 4 to 40 CFR 60 Subpart IIII]

2. Air Pollution Control Requirements

If a non-emergency engine is equipped with a diesel particulate filter to comply with the emission standards in Condition XVII.F, *the Permittee shall install,* maintain and *operate the particulate filter in accordance with good air pollution control practices for minimizing emissions.* [PCC 17.12.190, 17.12.350.a.3.d, and e]

[Material permit conditions are indicated by underline and italics]

3. Monitoring and Recordkeeping Requirements

a. If a non-emergency engine is equipped with a diesel particulate filter to comply with the emission standards in Condition XVII.F, *the Permittee shall install a backpressure monitor on the diesel particulate filter that notifies the Permittee when the high backpressure limit of the engine is approached.* [40 CFR 60.4209(b) and PCC 17.12.350.a.3.c]

[Material permit conditions are indicated by underline and italics]

b. The Permittee shall operate and maintain the control device according to the manufacturer's written instructions or procedures that are developed by the Permittee and approved by the engine manufacturer. A copy of the instructions or procedures shall be kept onsite and made available to ADEQ upon request. [40 CFR 60.4211(a) and PCC 17.12.180.A.3]

c. If the internal combustion engine is equipped with a diesel particulate filter, the Permittee shall keep records of any corrective action taken after the backpressure monitor has notified the Permittee that the high

backpressure limit of the engine is approached. [40 CFR 60.4214(c)]

d. If the Permittee elects to meet the emission limitations contained in Condition XVII.F.1.b.i or ii, the Permittee shall maintain records, including manufacturer specifications, demonstrating that the engine meets the horsepower and rpm specifications. [PCC 17.12.180.A.4]

G. Nitrogen Oxides

1. Pre-2007 model year internal combustion engines, that are not fire pump engines, that have a displacement of less than 10 liters per cylinder shall meet the following emission standards:

Maximum Engine Power (EP) (Horsepower)	Emission Limit (grams/horsepower-hour)
EP < 11	7.8 *
11 ≤ EP < 50	7.1 *
EP ≥ 50	6.9

* indicates nonmethane hydrocarbons (NMHC) + NO_x

[40 CFR 60.4204(a) and 60.4205(a)]

2. Fire pump engines that have a displacement of less than 30 liters per cylinder shall meet the following emission standards: [40 CFR 60.4205(c)]

Maximum Engine Power (EP) (horsepower)	Model Year	Emission Limit* (grams/horsepower-hour)
EP <11	2010 and earlier	7.8
	2011 and later	5.6
11 ≤ EP < 25	2010 and earlier	7.1
	2011 and later	5.6
25 ≤ EP < 50	2010 and earlier	7.1
	2011 and later	5.6
50 ≤ EP < 75	2010 and earlier	7.8
	2011 and later	3.5
75 ≤ EP < 100	2010 and earlier	7.8
	2011 and later	3.5
100 ≤ EP < 175	2009 and earlier	7.8
	2010 and later	3.0
175 ≤ EP < 300	2008 and earlier	7.8
	2010 and later	3.0
300 ≤ EP < 600	2008 and earlier	7.8
	2009 and later	3.0
600 ≤ EP < 750	2008 and earlier	7.8
	2009 and later	3.0
EP ≥ 750	2007 and earlier	7.8
	2008 and later	4.8

* indicates nonmethane hydrocarbons (NMHC) + NO_x

a. For model years 2011 through 2013, fire pump engines that are greater than 50 horsepower, but less than 100 horsepower with a rated speed of greater than 2,650 revolutions per minute (rpm) may comply with the emission limitations for 2010 model year engines. [Note 1 to Table 4 of 40 CFR Subpart IIII]

b. For model years 2010 through 2012, fire pump engines that are greater than 100 horsepower, but less than 175 horsepower with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2009 model year engines. [Note 2 to Table 4 of 40 CFR Subpart IIII]

3. If the Permittee elects to meet the emission limitations contained in Condition XVII.G.2.a or b, the Permittee shall maintain records, including manufacturer specifications, demonstrating that the engine meets the horsepower and RPM specifications. [PCC 17.12.180.A.4]

H. Carbon Monoxide

1. Pre-2007 model year internal combustion engines with a displacement of less than 10 liters per cylinder shall meet the following emission standards:

Maximum Engine Power (EP) (horsepower)	**Emission Limit (grams/horsepower-hour)**
EP <11	6.0
11 ≤ EP < 25	4.9
25 ≤ EP < 50	4.1
50 ≤ EP < 175	N/A
EP ≥ 177	8.5

2. Fire pump engines that have a displacement of less than 30 liters per cylinder shall meet the following emission standards:

Maximum Engine Power (EP) (horsepower)	Model Year	Emission Limit (grams/horsepower-hour)
EP <11	2010 and earlier	6.0
	2011 and later	N/A
11 ≤ EP < 25	2010 and earlier	4.9
	2011 and later	N/A
25 ≤ EP <50	2010 and earlier	4.1
	2011 and later	N/A
50 ≤ EP <75	2010 and earlier	3.7
	2011 and later	N/A
75 ≤ EP <100	2010 and earlier	3.7
	2011 and later	N/A
100 ≤ EP < 175	2009 and earlier	3.7
	2010 and later	N/A

Maximum Engine Power (EP) (horsepower)	Model Year	Emission Limit (grams/horsepower-hour)
175 ≤ EP < 300	2008 and earlier	2.6
	2010 and later	N/A
300 ≤ EP < 600	2008 and earlier	2.6
	2009 and later	N/A
600 ≤ EP < 750	2008 and earlier	2.6
	2009 and later	N/A
EP ≥ 750	2007 and earlier	2.6
	2008 and later	N/A

[40 CFR 60.4205(c)]

I. Hydrocarbon Emissions

Pre-2007 model year internal combustion engines that have a displacement of less than 10 liters per cylinder and a maximum engine power rating greater than or equal to 175 horsepower shall not emit more than 1.0 gram of hydrocarbons per horsepower hour.

[40 CFR 60.4204(a) and 60.4205(a)]

J. Permit Shield

[PCC 17.12.310]

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.4201(a) & (d), 60.4202(a) & (b), 60.4204(a), 60.4205(a), (b), & (c), 60.4206, 60.4207 (b), 60.4209(a) & (b), 60.4211(a) through (c), 60.4212, 60.4213, and 60.4214 (c) for the activities subject to this Section.

XVIII. STATIONARY SPARK IGNITION INTERNAL COMBUSTION ENGINES SUBJECT TO NSPS 40 CFR 60 SUBPART JJJJ

A. Applicability

This Section applies to stationary spark ignition (SI) internal combustion engines (ICE) subject to NSPS 40 CFR 60 Subpart JJJJ.

B. Operating Limitations

1. Fuel Limitations

The Permittee shall use only propane, liquefied petroleum gas, or natural gas in the SI ICE. [PCC 17.12.180.A.2, -17.12.190, and 17.12.350.A.3.a]

[Material Permit Conditions are indicated by underline and italics]

2. Engine Importation

a. After July 1, 2010, the Permittee shall not install stationary SI ICE with a maximum engine power of less than 500 HP that does not meet the applicable requirements in 40 CFR 60.4233. [40 CFR 60.4236(a)]

b. After July 1, 2009, the Permittee shall not install stationary SI ICE with a maximum engine power of greater than or equal to 500 HP that does not meet the applicable requirements in 40 CFR 60.4233, except that lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP that does not meet the applicable requirements in 40 CFR 60.4233 shall not be installed after January 1, 2010. [40 CFR 60.4236(b)]

c. For emergency stationary SI ICE with a maximum engine power of greater than 19 KW (25 HP), the Permittee shall not install an engine that do not meet the applicable requirements in 40 CFR 60.4233 after January 1, 2011. [40 CFR 60.4236(c)]

d. In addition to the requirements specified in 40 CFR 60.4231 and 60.4233, the Permittee shall not import any stationary SI ICE less than or equal to 19 KW (25 HP), stationary rich burn liquefied petroleum gas SI ICE, and stationary gasoline SI ICE that does not meet the applicable requirements specified in Conditions XVIII.B.2.a, b, and c, after the date specified in such conditions. [40 CFR 60.4236(d)]

e. The requirements of this section do not apply to stationary SI ICEs that have been removed from one existing location and reinstalled at a new location. [40 CFR 60.4236(e)]

3. General Monitoring and Recordkeeping Requirements [PCC 17.12.180.A.3.a]

a. The Permittee shall maintain a record of the fuel sulfur content and lower heating value of the fuel.

b. *The Permittee shall install non-resettable hour meter on the SI ICE.*
[40 CFR 60.4237 and PCC 17.12.350.A.3.c]

c. By the 30th day of each month, the Permittee shall monitor and record the monthly and 12-month rolling hours of operation for all SI ICE subject to this section.

d. The Permittee shall compute the monthly PM and PM_{10} emission rate for the SI ICE subject to this Section according to the procedure specified in Condition XV.C.

e. The Permittee shall compute the monthly SO_2 emission rate for the SI ICE according to the procedure specified in Condition **XV.C**.

C. Emission Limitations

1. The Permittee shall meet the emission standards in 40 CFR 60.4231(a) for any stationary SI ICE with a maximum engine power less than or equal to 19 KW (25 HP) manufactured on or after July 1, 2008 by purchasing an engine that is certified to the emission standards and other requirements for new non-road SI engines in 40 CFR part 90. [40 CFR 60.4233(a)]

2. For any stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) manufactured on or after the applicable date in 40 CFR 60.4230(a)(4) that is a rich burn engine that uses liquefied petroleum gas, the Permittee must comply with the emission standards in 40 CFR 60.4231(c) for the stationary SI ICE. The Permittee shall comply with the emission standards in 40 CFR 60.4231(c) by purchasing an engine that is certified to the emission standards and other requirements for new non-road SI engines included in 40 CFR 1048 or the Phase I emission standards and other requirements in 40 CFR 90.103 as applicable to the particular engine. The Permittee may purchase an SI ICE with a maximum engine power less than or equal to 40 HP with a total displacement lass than or equal to 1000 cubic centimeters that is certified to the emission standards and other requirements for new non-road engines in 40 CFR 90. [40 CFR 60.4233(c)]

3. For any stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) and less than 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) the Permittee must comply with the emission standards for field testing in 40 CFR 1048.101(c) for any non-emergency stationary SI ICE and with the emission standards in Table 1 of 40 CFR 60 Subpart JJJJ for any emergency stationary SI ICE. For any stationary SI ICE with a maximum engine power greater than 19 KW (25 HP) and less than 75 KW (100 HP) manufactured prior to January 1, 2011, that was certified to the standards in Table 1 of 40 CFR 60 Subpart JJJJ applicable to engines with a maximum engine power greater than or equal to 100 HP and less than 500 HP, the Permittee may optionally choose to meet those standards. [40 CFR 60.4233(d)]

4. For any stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) the Permittee shall comply with the emission standards in Table 1 of 40 CFR 60

Subpart JJJJ for the stationary SI ICE by purchasing an engine that is certified to meet these standards. [40 CFR 60.4233(e)]

5. The Permittee shall operate and maintain stationary the SI ICE to achieve the emission standards applicable to the SI ICE. [40 CFR 60.4234]

D. Compliance Demonstration Requirements [40 CFR 60.4243.a, b, d, e, f, and g]

1. The Permittee shall comply with the emission limitations by purchasing an engine that is certified to the emission standards in 40 CFR 60.4231(a) through (c), as applicable. The Permittee shall also meet the requirements as specified in 40 CFR Part 1068, subparts A through D, as they apply.

2. If the Permittee adjusts engine settings according to and consistent with the manufacturer's instructions, the stationary SI internal combustion engine will not be considered out of compliance.

3. The Permittee shall meet one of the following requirements:

   a. If the Permittee operates and maintains the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, the Permittee shall keep records of conducted maintenance to demonstrate compliance, but no performance testing is required.

   b. If the Permittee does not operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine, and the Permittee must demonstrate compliance according to 40 CFR 60.4243(a)(2)(i) through (iii), as appropriate.

4. If the Permittee is required to comply with the emission standards specified in 40 CFR 60.4233(d) or (e), the Permittee must demonstrate compliance according to one of the following methods:

   a. Purchasing an engine certified according to procedures specified in 40 CFR 60 Subpart JJJJ, for the same model year and demonstrating compliance according to one of the methods specified in paragraph (a), above.

   b. Purchasing a non-certified engine and demonstrating compliance with the emission standards specified in 40 CFR 60.4233(d) or (e) and according to the requirements specified in 40 CFR 60.4244, as applicable, and according to paragraphs (b)(2)(i) and (ii) of 40 CFR 60.4243.

5. Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and

readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The Permittee may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the Permittee maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving 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. For emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year is prohibited.

6. A stationary SI natural gas fired engines may operate using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations, but the Permittee must keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the Permittee shall conduct a performance test to demonstrate compliance with the emission standards of 40 CFR 60.4233.

7. For any stationary SI internal combustion engine that is less than or equal to 500 HP and is non-certified engine or is certified but has not been operated and maintained according to the manufacturer's written emission-related instructions, the Permittee shall perform initial performance testing as indicated in 40 CFR 60.4243. The Permittee is not required to conduct subsequent performance testing unless the stationary engine is rebuilt or undergoes major repair or maintenance. A rebuilt stationary SI ICE means an engine that has been rebuilt as that term is defined in 40 CFR 94.11(a).

8. It is expected that air-to-fuel ratio controllers will be used with the operation of three-way catalysts/non-selective catalytic reduction. The AFR controller shall be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times.

9. For any stationary SI internal combustion engine with maximum engine power greater than or equal to 500 HP that is manufactured after July 1, 2007 and before July 1, 2008, and must comply with the emission standards specified in sections 60.4233(b) or (c), the Permittee shall comply by one of the following methods:

    a. Purchasing an engine certified according to 40 CFR Part 1048. The engine shall be installed and configured according to the manufacturer's specifications.

    b. Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this permit condition and these methods must have been followed correctly.

c. Keeping records of engine manufacturer data indicating compliance with the standards.

d. Keeping records of control device vendor data indicating compliance with the standards.

E. Monitoring, Recordkeeping, and Reporting Requirements [40 CFR 60.4245]

1. The Permittee shall keep records of the following:

   a. All notifications submitted to comply with this permit condition and all documentation supporting any notification.

   b. Maintenance conducted on the engine.

   c. If the stationary SI internal combustion engine 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 90 and 1048.

   d. If the stationary SI internal combustion engine 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.

2. For all stationary SI emergency ICE greater than or equal to 500 HP manufactured on or after July 1, 2010, that do not meet the standards applicable to non-emergency engines, the Permittee shall keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. For all stationary SI emergency ICE greater than or equal to 130 HP and less than 500 HP manufactured on or after July 1, 2011 that do not meet the standards applicable to non-emergency engines, the Permittee shall keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. For all stationary SI emergency ICE greater than 25 HP and less than 130 HP manufactured on or after July 1, 2008, that do not meet the standards applicable to non-emergency engines, the Permittee shall keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The Permittee shall 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.

3. For any stationary SI ICE greater than or equal to 500 HP that has not been certified by an engine manufacturer to meet the emission standards in 40 CFR 60.4231 the Permittee shall submit an initial notification as required in 40 CFR 60.7(a)(1). The notification must include the following:

   i. Name and address of the Permittee;

   ii. The address of the affected source;

iii. Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;

iv. Emission control equipment; and

v. Fuel used.

4. If a performance test is required to be conducted, the Permittee shall submit a copy of each performance test as conducted in 40 CFR 60.4244 within 60 days after the test has been completed.

F. Performance Testing [40 CFR 60.4244]

Any required performance test shall be conducted in accordance with the procedures in paragraphs (a) through (f) of 40 CFR 60.4244.

G. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.4236(a) through (e); 60.4237; 60.4233(a), (c), (d), (e); 60.4234; 60.4243(a), (b), (d), (e), (f), (g); 60.4244; and 60.4245, for the activities subject to this Section.

XIX. REQUIREMENTS FOR FUGITIVE SOURCES

A. Applicability

This Section applies to all fugitive sources of the facility.

B. Open Areas, Roadways and Streets, Material Handling, Storage Piles

1. Emission Limitations/Standards

a. The Permittee shall not cause, allow or permit visible emissions from any fugitive dust source in excess of 20 % opacity measured in accordance with EPA Reference Method

[PCC 17.16.130.B and 17.16.050.B]

b. The Permittee shall employ at least one of the following listed "reasonable precautions" or any other method as proposed by the Permittee and approved by the Control Officer (following compliance with any applicable air permit revision mechanism), to prevent excessive amounts of particulate matter from becoming airborne:

i. Use dust suppressants or soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, or barring access when constructing, using, altering, repairing, demolishing, clearing, or leveling a building or its appurtenances, a driveway, a parking area, or a vacant lot, or when moving or excavating earth.

In addition to the above, the following have been identified as reasonable precautions:

Applying wetting agents, stemming, optimizing blast pattern, controlling oxygen balance of explosives during blast operations, minimize material drop height, temporary paving, road cover, controlling vehicle access, limiting vehicle speed, revegetation, hydro-seeding, hydro-mulching, mulching, wet sweeping, vacuuming, wind fence, wind break, shrouding, skirting, enclosing, contouring, animals, soil adhesives, compaction, agglomeration, inherent moisture content, and encrustation. [PCC 17.16.080.A]

ii. Keep dust to a minimum from driveways, parking areas, and vacant lots where motor vehicular activity occurs by using an approved dust suppressant, or adhesive soil stabilizer, or by paving, or by barring access to the property, or by other acceptable means. [PCC 17.16.080.B]

iii. Apply temporary paving, dust suppressants, wetting down, or detouring when using, repairing, constructing, or reconstructing a roadway.

In addition to the above, the following have been identified as reasonable precautions:

Applying wetting agents, controlling vehicle access, limiting vehicle speed, revegetation, hydro-seeding, hydro-mulching, mulching, landscaping, wet sweeping, vacuum, wind fence, wind break, covering, contouring, usage of soil adhesives, usage of soil stabilizers, compaction, usage of decomposed granite, agglomeration, inherent moisture content, and encrustation. [PCC 17.16.090.A]

iv. Apply dust suppressants, wetting, or cover the load when transporting materials likely to give rise to airborne dust.

In addition to the above, the following have been identified as reasonable precautions:

Applying wetting agents, minimizing material drop height, limiting vehicle speed, wind break, covering, agglomeration, and encrustation. [PCC 17.16.090.G]

v. Use spray bars, wetting, wetting agents, dust suppressants, covers, or hoods when crushing, screening, handling, transporting, or conveying material that is likely to result in significant amounts of airborne dust.

In addition to the above, the following have been identified as reasonable precautions:

Minimizing material drop height, wind fence, wind break, shrouding, skirting, enclosing, contouring, and agglomeration. [PCC 17.16.100]

vi. Use chemical stabilization, wetting, or covering when stacking, piling or otherwise storing organic or inorganic dust-producing material.

In addition to the above, the following have been identified as reasonable precautions:

Wind fence, wind break, shrouding, skirting, enclosing, covering, contouring, agglomeration, and encrustation. [PCC 17.16.110.A]

vii. Operate stacking and reclaiming machinery utilized at storage piles at all times with a minimum fall of material and in such manner, or with the use of spray bars and wetting agents.

In addition to the above, the following have been identified as reasonable precautions:

Wetting, wind fence, wind break, shrouding, skirting, enclosing, covering, contouring, and agglomeration. [PCC 17.16.110.B]

viii. Use wetting, chemical stabilization, or revegetation when constructing mineral tailing piles.

In addition to the above, the following have been identified as reasonable precautions:

Applying wetting agents, maximizing the wet surface area, barring or controlling vehicle access, limiting vehicle speed, hydro-seeding, hydro-mulching, mulching, landscaping, wind fence, wind break, covering, contouring, animals, soil adhesives, soil stabilizers, compaction, usage of decomposed granite, agglomeration, and encrustation. [PCC 17.16.120]

ix. At a minimum, the following measures at the Tailing Impoundment shall be employed in order to achieve the requirements of PCC 17.16.120:

1) New tailing dam roads, constructed as part of pipeline raises, shall be capped with native dirt. Heavily traveled perimeter roads shall be treated with a dust suppressant, as necessary.

2) Active berms and construction areas shall be sprayed with water, as necessary.

3) The wet dam construction method shall be used to control the surface of the impoundment, maintaining the majority of the impoundment surface wet or encrusted, while the remaining area is under construction.

4) After heavy rainfall events (sufficient to cause surface runoff and flushing of natural dust suppressing surface salts) if the upper most layer becomes susceptible to wind erosion, the Permittee shall implement and document additional control measures.

[Order of Abatement A-174-97, PCC 17.16.120]

x. Use wetting agents or dust suppressants before the cleaning of any site, roadway, or alley. Earth or other material shall be removed from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water or by other means.

In addition to the above, the following have been identified as reasonable precautions:

Wetting, chip seal, gravel, temporary paving, controlling vehicle access, limiting vehicle speed, revegetation, inherent moisture content, and hydro-seeding.

[PCC 17.16.470.B and P.C. C. 17.16.070 through 110]

c. The Permittee shall prohibit the following activities without the use of dust minimization techniques as described in the previous condition.

i. Driving over unpaved roads or vacant areas

ii. Excavation, construction, demolition, earth moving, land clearing or leveling

[P. C. C. 17.16.070 through 110]

2. Air Pollution Control Requirements

Water, or an equivalent control, shall be used to control visible emissions from haul roads and storage piles. [PCC 17.12.180.A.2 and 17.12.350.A.3.d]

[Material Permit Conditions are indicated by underline and italics]

3. Monitoring, Reporting, and Recordkeeping

a. The Permittee shall maintain records of the dates on which any of the activities listed in Conditions XIX.B.1.b.i through XIX.B.1.b.x were performed and control measures employed. In lieu of maintaining such records, the Permittee may maintain the Fugitive Source Monitoring Plan (Condition XIX.B.3.b) as a means of monitoring and recordkeeping to assure the implementation of dust control measures. [PCC 17.12.180.A.3.c]

b. The Permittee shall maintain a Fugitive Source Monitoring Plan as a

means of monitoring and recordkeeping to demonstrate that reasonable precautions to prevent particulate emissions were employed.

[PCC 17.12.180.A.3.c]

i. The Fugitive Source Monitoring Plan shall describe the methods the Permittee shall use to comply with the requirements of this condition. The plan shall contain the following minimum elements:

(1) A list of the fugitive emission sources with each source's applicable opacity limit.

(2) Identification of a central lookout station or multiple observation points, as appropriate, from where the fugitive sources shall be monitored. When multiple observation points are used all of the fugitive sources associated with each observation point shall be specifically identified within the observation plan.

(3) Types of control measures employed on an activity-specific basis;

(4) Frequency of application of control measures; and

(5) A system for documenting variations from the strategy outlined in the Fugitive Source Monitoring Plan.

[PCC 17.12.180.A.3.c]

ii. The Permittee shall maintain a Tailing Dam Dust Control Management Plan (this may be part of the Fugitive Source Monitoring Plan) containing the following elements:

(1) A description of the reasonable precautions used to control fugitive dust emissions from the tailing impoundment, including but not limited to the following:

Use of the "wet dam" construction method

Berm construction techniques to minimize dust emissions

New tailing dam roads shall be capped with native soil and routinely watered as soon as practicable

Heavily traveled perimeter roads shall be treated with dust suppressant (e.g., magnesium chloride)

Re-vegetation techniques to be used for surface stabilization where practical

After heavy rainfall events (sufficient to cause surface

runoff and flushing of natural dust suppressing surface salts) if the upper most layer becomes susceptible to wind erosion, the Permittee shall implement and document additional control measures.

(2) Semiannual inspections to identify signs of fatigue on surface crusts and areas that are susceptible to high wind events. Results of the inspections shall be used to determine the need for additional dust control measures.

(3) Contingency plan to address dust suppression system problems

(4) Records needed to support the management plan

(5) Semi-annual review of the Tailing Dam Dust Control Management Plan

[PCC 17.12.180.A.3.c]

iii. If the Permittee relies on "inherent moisture content" as a reasonable precaution for minimizing particulate emissions caused by traffic over haul roads, the dates of the period for which this control measure was used shall be recorded.

[PCC 17.12.180.A.3.c]

iv. The Permittee may add any of the listed "reasonable precautions" to the list of control methods identified in the Fugitive Source Monitoring Plan or Tailing Dam Dust Control Management Plan. Such changes shall be recorded, and a notification shall be sent to the Control Officer within 10 days following the change. In addition, the Permittee may add any method approved hereafter by the Control Officer to be a "reasonable precaution: to the list of control methods identified in the Fugitive Monitoring Plan or Tailing Dam Dust Control Management Plan by complying with the applicable permitting mechanism if a permit revision is required, and in any other case by recording the change, and providing a notification to the Control Officer within 10 days following the change.

[PCC 17.12.180.A.3.c]

c. The Permittee shall complete the Tailings Impoundment Environmental Activities Report weekly. This report shall include, when applicable, the current area of tailings deposition, the number of loads applied for each water truck, location of cattle which are part of the Holistics Resource Management plan, the areas of hydroseeding, and the areas of chemical dust suppressant application. On a semiannual basis, the report shall include any recommendations for improving dust management at the Tailings Impoundment based on the results of a semiannual checklist audit of compliance with the measures specified in Condition XIX.B.1.

[PCC 17.12.180.A.3.c]

d. Weekly Monitoring Requirement [PCC 17.12.180.A.3.c]

A certified Method 9 observer shall conduct weekly visible emissions observations of fugitive sources and the Tailing Impoundment.

i. If the observer, during the weekly visual survey, does not observe any plume from any fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.

ii. If the observer sees visible emissions from a fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall if practicable take a six-minute Method 9 observation of the plume.

iii. If the six-minute opacity of the plume exceeds the opacity standard, the Permittee shall do the following:

(1) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard; and

(2) Report the event as excess emissions in accordance with Attachment "A", Condition XII.

iv. If the six-minute opacity of the plume is less than the opacity standard, the observer shall make a record of the following:

(1) Location, date, and time of the test; and

(2) The results of the Method 9 observation.

4. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this Section shall be deemed compliance with PCC 17.16.080.A, PCC 17.16.090, PCC 17.16.100, PCC 17.16.110, PCC 17.16.120, PCC 17.16.130.B, PCC 17.16.470, PCC 17.16.050.B, and P.C.C. 17.16.70 through 110 for the activities subject to this Section.

XX. REQUIREMENTS FOR OTHER PERIODIC ACTIVITIES

A. Abrasive Blasting

Particulate Matter and Opacity Standards

1. Emission Limitation/Standards

a. The Permittee shall not cause or allow sandblasting or other abrasive

blasting without minimizing dust emissions to the atmosphere through the use of good modern practices. Good modern practices include:

i. Wet blasting;

ii. Effective enclosure with necessary dust collecting equipment;

iii. Use of slag products; or

iv. Any other method approved by the Control Officer.

[PCC 17.16.100.D]

b. Opacity Limitations

The Permittee shall not cause, allow, or permit to be emitted into the atmosphere from any sandblasting or other abrasive blasting operations, opacity of greater than 20%. [PCC 17.16.130.B.3]

2. Monitoring and Recordkeeping Requirement [PCC 17.12.180.A.3.c]

Each time an abrasive blasting project is conducted, the Permittee shall log in ink or in an electronic format, a record of the following:

a. The date the project was conducted;

b. The duration of the project; and

c. Type of control measures employed.

3. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this part shall be deemed compliance with the following requirements as of the date of issuance of this permit: PCC 17.16.130.B.3 and A.A.C. R18-2-726.

B. Use of Paints

1. Volatile Organic Compound Standards

a. Emissions Limitations/Standards

While performing spray-painting operations, the Permittee shall comply with the following requirements:

i. The Permittee shall not conduct or cause to be conducted any spray painting operation without minimizing organic solvent emissions. Such operations, other than architectural coating and spot painting, shall be conducted in an enclosed area equipped with controls containing no less than 96 percent of the overspray.

[PCC 17.16.400.C.1]

ii. The Permittee shall not either:

(1) Employ, apply, evaporate, or dry any architectural coating containing photochemically reactive solvents for industrial or commercial purposes; or

(2) Thin or dilute any architectural coating with a photochemically reactive solvent.

[PCC 17.16.400.C.2]

iii. For the purposes of Conditions XX.B.1.a.ii, a photochemically reactive solvent shall be any solvent with an aggregate of more than 20 percent of its total volume composed of the chemical compounds classified in Conditions XX.B.1.a.iii.1 through XX.B.1.a.iii.3 below, or which exceeds any of the following percentage composition limitations, referred to the total volume of solvent: [PCC 17.16.400.C.3]

(1) A combination of the following types of compounds having an olefinic or cyclo-olefinic type of unsaturation-hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones: 5 percent.

(2) A combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene: 8 percent.

(3) A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: 20 percent.

iv. Whenever any organic solvent or any constituent of an organic solvent may be classified from its chemical structure into more than one of the groups of organic compounds described in Conditions XX.B.1.a.iii.1 through XX.B.1.a.iii.3 above, it shall be considered to be a member of the group having the least allowable percent of the total volume of solvents. [PCC 17.16.400.C.4]

b. Monitoring and Recordkeeping Requirements

i. Each time a spray painting project is conducted, the Permittee shall keep a record of the following:

(1) The date the project was conducted;

(2) The duration of the project;

(3) Type of control measures employed, if any;

(4) Material Safety Data Sheets for all paints and solvents used in the project; and

(5) The amount of paint consumed during the project.

ii. Spot painting projects shall be exempt from the recordkeeping requirements of Condition **XX.B.1.b.i** above.

[PCC 17.12.180.A.3.c]

c. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this part shall be deemed compliance with the PCC 17.16.400.C as of the date of issuance of this permit.

C. Demolition/Renovation

Hazardous Air Pollutants Standards

1. Emissions Limitation/Standard

The Permittee shall comply with all of the requirements of 40 CFR Part 61 Subpart M (National Emissions Standards for Hazardous Air Pollutants - Asbestos). [PCC 17.16.530.A.8]

2. Monitoring and Recordkeeping Requirement [PCC 17.12.180.A.3.c]

The Permittee shall keep all required records in a file. The required records shall include the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents.

3. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-1101.A.8 as of the date of issuance of this permit.

D. Open Burning

1. Emission Limitations/Standards [PCC 17.12.480]

Except as provided in PCC 17.12.480.C(1), C(3), and C(4), and except when permitted to do so by either PDEQ or the local officer delegated the authority for issuance of open burning permits, the Permittee shall not conduct open burning.

2. Monitoring, Recordkeeping, and Reporting Requirements [PCC 17.12.180.A.3.c]

The Permittee shall maintain copies of all open burning permits readily available for inspection on file.

3. Permit Shield [PCC 17.12.310]

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-602 as of the date of issuance of this permit.

XXI. MOBILE SOURCES

A. The requirements of this Section are applicable to mobile sources which either move while emitting air contaminants or are frequently moved during the course of their utilization but are not classified as motor vehicles, agricultural vehicles, or are agricultural equipment used in normal farm operations. Mobile sources shall not include portable sources as defined in PCC 17.04.340(174). [PCC 17.16.450]

B. Emission Limitations/Standards for Roadway and Site Cleaning Machinery

The Permittee shall not cause, allow or permit to be emitted into the atmosphere from any roadway and site cleaning machinery smoke or dust for any period greater than ten consecutive seconds, the opacity of which exceeds 40 percent. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes. [PCC 17.16.470.A]

C. Permit Shield [PCC 17.12.310]

Compliance with this condition shall be deemed compliance with PCC 17.16.450 and PCC 17.16.470(A) for the activities subject to this Part.

XXII. NONVEHICLE AIR CONDITIONER MAINTENANCE AND/OR SERVICES

A. Emission Limitations/Standards [40 CFR 82, Subpart F]

The Permittee shall comply with the applicable requirements of 40 CFR 82 - Subpart F (Protection of Stratospheric Ozone - Recycling and Emissions Reduction).

B. Monitoring, Recordkeeping, and Reporting Requirements [PCC 17.12.180.A.3.c]

The Permittee shall keep all records required by the applicable requirements of 40 CFR 82 - Subpart F in a file.

XXIII. GENERAL REQUIREMENTS for NONMETALLIC MINERAL PROCESSES SUBJECT TO 40 CFR 60 SUBPART OOO

A. Applicability [PCC 17.16.130.B, 40 CFR 60.382]

The provisions of this section are applicable to the NSPS Road Rock Crushing Plant (Source ID 093) identified in Attachment "C" of this permit.

B. Notification Requirements

1. A notification of the actual date of initial startup of each affected facility shall be submitted to the Control Officer

2. For a combination of affected facilities in a production line that begin actual initial startup on the same day, a single notification of startup may be submitted by the Permittee to the Control Officer. The notification shall be postmarked within 15 days after such date and shall include a description of each affected facility, equipment manufacturer, and serial number of the equipment, if available.

[40 CFR 60.676(i)(1)]

C. Emission Limits and Standards

1. Particulate Matter & Opacity Standards

a. *Within 60 days after achieving the maximum production rate, at which the affected facility will be operated, but not later than 180 days after initial startup, the Permittee shall not cause to be discharged into the atmosphere any fugitive emissions which exhibit:*

[40 CFR 60.672(b) and PCC 17.12.350.A.3.f]
[Material permit conditions are indicated by underline and italics]

i. Greater than 12 percent opacity from crusher constructed on or after April 22, 2008.

ii. Greater than 7 percent opacity from affected facilities other than crushers, constructed after April 22, 2008.

b. Movable vehicle (trucks, front end loaders, skip hoist, railcars, etc) dumping of nonmetallic minerals into any screening operation, feed hopper or crusher is exempt from the requirements of this section

[40 CFR 60.672(d)]

2. Operation and Maintenance Requirement

At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.

[Table 1 to Subpart OOO & 40 CFR 60.11(d) & PCC 17.16.020.A]
[Material permit conditions are indicated by underline and italics]

D. Monitoring Requirements [PCC 17.12.185.A.3]

1. The Permittee shall conduct opacity monitoring for non-fugitive emission units associated with Source ID 093 in accordance with Condition II.I of this permit. The Permittee shall conduct opacity monitoring for fugitive emission units associated with Source ID 093 in accordance with condition B.3.d, section XIX of this permit.

2. The Permittee shall compute the monthly non-fugitive source PM emission rate for the conveyor transfer points of Source ID 093 as the product of the monthly production weight and 0.000092 pounds PM per ton of material processed. The

Permittee shall compute the monthly PM_{10} emission rate by assuming that PM and PM_{10} emissions are equal unless otherwise demonstrated.

3. To assure compliance with the opacity limitations in condition C.1.a of this section XXIII, the Permittee shall observe fugitive sources at least once a day while the plant is operating. If the observer sees a plume that, on an instantaneous basis, appears to exceed the applicable opacity, or the emissions are crossing property boundaries, then the Permittee shall, if practical, conduct an EPA Method 9. If the results exceed the applicable opacity, this shall be recorded and reported as an excess emission and a permit deviation.

[PCC 17.1.185.A.3]

4. To assure compliance with the opacity limitation in condition C.1.a of this section XXIII, the Permittee shall perform monthly periodic inspections to check that water is flowing to facility's discharge spray nozzles supplying wet suppression. Corrective action must be initiated within 24 hours and completed as expediently as practical.

[40 CFR 60.674(b)]

5. For affected facilities without direct wet suppression, the PErmittee may designate an upstream water spray providing carryover wet suppression to the affected facility and perform these same monthly nozzle inspections to avoid periodic testing required in condition G.2 of this section XXIII. The designation must be made during the initial performance testing. [40 CFR 60.674(b)(1)]

6. The Permittee shall keep daily road rock crushing production records (Source ID 093) used to produce monthly production totals. A rolling, twelve-month total of production tonnage will be created and updated monthly.

7. Once per day during operations, the Permittee shall check all operations (Source ID 093) for evidence of abnormal emissions. The Permittee shall record the date and time of such a check, the name of the inspector, and the results of the inspection indicating if abnormal emissions were observed and, if so, the type of corrective action taken. The Permittee shall initiate corrective action within 24 hours and complete corrective action as expediently as practical if it is found that water is not flowing properly during an inspection of the water spray nozzles.

[40 CFR 60.674(b)]

8. The PM emission rate for each source shall be expressed as tons per month and shall be used in conducting the calculations of Condition II.K.2.a of this permit.

9. The Permittee shall perform monthly periodic inspections to check that water is flowing to discharge spray nozzles in the wet suppression system. The Permittee shall initiate corrective action within 24 hours and complete corrective action as expediently as practical if it is found that water is not flowing properly during an inspection of the water spray nozzles. The Permittee shall record each inspection of the water spray nozzles, including the date of each inspection and any corrective actions taken, in the logbook required under Condition D.9 of this section XXIII.

[40 CFR 60.674(b)]

a. If an affected facility relies on water carryover from upstream water sprays to control fugitive emissions, then that affected facility is exempt from the 5-year repeat testing requirement specified in Table 3 of 40 CFR 60 Subpart OOO, provided the criteria of Conditions D.9.a (i & ii) of this section XXIII are met. [40 CFR 60.674(b)(1)]

   i. The Permittee conducts periodic inspections of the upstream water spray(s) that are responsible for controlling fugitive emissions from the affected facility. These inspections shall be conducted according to conditions D.9 and D.10 of this section XXIII.
   [40 CFR 60.674(b)(1)(i)]

   ii. The Permittee shall designate which upstream water spray(s) will be periodically inspected at the time of the initial performance test required by 40 CFR 60.11 and Condition G of this section XXIII.
   [40 CFR 60.674(b)(1)(ii)]

b. If an affected facility that routinely uses wet suppression water sprays ceases operation of the water sprays or is using a control mechanism to reduce fugitive emissions other than water sprays during the monthly inspection (for example, water from recent rainfall), the logbook entry required under condition D.10 of this section XXIII must specify the control mechanism being used instead of the water sprays. [40 CFR 60.674(b)(2)]

10. The Permittee shall record each periodic inspection required under condition D.9 of this section XXIII including dates and any corrective actions taken, in a logbook (in written or electronic format). The Permittee shall keep the logbook onsite and make hard or electronic copies (whichever is requested) of the logbook available to the Control Officer upon request. [40 CFR 60.674(b)(1)]

E. Recordkeeping Requirements

1. The Permittee shall record all monitoring results including EPA reference Method 9 observations, excess emissions and permit deviations. Records of such checks shall include, at a minimum:

    a. The date and time of the check;

    b. The name of the person conducting the check;

    c. The particular piece of equipment or area being observed; and,

    d. The results of the check to include whether excessive emissions were observed. If excessive emissions were observed, the record shall include corrective action taken and the results of the required follow-up opacity test.

2. The Permittee shall record each inspection of water spray nozzles, including the date of each inspection and any corrective actions taken, in a written or electronic logbook. The logbook must be kept onsite and made available to PDEQ inspectors. [40 CFR 60.676(b)]

3. If an affected facility that routinely uses wet suppression water sprays ceases operation of the water sprays or is using a control mechanism to reduce fugitive emissions other than water sprays during the monthly inspection (for example, water from recent rainfall), the logbook entry must specify the control mechanism being used instead of the water sprays. [40 CFR 60.674(b)(2)]

4. The Permittee shall maintain a record of the rolling total production detailed in condition D.6 of this section XXIII.

5. All records required by this permit shall be retained for at least five years. [PCC 17.24.020.A]

F. Reporting Requirements

1. Performance Tests

    a. The Permittee shall submit written reports of the results of all performance tests conducted to demonstrate compliance with the standards set forth in condition C.1.a of this section XXIII. [40 CFR 60.676(f)]

    b. The reports shall be received no later than 30 days after completion of the test.

2. Notification Requirement

    The Permittee shall furnish the Control Officer written notification or, if acceptable to both the Control Officer and the Permittee, electronic notification, as follows:

    a. A notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard

applies, unless that change is specifically exempted. This notice shall be postmarked 60 days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The Control Officer may request additional relevant information subsequent to this notice. [40 CFR 60.7(a)(4)]

b. When an existing facility is replaced by a piece of equipment of equal or smaller size, having the same function as the existing facility, and there is no increase in the amount of emissions, the following capacities must be submitted to Control Officer for both the replaced equipment and the replacement equipment: [40 CFR 60.676(a)]

i. Tons per hour;

ii. For a screening operation, the total surface area of screen tops;

iii. For a conveyor belt, the width of conveyor belts;

iv. For a storage bin, the rated capacity (tons) of the storage bins

c. Any screening operation, bucket elevator, or belt conveyor that processes saturated material and subsequently processes unsaturated materials, shall be reported by Permittee to the Control Officer within 30 days following such change. At the time of such change, the screening operation, bucket elevator, or belt conveyor becomes subject to the applicable opacity limit in condition C.1.a of this section XXIII and the collateral Monitoring, Recording keeping, Reporting and Testing requirements in this section XXIII.

[40 CFR 60.676(g)]

G. Testing Requirements

1. Initial Performance Testing

The Permittee shall demonstrate initial compliance with the applicable opacity limits for fugitive emissions contained in condition C of this section XXIII by conducting initial performance tests according to condition G.6 of this section XXIII.

[Table 3 to 40 CFR 60 Subpart OOO]

2. Facilities without water spray nozzles, having commenced construction, modification or reconstruction on or after April 22, 2008, shall be performance tested again within 5 years from the previous performance test for fugitive emissions. Affected facilities controlled by water carryover from upstream water sprays, that have been declared and inspected according to condition D.9.a of this section XXIII, are exempt from this 5-year repeat testing requirement.

[40 CFR 60.674(b)(1) & 40 CFR 60 Table 3 of Subpart OOO]

3. In determining compliance with the opacity and particulate matter standards in condition C of this section XXIII, the Permittee shall use Method 9 and the procedures in 40 CFR 60.11, with the following additions: [40 CFR 60.675(c)(1)]

a. The minimum distance between the observer and the emission source shall be 4.57 meters (15 feet).

b. The observer shall, when possible, select a position that minimizes interference from other fugitive emission sources (e.g., road dust). The required observer position relative to the sun (Method 9 of Appendix A-4 of 40 CFR 60, Section 2.1) must be followed

c. For affected facilities using wet dust suppression for particulate matter control, a visible mist is sometimes generated by the spray. The water mist must not be confused with particulate matter emissions and is not to be considered a visible emission. When a water mist of this nature is present, the observation of emissions is to be made at a point in the plume where the mist is no longer visible.

4. When determining compliance with the fugitive emissions standards under condition C of this section XXIII, the duration of the Method 9 observations shall be 30 minutes (five 6-minute averages). Compliance with the applicable fugitive emission limits shall be based on the average of the five 6-minute averages.

[40 CFR 60.675(c)(3)]

5. The Permittee may use the following as alternatives to the reference methods and procedures specified in condition G of this section XXIII: [40 CFR 60.675(e)]

a. For the method and procedure of condition G.2 of this section XXIII, if the emissions from two or more facilities continuously interfere so that the opacity of the fugitive emissions from an individual affected facility cannot be read, either of the following procedures may be used:

i. Use for the combined emission stream the highest fugitive opacity standard applicable to any of the individual affected facilities contributing to the emissions stream.

ii. Separate the emissions so that the opacity of emissions from each affected facility can be read.

b. 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 if the following conditions are met:

i. No more than three emission points may be read concurrently.

ii. All three emission points must be within a 70 degree viewing sector or angle in front of the observer such that the proper sun position can be maintained for all three points

iii. If an opacity reading for any one of the three emission points equals or exceeds the applicable standard, then the observer must stop taking readings for the other two points and continue reading just that single point.

6. For performance tests involving only Method 9 testing, the Permittee may reduce the 30-day advance notification of performance test in 40 CFR 60.7(a)(6) and 60.8(d) to a 7-day advance notification. [40 CFR 60.675(g)]

7. Conditions of Performance Testing

   a. Performance tests shall be conducted under such conditions as the Control Officer shall specify to the plant operator based on representative performance of the affected facility. The Permittee shall make available to the Control Officer such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard. [40 CFR 60.8(c)]

   b. The owner or operator of an affected facility shall provide the Control Officer at least seven (7) days prior notice of any performance test, except as specified under other subparts, to afford the Control Officer the opportunity to have an observer present. If there is a delay (due to operational problems, etc.) in conducting the scheduled performance test, the owner or operator of an affected facility shall notify the Control Officer as soon as possible of any delay in the original test date, either by providing at least seven (7) days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Control Officer (or delegated State or local agency) by mutual agreement. [40 CFR 60.8(d) & 40 CFR 675(g)]

   c. Each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in condition G.7 of this section XXIII. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Control Officer's approval, be determined using the arithmetic mean of the results of the two other runs. [40 CFR 60.8(f)]

ATTACHMENT "C": EQUIPMENT LISTS

Please see Section 9.0 of the Renewal Application for the updated Equipment List