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SENT VIA ELECTRONIC MAIL TO AIRPERMITS@AZDEQ.GOV

September 26, 2022

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

**RE: Significant Permit Revision Application
Changes to the Concentrate Leach Plant
Freeport-McMoRan Morenci Inc.
Class I Air Quality Permit #72683**

Dear Mr. Czecholinski:

Freeport-McMoRan Morenci Inc. (FMMI) operates a copper and molybdenum ore mining and processing facility in Morenci, Arizona as authorized by Class I Air Quality Permit #72683, issued by the Arizona Department of Environmental Quality (ADEQ) on December 21, 2018. In accordance with Arizona Administrative Code (A.A.C.) R18-2-320, FMMI is submitting the enclosed significant permit revision (SPR) application to authorize the following changes to the Concentrate Leach Plant (CLP): (a) increase the maximum capacity of each Pressure Leach Vessel (PLV) to 20 tons per hour (tph); (b) add an additional cooling tower at the Oxygen Plant; and (c) replace the existing pollution control equipment with a two-train control system (one for each PLV).

If you have any questions concerning this application or need additional details, please contact Chris West of my staff at (928) 865-7478, or you can contact me directly at (928) 865-6484.

Sincerely,

A handwritten signature in blue ink, appearing to be 'Brent Fletcher', written over a horizontal line.

Brent Fletcher
Manager, Environmental Services Department

FOR /

**Freeport-McMoRan Morenci Inc.
Significant Permit Revision Application
Changes to the Concentrate Leach Plant
Class I Air Quality Permit #72683
Morenci, Arizona**



Prepared for:

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September 26, 2022

SIGN-OFF SHEET

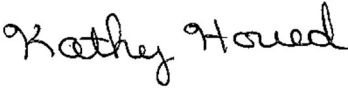
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Prepared by: 
(signature)

Amber Summers

Reviewed by: 
(signature)

Kathy Houed

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EXECUTIVE SUMMARY

Freeport-McMoRan Morenci Inc. (FMMI) currently operates a copper and molybdenum ore mining and processing facility in Morenci, Arizona as authorized by Class I Air Quality Permit #72683, issued by the Arizona Department of Environmental Quality (ADEQ) on December 21, 2018. In accordance with Arizona Administrative Code (A.A.C.) R18-2-320, FMMI is submitting the enclosed significant permit revision (SPR) application to authorize the following changes to the Concentrate Leach Plant (CLP): (a) increase the maximum capacity of each Pressure Leach Vessel (PLV) to 20 tons per hour (tph); (b) add an additional cooling tower at the Oxygen Plant; and (c) replace the existing pollution control equipment with a two-train control system (one for each PLV).

Key elements of the SPR application are presented below. An application completeness checklist is also included.

Summary of the Proposed Changes

Class I Air Quality Permit #72683 currently authorizes FMMI to operate the CLP. The PLVs associated with the CLP are currently permitted at a maximum total capacity of 29.1 tph of copper concentrate and are controlled by a 2-Stage Scrubber. FMMI proposes to increase the maximum hourly capacity of the PLVs from 29.1 tph total to 20 tph each. In order to increase the capacity, the following auxiliary changes are required:

- Add an additional cooling tower to support the Oxygen Plant; and
- Replace the existing 2-Stage Scrubber with a two-train control system (one for each PLV).

The new Oxygen Plant Cooling Tower 2 (Process #014-460) will be rated at a maximum of 3,600 gallons per minute (gpm) and have a maximum drift rate of 0.01%. It will function similarly to the existing Oxygen Plant Cooling Tower 1.

The new parallel pollution control trains for the PLVs (Process #s 014-458 and 014-459) will each consist of: (a) a Vent Gas Cyclone to recover any slurry entrained in the exhaust gas; (b) a Spray Condenser to condense any remaining steam; and (c) a Scrubber to control any remaining particulate matter (PM). The exhaust from the Scrubbers will be the release points to the atmosphere.

FMMI's Class I Air Quality Permit #72683 currently includes operational limitations, control requirements, and emission limitations and standards (including voluntarily accepted emission limitations) for the PLVs as controlled by the existing 2-Stage Scrubber. These permit conditions will need to be revised to reflect the new two-train control system. As part of the revisions, FMMI proposes to increase the existing voluntarily accepted emission limitations by 40% to account for the increase in the maximum hourly capacity of the PLVs. However, the voluntarily accepted emission limitations are proposed to be split equally between each PLV and corresponding pollution control train.

The proposed facility changes described above will not affect the maximum capacity or potential emission estimates from upstream or downstream operations. Instead, the changes to the CLP will

enable FMMI to process more copper concentrate onsite (instead of shipping it to a smelter) and will allow downstream operations to operate closer to their maximum capacity.

Changes in Emissions

The regulated air pollutants emitted by the emission units addressed in this SPR application include the following: PM; particulate matter less than or equal to 10 microns in aerodynamic diameter (PM₁₀); particulate matter less than or equal to 2.5 microns in aerodynamic diameter (PM_{2.5}); and volatile organic compounds (VOCs).

The primary activity of the FMMI facility is mining and ore processing operations, which makes FMMI's facility-wide operations a "non-categorical" source for Prevention of Significant Deterioration (PSD) purposes. Because FMMI's facility-wide potential to emit (PTE) for all regulated New Source Review (NSR) pollutants is currently below the PSD major source thresholds (for a non-categorical source in an attainment/unclassifiable area), the facility-wide operations are considered a minor source for purposes of PSD.

FMMI's annual facility-wide potential emissions (including PTE) prior to and following the proposed facility changes are presented in Table ES.1. Table ES.1 is broken down into: (a) annual facility-wide potential emissions as presented in the last submittal to ADEQ (i.e., minor permit revision [MPR] #94603); (b) change in annual potential emissions due to the proposed facility changes; and (c) the resulting annual facility-wide potential emission totals following the proposed facility changes. As seen in Table ES.1, the proposed facility changes will not affect the source status of the FMMI facility. FMMI will remain a Title V, minor PSD, and minor hazardous air pollutant (HAP) source in accordance with the A.A.C. following the proposed facility changes.

Permit Condition Changes

FMMI requests that the following changes be made to Class I Air Quality Permit #72683:

- **Attachment "A"**
 - None.
- **Attachment "B"**
 - None.
- **Attachment "C"**
 - Revise the voluntary emission limitations for the PLVs in Condition X.B.1 and X.B.3.
 - Update the name of Oxygen Plant Cooling Tower 1 (Process #014-241) and add Oxygen Plant Cooling Tower 2 (Process #014-460) to Condition X.D.1.
 - Add reference to the Vent Gas Cyclones, Spray Condensers, and PLV Scrubbers in Conditions X.D.3 and X.D.4.
 - Add performance testing requirements for Process #s 014-458 and 014-459 in Condition X.F.

- **Attachment “D”**
 - None.
- **Attachment “E”**
 - Remove the Pressure Leach Vessels as controlled by the PLV 2-Stage Scrubber (Process #014-239).
 - Add Pressure Leach Vessel 1 as controlled by Vent Gas Cyclone 1, Spray Condenser 1, and PLV Scrubber 1 (Process #014-458).
 - Add Pressure Leach Vessel 2 as controlled by Vent Gas Cyclone 2, Spray Condenser 2, and PLV Scrubber 2 (Process #014-459).
 - Update the name of Oxygen Plant Cooling Tower 1 (Process #014-241) and add Oxygen Plant Cooling Tower 2 (Process #014-460).

Suggested draft permit language for the proposed changes to Class I Air Quality Permit #72683 is presented in Appendix G.

Information Required as Part of a Significant Permit Revision Application

According to A.A.C. R18-2-304.B, applicants applying for a significant permit revision must “complete the applicable standard application form provided by the Director and supply all information required by the form’s filing instructions.” As clarified by A.A.C. R18-304.E.1, an application for permit revision need only supply information related to the proposed change. Identification of the information included in this application, including the Standard Permit Application Form, information required by the filing instructions, and application components from ADEQ’s Application Packet for a Class I Permit are presented in Table ES.2. The section or appendix where the information can be located in this document is also presented in Table ES.2.

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

Potential Emission Description	Emission Classification	Annual Facility-Wide Potential Emissions (tpy)								
		PM	PM ₁₀	PM _{2.5}	CO	NO _x	SO ₂	VOC	CO ₂ e	Total HAPs
Potential Emissions Following MPR #94603 ^a	Non-Fugitive	230.99	186.02	163.63	142.08	237.78	2.08	41.64	100,905	2.06
	Fugitive	14,071.55	3,883.69	533.28	2,239.30	99.17	0.81	46.10	22,490	13.13
	Total	14,302.54	4,069.71	696.91	2,381.38	336.95	2.89	87.74	123,395	15.19
	PTE	230.99	186.02	163.63	142.08	237.78	2.08	41.64	100,905	15.19
Change in Potential Emissions Due to the Proposed Facility Changes	Non-Fugitive	1.31	1.31	1.31	--	--	--	10.20	--	--
	Fugitive	1.18	0.86	0.003	--	--	--	--	--	--
	Total	2.50	2.17	1.32	--	--	--	10.20	--	--
	PTE	1.31	1.31	1.31	--	--	--	10.20	--	--
Potential Emissions Following the Proposed Facility Changes	Non-Fugitive	232.31	187.33	164.94	142.08	237.78	2.08	51.84	100,905	2.06
	Fugitive	14,072.73	3,884.55	533.28	2,239.30	99.17	0.81	46.10	22,490	13.13
	Total	14,305.04	4,071.88	698.23	2,381.38	336.95	2.89	97.94	123,395	15.19
	PTE	232.31	187.33	164.94	142.08	237.78	2.08	51.84	100,905	15.19

^a The potential emission totals following MPR #94603 have been revised to classify sulfuric acid mist emissions from electrowinning as filterable particulate matter and correct the drift rate of the PLV Cooling Tower (Process #014-240) to 0.004%.

Table ES.2 Information Included in the Application

Required Application Component	Location in the Application
Standard Class I Permit Application Form Including the Compliance Certification and Certification of Truth, Accuracy, and Completeness	Appendix A
Description of the Proposed Changes (including Source Classification Codes)	Section 2.1
Description of Product(s)	Section 2.2
Description of Alternate Operating Scenario (including Source Classification Codes)	Section 3
Description of Alternate Operating Scenario Product(s)	Section 3
Flow Diagram for All Processes	Appendix D
Material Balance for All Processes (optional, only if emission calculations are based on a material balance)	Appendix E
Emissions Related Information	Section 5 and Appendices C, E, and F.
Citation and Description of All Applicable Requirements Including Voluntarily Accepted Limits Pursuant to A.A.C. R18-2-306.01	Section 8.1
Explanation of Any Proposed Exemptions from Otherwise Applicable Requirements	Section 8.2
Information Needed to Determine or Regulate Emissions or to Comply with the Requirements of A.A.C. R18-2-306.01	Section 6
Description of All Process and Control Equipment for which Permits are Required	Section 2.3 and Appendix B
Insignificant and Trivial Activity Information	Section 9

Table ES.2 Information Included in the Application

Required Application Component	Location in the Application
Stack Information	^a
Site Diagram	^b
Air Pollution Control Information	Section 4
Compliance Plan	Section 10
Compliance Certification	Section 11
Acid Rain Program Compliance Plan	Section 12
New Major Source or Major Modification Information	Section 13
Minor NSR Applicability Determination	Section 14
Compliance Assurance Monitoring (CAM) Analysis	Section 15
Suggested Draft Permit Language	Appendix G
Identification of Confidential Information	Section 16
Calculations on which All Information Requested in this Application is Based	Appendices E and F

^a Stack information for the equipment addressed in the application is currently unavailable.

^b The facility changes proposed in this application do not affect previously submitted site diagrams.

ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AP-42	Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition
A.R.S.	Arizona Revised Statutes
Btu	British Thermal Units
CAM	Compliance Assurance Monitoring
CCD	Counter-Current Decantation
CLP	Concentrate Leach Plant
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FMMI	Freeport-McMoRan Morenci Inc.
gph	Gallons per Hour
gpm	Gallons per Minute
HAP	Hazardous Air Pollutant
hr	Hour
lb	Pound
MM	Million
MPR	Minor Permit Revision
NEI	Net Emissions Increase
NESHAP	National Emission Standards for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PLV	Pressure Leach Vessel
PLS	Pregnant Leach Solution
PM	Particulate Matter
PM ₁₀	Particulate Matter Less Than or Equal to 10 Microns in Aerodynamic Diameter
PM _{2.5}	Particulate Matter Less Than or Equal to 2.5 Microns in Aerodynamic Diameter
ppm	Parts Per Million
PSD	Prevention of Significant Deterioration

ABBREVIATIONS (cont'd)

PSEU	Pollutant-Specific Emission Unit
PTE	Potential to Emit
SCC	Source Classification Code
SEI	Significant Emissions Increase
SPR	Significant Permit Revision
TDS	Total Dissolved Solids
tph	Tons per Hour
tpy	Tons per Year
VOC	Volatile Organic Compounds
yr	Year

1 INTRODUCTION

Freeport-McMoRan Morenci Inc. (FMMI) operates a copper and molybdenum ore mining and processing facility in Morenci, Arizona as authorized by Class I Air Quality Permit #72683, issued by the Arizona Department of Environmental Quality (ADEQ) on December 21, 2018. In accordance with Arizona Administrative Code (A.A.C.) R18-2-320, FMMI is submitting the enclosed significant permit revision (SPR) application to authorize the following changes to the Concentrate Leach Plant (CLP): (a) increase the maximum capacity of each Pressure Leach Vessel (PLV) to 20 tons per hour (tph); (b) add an additional cooling tower at the Oxygen Plant; and (c) replace the existing pollution control equipment with a two-train control system (one for each PLV).

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

2 PROCESS AND PRODUCT DESCRIPTION

2.1 DESCRIPTION OF THE PROPOSED CHANGES

2.1.1 Current Operations

Class I Air Quality Permit #72683 currently authorizes FMMI to operate the CLP. The process flow diagram of the existing design of the CLP is presented in Figure D.1 of Appendix D. The CLP is a process that uses hydrometallurgy to extract copper from copper concentrate. This technology allows FMMI to produce high purity copper from copper concentrate without the use of a copper smelter.

Copper concentrate from FMMI's concentrate processing operations is primarily delivered to the CLP in slurry form from the Copper Concentrate Thickeners via pumps, Filter Feed Tanks, and the Ground Concentrate Tank. Copper concentrate can also be delivered in solid form via the CLP Feed Hopper, CLP Feed Conveyor, Concentrate Repulp Tank, Sand Filled Wet Grinding Circuit, and the Ground Concentrate Tank.

The concentrate is pumped from the Ground Concentrate Tank to PLVs 1 and 2.¹ The vessels operate at high temperature and pressure in parallel arrangement at a maximum total capacity of 29.1 tph of copper concentrate. Oxygen, coolant, and lean electrolyte are injected into the vessels to sustain the exothermic reaction and to maintain the target temperature. The leached concentrate slurry discharges from the PLVs into Flash Vessels, which are used to reduce the pressure of the system to near atmospheric conditions.

The flashed slurry is then discharged to the Slurry Conditioning Tank prior to being processed by the Evaporative Cooler, which utilizes Vacuum Cooling, a Barometric Condenser, and a Recirculating Condensate Cooler to cool the slurry and recycle condensate. A small portion of the evaporated gas is vented through the Vacuum Pump but is considered a trivial activity according to A.A.C. R18-2-101.146.

The cooled slurry-containing copper bearing pregnant leach solution (PLS) is separated from any residue via the Decant Thicker. The Decant Thickener underflow residue is washed with fresh water in the Counter-Current Decantation (CCD) Thickeners to recover more than 99.9% of the copper as a solution. The Decant Thickener overflow solution (termed strong PLS) and the CCD Thickeners overflow solution (termed weak PLS) are directed to the PLS Holding Tank and Silica Preparation Tanks. The combined solution product (termed mixed PLS) is then pumped to FMMI's existing Stargo and Modoc solvent extraction facilities. The washed CCD residue tails (i.e., waste) are neutralized with milk of lime in the Neutralization Tanks prior to being pumped to the tailings thickeners and storage.

Other equipment and operations supporting the CLP include:

- Natural Gas Startup Boiler;

¹ Class I Air Quality Permit #72683 currently refers to "Pressure Leach Vessel." As part of this application, FMMI clarifies that there are currently (and have always been) two PLVs associated with the CLP. SPR #36424 dated March 10, 2006 refers to "Pressure Leach Vessels." It appears that the plural "Pressure Leach Vessels" was inadvertently changed to the singular "Pressure Leach Vessel" during the issuance of Class I Air Quality Permit #42474.

- PLV Cooling Tower, used to distribute cooling water to the coolers, condensers, air compressors, PLV agitator seal system, PLV agitators, and glycol heat exchanger;
- Oxygen Plant including the Oxygen Plant Cooling Tower; and
- Flocculant, lime, and diatomaceous earth additive systems, including the use of bin vents to capture and recover any flocculant, lime, or diatomaceous earth entrained in the air displaced during filling of the Flocculant Bin, Lime Silo, and Super Sack Unloader, respectively.

As shown in Figure D.1 of Appendix D, the steam generated during slurry flash cooling along with exhaust gas from the PLVs is sent to a 2-Stage Scrubber. The exhaust gas contains particulate matter (PM, in the form of sulfuric acid) and volatile organic compounds (VOC). The 2-Stage Scrubber is used for recovery of slurry and control of any remaining PM.²

2.1.2 Proposed Changes

The process flow diagram of the proposed design of the CLP is presented in Figure D.2 of Appendix D. FMMI proposes to increase the maximum hourly capacity of the Pressure Leach Vessels from 29.1 tph total to 20 tph each. In order to increase the capacity, the following auxiliary changes are required:

- Add an additional cooling tower to support the Oxygen Plant; and
- Replace the existing 2-Stage Scrubber with a two-train control system (one for each PLV).

The new Oxygen Plant Cooling Tower 2 (Process #014-460) will be rated at a maximum of 3,600 gallons per minute (gpm) and have a maximum drift rate of 0.01%. It will function similarly to the existing Oxygen Plant Cooling Tower 1.

The new parallel pollution control trains for the PLVs (Process #s 014-458 and 014-459) will each consist of: (a) a Vent Gas Cyclone to recover any slurry entrained in the exhaust gas; (b) a Spray Condenser to condense any remaining steam; and (c) a Scrubber to control any remaining PM. The exhaust from the Scrubbers will be the release points to the atmosphere.

The design of the pollution control trains includes an Emergency Relief Vessel located after the Spray Condensers for bypass of the Scrubbers in the case of an emergency. The design engineers conservatively planned for the Emergency Relief Vessel to be used twice per year. Due to the minimal emissions expected for emergencies, the Emergency Relief Vessel is considered a trivial activity according to A.A.C. R18-2-101.146.

FMMI's Class I Air Quality Permit #72683 currently includes operational limitations, control requirements, and emission limitations and standards (including voluntarily accepted emission limitations) for the PLVs as controlled by the existing 2-Stage Scrubber. These permit conditions will need to be revised to reflect the new two-train control system. As part of the revisions, FMMI proposes to increase the existing voluntarily accepted emission limitations by 40% to account for the increase in

² FMMI's Class I Air Quality Permit #72683 implies that the 2-Stage Scrubber (venturi) is used for control of VOC. FMMI clarifies as part of this application that the 2-Stage Scrubber is for recovery and control of PM only, although minimal incidental control of VOC may occur.

the maximum hourly capacity of the PLVs. However, the voluntarily accepted emission limitations are proposed to be split equally between each PLV and corresponding pollution control train.

The proposed facility changes described above will not affect the maximum capacity or potential emission estimates from upstream or downstream operations. Instead, the changes to the CLP will enable FMMI to process more copper concentrate onsite (instead of shipping it to a smelter) and will allow downstream operations to operate closer to their maximum capacity.

2.2 DESCRIPTION OF PRODUCT(S)

The product from the CLP is PLS to supplement the PLS generated by copper leaching.

2.3 DESCRIPTION OF ALL PROCESS AND CONTROL EQUIPMENT FOR WHICH PERMITS ARE REQUIRED

The equipment associated with the CLP following the proposed facility changes that is subject to air quality permitting through ADEQ is presented in Table 2.1. Further detailed information about the equipment (maximum rated capacity, make, model, serial number, and date of manufacturer) is presented in Appendix B. Table 2.1 also presents the Source Classification Code (SCC) associated with each piece of equipment as well as a reference to the applicable state (A.A.C) and federal (New Source Performance Standards [NSPS] and National Emission Standards for Hazardous Air Pollutants [NESHAP]) requirements. Further details about the applicable requirements are presented in Section 8.

Table 2.1 Equipment Subject to Air Quality Permitting

Process Number	Equipment Description	Source Classification Code	Applicable Requirements Reference		
			State	NSPS	NESHAP
Operation 014: Concentrate Leach Plant					
014-235	CLP Feed Hopper	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--
014-341	CLP Feed Conveyor	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--
014-242	Natural Gas Startup Boiler	1-02-006-02	A.A.C. R18-2-306.01 A.A.C. R18-2-901.1 A.A.C. R18-2-901.5	40 CFR 60 Subpart Dc	-- ^a
014-458	Pressure Leach Vessel 1	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--
	Vent Gas Cyclone 1	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730 ^b	--	--
	Spray Condenser 1	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730 ^b	--	--
	PLV Scrubber 1	3-03-024-04	A.A.C. R18-2-306.01 ^{c,d}	--	--
014-459	Pressure Leach Vessel 2	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--
	Vent Gas Cyclone 2	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730 ^b	--	--
	Spray Condenser 2	3-03-024-04	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730 ^b	--	--
	PLV Scrubber 2	3-03-024-04	A.A.C. R18-2-306.01 ^{c,d}	--	--

Table 2.1 Equipment Subject to Air Quality Permitting

Process Number	Equipment Description	Source Classification Code	Applicable Requirements Reference		
			State	NSPS	NESHAP
014-240	PLV Cooling Tower	3-85-001-01	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	-- ^e
014-241	Oxygen Plant Cooling Tower 1	3-85-001-01	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	-- ^e
014-460	Oxygen Plant Cooling Tower 2	3-85-001-01	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	-- ^e
014-348	Flocculant Bin	3-05-016-26	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--
	Flocculant Bin Vent	3-05-016-26	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730 ^b	--	--
	Flocculant Feeder	3-05-016-26	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--
014-254	Lime Silo	3-05-016-26	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	-- ^f
	Lime Silo Bin Vent	3-05-016-26	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730 ^b	--	--
014-253	Super Sack Unloader	3-05-016-26	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	--	--
	Super Sack Unloader Bin Vent	3-05-016-26	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730 ^b	--	--

^a The equipment is exempt from 40 CFR 63 Subpart JJJJJJ (National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources) because it is considered a gas-fired boiler.

^b The equipment is not considered a pollution control device because it is inherent to the process, has a primary function of recovering process material, and/or is not used to destroy or remove air pollutant(s) prior to discharge to the atmosphere.

Table 2.1 Equipment Subject to Air Quality Permitting

Process Number	Equipment Description	Source Classification Code	Applicable Requirements Reference		
			State	NSPS	NESHAP

^c The pollution control device is not an affected facility subject to A.A.C. R18-2-702.B.3 and A.A.C. R18-2-730 (Standards of Performance for Unclassified Sources). Instead, it controls affected facilities subject to A.A.C. R18-2-702.B.3 and A.A.C. R18-2-730 and is used to demonstrate compliance with the requirements of A.A.C. R18-2-702.B.3 and A.A.C. R18-2-730.

^d For convenience, A.A.C. R18-2-306.01 is listed as applicable to the pollution control device. However, the voluntary limitation is actually applicable to the process equipment controlled by the pollution control device and the pollution control device is used to demonstrate compliance with the voluntary emission limitation.

^e The equipment is not subject to 40 CFR 63 Subpart Q (National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers) because FMMI is not a major source of HAP emissions.

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

3 DESCRIPTION OF ALTERNATE OPERATING SCENARIOS AND ALTERNATE OPERATING SCENARIO PRODUCT(S)

FMMI does not propose to add or make any changes to alternate operating scenarios or alternate operating scenario products.

4 AIR POLLUTION CONTROL INFORMATION

As described in Section 2.1.2, FMMI proposes to replace the existing 2-Stage Scrubber currently controlling the PLVs with a two-train control system. Each train will consist of a Vent Gas Cyclone, Spray Condenser, and Scrubber designed in series (one train for each PLV). The new Vent Gas Cyclones will not be considered pollution control devices since they are inherent to the process equipment and have a primary function of recovering slurry entrained in the exhaust gas (i.e., not pollution control). The new Spray Condensers will also not be considered pollution control devices since they will not be used to destroy or remove air pollutant(s) prior to discharge to the atmosphere. Instead, they will be used to condense any steam remaining in the exhaust gas.

The new scrubbers will be considered pollution control devices since they will be used primarily to control any remaining PM in the exhaust gas. FMMI's engineers designed the pollution control trains with a scrubber control efficiency of 99.5% (rated and operating efficiency). PM, particulate matter less than or equal to 10 microns in aerodynamic diameter (PM_{10}), and particulate matter less than or equal to 2.5 microns in aerodynamic diameter ($PM_{2.5}$) will all be controlled by the new scrubbers.

The general location of the new scrubbers as part of the CLP is shown in Figure D.2 of Appendix D. The applicable test methods that can be used on the exhaust of the new scrubbers to determine compliance with the applicable emission standards include:

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

Because there are no applicable requirements for the efficiency of the new scrubbers, it is unnecessary to provide data necessary to establish a required efficiency. Additionally, because the emission increases associated with the facility changes proposed in this SPR application are below the permitting exemption thresholds defined in A.A.C. R18-2-101.101, it is reasonably assumed that operation of the new pollution control trains will not violate ambient air quality standards or maximum allowable increases under A.A.C. R18-2-218.

5 EMISSIONS RELATED INFORMATION

5.1 EMISSIONS FROM EACH PROCESS

As described in Section 2.1.2, FMMI proposes to: (a) increase the maximum capacity of each PLV to 20 tph; (b) add an additional cooling tower at the Oxygen Plant; and (c) replace the existing pollution control equipment with a two-train control system (one for each PLV). The proposed facility changes affect the following emission units.

- Process #014-239: Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber

This process will no longer be used following the proposed facility changes and should therefore be removed from facility-wide potential emission calculations.

- Process #014-458: Pressure Leach Vessel 1 Controlled by PLV Scrubber 1
- Process #014-459: Pressure Leach Vessel 2 Controlled by PLV Scrubber 2

As described in Section 2.1.2, FMMI proposes to replace Process #014-239 with Process #s 014-458 and 014-459. Therefore, these replacement processes should be added to FMMI's facility-wide potential emission calculations.

- Process #014-460: Oxygen Plant Cooling Tower 2

This is a new process proposed to be added to the FMMI facility. It is used to support the increase in the maximum capacity of the PLVs and should be added to FMMI's facility-wide potential emission calculations.

The changes in potential emissions due to the proposed facility changes are presented in Table 5.1 in pounds per hour (lb/hr) and tons per year (tpy). The regulated air pollutants emitted by the emission units affected by the proposed facility changes include PM, PM₁₀, PM_{2.5}, and VOC.

Potential emissions of PM, PM₁₀, PM_{2.5}, and VOC from the PLVs have been calculated historically using applicable emission limits (i.e., allowable emissions) and annual hours of operation. This same calculation methodology is used throughout the application and is described in the more detail in Appendix E.

5.2 FACILITY-WIDE EMISSIONS AND POTENTIAL TO EMIT (PTE)

The primary activity of the FMMI facility is mining and ore processing operations, which is not a "categorical source" or a "Section 302(j) category" source as defined in A.A.C. R18-2-101.23 and A.A.C. R18-2-101.129, respectively. Therefore, only non-fugitive emissions are included in the determination of the facility-wide PTE of regulated air pollutants (except hazardous air pollutants [HAPs]) for purposes of determining "major source" status under A.A.C. R18-2, Articles 3 and 4. All HAP emissions are included in the determination of the facility-wide PTE regardless of their fugitive or non-fugitive classification.

Although FMMI is regulated as a Title V source, its facility-wide PTE for all regulated New Source Review (NSR) pollutants is currently below the Prevention of Significant Deterioration (PSD) major

source thresholds (for a non-categorical source in an attainment/ unclassifiable area). Consequently, the facility-wide operations are considered a minor source for purposes of PSD.

FMMI's facility-wide potential emissions (including PTE) prior to and following the proposed facility changes are presented in Tables 5.2 and 5.3. Tables 5.2 and 5.3 present hourly and annual potential emissions, respectively, and are broken down into: (a) annual facility-wide potential emissions as presented in the last submittal to ADEQ (i.e., minor permit revision [MPR] #94603); (b) change in annual potential emissions due to the proposed facility changes; and (c) the resulting annual facility-wide potential emission totals following the proposed facility changes. As seen in Table 5.3, the proposed facility changes will not affect the source status of the FMMI facility. FMMI will remain a Title V, minor PSD, and minor HAP source in accordance with the A.A.C. following the proposed facility changes.

5.3 EMISSION FACTOR DOCUMENTATION

The methodologies and calculations used to estimate potential emissions from the emission units identified in Section 5.1 are presented in Appendix E.

5.4 ELECTRONIC COPY OF EMISSION CALCULATIONS

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

Table 5.1 Change in Potential Emissions Due to the Proposed Facility Changes

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions Prior to the Proposed Facility Changes		Potential Emissions Following the Proposed Facility Changes		Change in Potential Emissions Due to the Proposed Facility Changes	
				lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Operation 014: Concentrate Leach Plant									
014-239	Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber	Non-Fugitive	PM	0.75	3.29	--	--	-0.75	-3.29
			PM ₁₀	0.75	3.29	--	--	-0.75	-3.29
			PM _{2.5}	0.75	3.29	--	--	-0.75	-3.29
			VOC	5.82	25.49	--	--	-5.82	-25.49
014-458	Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	Non-Fugitive	PM	--	--	0.53	2.30	0.53	2.30
			PM ₁₀	--	--	0.53	2.30	0.53	2.30
			PM _{2.5}	--	--	0.53	2.30	0.53	2.30
			VOC	--	--	4.07	17.84	4.07	17.84
014-459	Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	Non-Fugitive	PM	--	--	0.53	2.30	0.53	2.30
			PM ₁₀	--	--	0.53	2.30	0.53	2.30
			PM _{2.5}	--	--	0.53	2.30	0.53	2.30
			VOC	--	--	4.07	17.84	4.07	17.84

Table 5.1 Change in Potential Emissions Due to the Proposed Facility Changes

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Regulated Air Pollutant Emitted	Potential Emissions Prior to the Proposed Facility Changes		Potential Emissions Following the Proposed Facility Changes		Change in Potential Emissions Due to the Proposed Facility Changes	
				lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
014-460	Oxygen Plant Cooling Tower 2	Fugitive	PM	--	--	0.27	1.18	0.27	1.18
			PM ₁₀	--	--	0.20	0.86	0.20	0.86
			PM _{2.5}	--	--	0.0006	0.003	0.0006	0.003

Table 5.2 Summary of the Changes in Hourly Facility-Wide Potential Emissions

Potential Emission Description	Emission Classification	Hourly Facility-Wide Potential Emissions (lb/hr)								
		PM	PM ₁₀	PM _{2.5}	CO	NO _x	SO ₂	VOC	CO ₂ e	Total HAPs
Potential Emissions Following MPR #94603 a	Non-Fugitive	133.70	77.54	46.85	309.62	320.19	0.92	14.80	74,826	1.20
	Fugitive	5,641.59	2,026.17	228.33	8,932.55	395.60	3.21	10.53	89,714	3.27
	Total	5,775.29	2,103.72	275.18	9,242.16	715.79	4.13	25.32	164,539	4.47
Change in Potential Emissions Due to the Proposed Facility Changes	Non-Fugitive	0.30	0.30	0.30	--	--	--	2.33	--	--
	Fugitive	0.27	0.20	0.0006	--	--	--	--	--	--
	Total	0.57	0.50	0.30	--	--	--	2.33	--	--
Potential Emissions Following the Proposed Facility Changes	Non-Fugitive	134.00	77.84	47.15	309.62	320.19	0.92	17.13	74,826	1.20
	Fugitive	5,641.86	2,026.37	228.33	8,932.55	395.60	3.21	10.53	89,714	3.27
	Total	5,775.86	2,104.21	275.48	9,242.16	715.79	4.13	27.65	164,539	4.47

^a The potential emission totals following MPR #94603 have been revised to classify sulfuric acid mist emissions from electrowinning as filterable particulate matter and correct the drift rate of the PLV Cooling Tower (Process #014-240) to 0.004%.

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

Potential Emission Description	Emission Classification	Annual Facility-Wide Potential Emissions (tpy)								
		PM	PM ₁₀	PM _{2.5}	CO	NO _x	SO ₂	VOC	CO ₂ e	Total HAPs
Potential Emissions Following MPR #94603 ^a	Non-Fugitive	230.99	186.02	163.63	142.08	237.78	2.08	41.64	100,905	2.06
	Fugitive	14,071.55	3,883.69	533.28	2,239.30	99.17	0.81	46.10	22,490	13.13
	Total	14,302.54	4,069.71	696.91	2,381.38	336.95	2.89	87.74	123,395	15.19
	PTE	230.99	186.02	163.63	142.08	237.78	2.08	41.64	100,905	15.19
Change in Potential Emissions Due to the Proposed Facility Changes	Non-Fugitive	1.31	1.31	1.31	--	--	--	10.20	--	--
	Fugitive	1.18	0.86	0.003	--	--	--	--	--	--
	Total	2.50	2.17	1.32	--	--	--	10.20	--	--
	PTE	1.31	1.31	1.31	--	--	--	10.20	--	--
Potential Emissions Following the Proposed Facility Changes	Non-Fugitive	232.31	187.33	164.94	142.08	237.78	2.08	51.84	100,905	2.06
	Fugitive	14,072.73	3,884.55	533.28	2,239.30	99.17	0.81	46.10	22,490	13.13
	Total	14,305.04	4,071.88	698.23	2,381.38	336.95	2.89	97.94	123,395	15.19
	PTE	232.31	187.33	164.94	142.08	237.78	2.08	51.84	100,905	15.19

^a The potential emission totals following MPR #94603 have been revised to classify sulfuric acid mist emissions from electrowinning as filterable particulate matter and correct the drift rate of the PLV Cooling Tower (Process #014-240) to 0.004%.

6 INFORMATION NEEDED TO DETERMINE OR REGULATE EMISSIONS OR TO COMPLY WITH A.A.C. R18-2-306.01

The information needed to determine or regulate emissions or to comply with the requirements of A.A.C. R18-2-306.01 is presented in the following sections. The information is limited to the equipment addressed in this SPR application. Information for any remaining equipment can be found in previous submittals to ADEQ.

6.1 PROCESS RATE INFORMATION

The maximum annual and rated hourly process rates for the processes affected by the facility changes addressed in this application are presented in Appendices C and E.

6.2 FUEL USE INFORMATION

The facility changes proposed in this application do not affect fuel usage information needed to determine or regulate emissions or to comply with the requirements of A.A.C. R18-2-306.01.

6.3 RAW MATERIAL INFORMATION

The facility changes proposed in this application do not affect raw material usage information needed to determine or regulate emissions or to comply with the requirements of A.A.C. R18-2-306.01.

6.4 ANTICIPATED OPERATING SCHEDULES

FMMI's facility-wide operations are available to operate 24 hr/day, 7 days/week, and 365 days/yr. Annual production is generally evenly distributed throughout the year (25% each quarter). Operations specific to the CLP also occur throughout the year.

6.5 LIMITATIONS ON SOURCE OPERATIONS AND WORK PRACTICE STANDARDS AFFECTING EMISSIONS

Other than the voluntarily accepted limits described in Section 7 of this application, there are no limitations on source operations or work practice standards that affect emissions from the processes addressed in this application.

7 PROPOSED VOLUNTARY LIMITATIONS

As described in Section 2.1.2, FMMI proposes to revise voluntarily accepted emission limitations specific to the PLVs in Class I Air Quality Permit #72683. The revisions are necessary to account for the proposed increases to the maximum capacities of the PLVs. A detailed description of the changes is presented in Table 7.1.

Table 7.1 Changes to Voluntarily Accepted Limitations

Permit Condition Reference in Class I Air Quality Permit #72683	Type of Voluntary Limitation	Affected Equipment/Process	Current Voluntary Limitation	Description of the Proposed Change	Proposed Voluntary Limitation
Attachment "C" Conditions X.B.1.c and X.B.3	Emission Limitation	Process #014-239: Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber	PM ≤ 0.75 lb/hr	Increase the limits by 40% and split equally between Process #s 014-458 and 014-459 shown below. No limitations will remain for Process #014-239.	N/A
			PM ₁₀ ≤ 0.75 lb/hr		N/A
			VOC ≤ 5.82 lb/hr		N/A
Proposed Attachment "C" Conditions X.B.1.c and X.B.3.a	Emission Limitation	Process #014-458: Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	N/A	Establish new limitations.	PM ≤ 0.525 lb/hr
			N/A		PM ₁₀ ≤ 0.525 lb/hr
			N/A		VOC ≤ 4.074 lb/hr
Proposed Attachment "C" Conditions X.B.1.d and X.B.3.b	Emission Limitation	Process #014-459: Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	N/A	Establish new limitations.	PM ≤ 0.525 lb/hr
			N/A		PM ₁₀ ≤ 0.525 lb/hr
			N/A		VOC ≤ 4.074 lb/hr

8 APPLICABLE REQUIREMENTS AND PROPOSED EXEMPTIONS FROM OTHERWISE APPLICABLE REQUIREMENTS

8.1 APPLICABLE REQUIREMENTS

Reference to the regulatory requirements applicable to the equipment associated with CLP are presented in Table 2.1. As identified in Table 2.1, the equipment/processes associated with the CLP are currently subject to the following requirements (except for the Natural Gas Startup Boiler [Process #014-242]):

- A.A.C. R18-2-702.B.3 (Opacity Standard); and
- A.A.C. R18-2-730 (Standards of Performance for Unclassified Sources).

The Natural Gas Startup Boiler (Process #014-242) is subject to the following requirements:

- 40 CFR 60 Subpart A (General Provisions); and
- 40 CFR 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units).

Detailed descriptions of the regulatory requirements are presented in Tables 8.1 through 8.4.

The applicable requirements of A.A.C. R18-2-702.B.3 and A.A.C. R18-2-730 are currently included in Condition X of Attachment “C” of Class I Air Quality Permit #72683. The applicable requirements of 40 CFR 60 Subparts A and Dc are currently included in Condition II.B of Attachment “B” of Class I Air Quality Permit #72683.

No changes need to be made to Condition II.B of Attachment “B” as a result of the changes proposed in this SPR application. However, Conditions X.B, X.D, and X.F of Attachment “C” will need to be revised to incorporate the new pollution control trains for the PLVs.

Additionally, changes will be required to Attachment “E” under the heading of Concentrate Leach Plant (Operation 014) to add equipment, remove equipment, and update maximum rated hourly capacities. Suggested draft permit language is presented in Appendix G.

FMMI notes that the PLVs associated with the CLP are also subject to A.A.C. R18-2-306.01 due to FMMI previously accepting voluntary emission limitations for the operations as controlled by the 2-Stage Scrubber. Revisions to the voluntary emission limitations are discussed in Section 7 and included in the suggested draft permit language is presented in Appendix G.

The Natural Gas Startup Boiler (Process #014-242) is also subject to A.A.C. R18-2-306.01 due to FMMI previously accepting a voluntary fuel usage limitation. The limitation will still apply following the changes proposed in this SPR application (including after increases to the maximum rated hourly capacities of the PLVs). Compliance with the existing fuel usage limitation is expected.

8.2 PROPOSED EXEMPTION FROM OTHERWISE APPLICABLE REQUIREMENTS

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

Table 8.1 Applicable Regulatory Requirements of A.A.C. R18-2-702.B.3 and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
<p>A.A.C. R18-2-702.B.3 A.A.C. R18-2-702.C</p>	<p>For all sources described in A.A.C. R18-2-702.A (except as otherwise provided in Title 18, Chapter 2 of the A.A.C. relating to specific types of sources):</p> <ul style="list-style-type: none"> • Opacity \leq 20% <p>If the presence of uncombined water is the only reason for an exceedance of the opacity limit, the exceedance shall not constitute a violation.</p>	<p>Facility procedure; records of bi-weekly visual surveys; records of Method 9 observations.</p>

Table 8.2 Applicable Regulatory Requirements of A.A.C. R18-2-730 and Methods for Demonstrating Compliance

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

Table 8.3 Applicable Regulatory Requirements of A.A.C. R18-2-901.1 and 40 CFR 60 Subpart A and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements ^a	Methods Used to Demonstrate Compliance
40 CFR 60.7(a)(1) A.A.C. R18-2-901.1	Provide notification of the date construction (or reconstruction as defined under 40 CFR 60.15) commenced postmarked no later than 30 days after such date. This requirement does not apply in the case of mass-produced facilities which are purchased in completed form.	Facility procedure; maintenance of records.
40 CFR 60.7(a)(3) A.A.C. R18-2-901.1	Provide notification of the actual date of initial startup postmarked within 15 days after such date.	Facility procedure; maintenance of records.
40 CFR 60.7(a)(4) A.A.C. R18-2-901.1	Submit 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 under an applicable subpart or in 40 CFR 60.14(e). 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.	Submittal of notifications, maintenance of records.
40 CFR 60.7(a)(6) A.A.C. R18-2-901.1	Submit a notification of the anticipated date for conducting the opacity observations required by 40 CFR 60.11(e)(1). The notification must also include, if appropriate, a request for the Administrator to provide a visible emissions reader during a performance test. The notification must be postmarked not less than 30 days prior to such date.	Submittal of notifications, maintenance of records.

Table 8.3 Applicable Regulatory Requirements of A.A.C. R18-2-901.1 and 40 CFR 60 Subpart A and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements ^a	Methods Used to Demonstrate Compliance
40 CFR 60.7(b) A.A.C. R18-2-901.1	Maintain records of: <ul style="list-style-type: none"> • 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; and • Any periods during which a continuous monitoring system or monitoring device is inoperative. 	Facility procedure; maintenance of records.
40 CFR 60.7(c) A.A.C. R18-2-901.1	Submit excess emissions and monitoring systems performance report and/or summary report form to the Administrator semiannually, except when more frequent reporting is specifically required by an applicable subpart; or the Administrator, on a case-by-case basis, determines that more frequent reporting is necessary to accurately assess the compliance status of the source. All reports shall be postmarked by the 30th day following the end of each six-month period.	Submittal of report, maintenance of records.
40 CFR 60.7(f) A.A.C. R18-2-901.1	Maintain a file of all measurements in a permanent form suitable for inspection. Retain the file for at least two years following the date of such measurements.	Facility procedure; maintenance of records.
40 CFR 60.8(a) A.A.C. R18-2-901.1	Completion of performance test in accordance to 40 CFR 60.8 demonstrating compliance with applicable limits within 60 days after achieving the maximum production rate, but no later than 180 days after initial startup. Submittal of written report of the results of the performance tests to the Director and Administrator.	Performance of EPA Reference Method Tests.
40 CFR 60.8(d) A.A.C. R18-2-901.1	Notification to the Director and Administrator 30 days prior to performance testing.	Facility procedure; maintenance of records.

Table 8.3 Applicable Regulatory Requirements of A.A.C. R18-2-901.1 and 40 CFR 60 Subpart A and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements ^a	Methods Used to Demonstrate Compliance
40 CFR 60.11(d) A.A.C. R18-2-901.1	At all times, including periods of startup, shutdown, and malfunction, maintain, and operate, to the extent practicable, any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.	Facility procedure; maintenance of records.
40 CFR 60.11(e) A.A.C. R18-2-901.1	If no performance test under 40 CFR 60.8 is required, completion of opacity observations demonstrating compliance with applicable limits within 60 days after achieving the maximum production rate, but no later than 180 days after initial startup.	Performance of EPA Reference Method 9 Tests.

^a The individual subparts of 40 CFR 60 provide more details about the applicability of the general provisions of 40 CFR 60 Subpart A.

Table 8.4 Applicable Regulatory Requirements of A.A.C. R18-2-901.5 and 40 CFR 60 Subpart Dc and Methods for Demonstrating Compliance

Regulatory Citation for Applicable Requirements	Description of Requirements	Methods Used to Demonstrate Compliance
40 CFR 60.48c(g)(2) A.A.C. R18-2-901.5	Maintain monthly records of the amount of fuel combusted during each calendar month.	Records of total fuel, higher heating value of fuel combusted, 12-month rolling total fuel and MMBtu consumed; records review.
40 CFR 60.48c(i) A.A.C. R18-2-901.5	Maintain all records required by this section for a period of two years following the date of such record.	Facility procedure; records review.

9 INSIGNIFICANT AND TRIVIAL ACTIVITY INFORMATION

9.1 INSIGNIFICANT ACTIVITIES

FMMI does not propose to add any insignificant activities as part of this SPR application.

9.2 TRIVIAL ACTIVITIES

The equipment/operations associated with the CLP that are not expressly identified in Table 2.1 are considered trivial activities. Most of the trivial activities have been presented to ADEQ in previous applications. The remaining trivial activities that FMMI is identifying in this application include:

- Ground Concentrate Tank;
- Filter Feed Tanks;
- Emergency Relief Vessel;
- Slurry Conditioning Tank;
- Recirculating Condensate Cooler;
- PLS Cooler;
- Vacuum Pump; and
- PLS Holding Tank.

The above equipment/operations are considered trivial activities according to A.A.C. R18-2-101.146.

10 COMPLIANCE PLAN

10.1 COMPLIANCE STATUS

At the time of this application's submittal, FMMI is in compliance with the applicable requirements of Articles 6, 7, 8, 9, and 11 of Title 18, Chapter 2 of the A.A.C., the rules promulgated pursuant to Arizona Revised Statutes (A.R.S.) §49-426.03, and voluntarily accepted limitations pursuant to A.A.C. R18-2-306.01.

The CLP will remain subject to the applicable requirements of Articles 7 and 9 of Title 18, Chapter 2 of the A.A.C. The Natural Gas Startup Boiler (Process #014-242) is subject to applicable requirements of Article 9 of Title 18, Chapter 2 of the A.A.C. All remaining equipment associated with the CLP is subject to applicable requirements of Article 7 of Title 18, Chapter 2 of the A.A.C. FMMI will demonstrate continued compliance with these applicable requirements using methods identified in Tables 8.1 through 8.4 of this application and methods similar to those detailed in its most recent compliance certification.

10.2 COMPLIANCE SCHEDULE

For current applicable requirements, FMMI will continue to comply with such requirements. For applicable requirements that become effective during the permit term, FMMI will meet such requirements in a timely manner.

11 COMPLIANCE CERTIFICATION

A certification of compliance with all requirements applicable to FMMI is presented in Appendix A and signed by the facility's responsible official. The applicable requirements which are the basis of the certification for the equipment addressed in this SPR application are presented in Section 8. The methods used for determining compliance, including a description of monitoring requirements, recordkeeping requirements, reporting requirements, and test methods are identified in Tables 8.1 through 8.4 of this application and in FMMI's most recent compliance certification.

As described in Appendix A, compliance certifications will be submitted during the permit term no less frequently than annually or more frequently if specified by the underlying applicable requirements or by ADEQ (FMMI currently submits compliance certifications semiannually). FMMI is not currently subject and will not become subject to any applicable enhanced monitoring or compliance certification requirements due to the changes proposed in this SPR application.

A certification of truth, accuracy, and completeness pursuant to A.A.C. R18-2-304.I is also presented in Appendix A.

12 ACID RAIN COMPLIANCE PLAN

The Acid Rain Program applies to the affected units defined in 40 CFR 72.6. Because the FMMI facility does not include any of these affected units, the federal acid rain program regulations do not apply, and a compliance plan is not necessary.

13 NEW MAJOR SOURCE OR MAJOR MODIFICATION INFORMATION

13.1 GENERAL INFORMATION

For purposes of Article 4 of Chapter 2 of the A.A.C., “major source” means any stationary source that emits, or has the potential to emit, 100 tpy or more of any regulated NSR pollutant if the source is classified as a categorical source, or 250 tpy or more of any regulated NSR pollutant if the source is not classified as a categorical source.¹

A major modification is defined as any physical change in or change in the method of operation of a major stationary source that would result in both:

- A significant emissions increase (SEI) of a regulated NSR pollutant; and
- A significant net emissions increase (NEI) of that pollutant from the stationary source.

13.2 APPLICABILITY DETERMINATION

The primary activity of the FMMI facility is mining and ore processing operations, which makes FMMI a “non-categorical” source for PSD purposes. Because FMMI’s facility-wide PTE (both prior to and following the proposed changes – see Table 5.3) is below the PSD major source thresholds (for a non-categorical source in an attainment/unclassifiable area), the facility-wide operations are considered a minor PSD source. Consequently, there can be no “major modification” and therefore it is not necessary to determine the SEI or NEI of any regulated NSR pollutant.

¹ Lower thresholds exist in certain nonattainment areas, but the FMMI facility is located in an attainment/unclassifiable area.

14 MINOR NSR APPLICABILITY DETERMINATION

14.1 GENERAL INFORMATION

According to A.A.C. R18-2-334.A.1, minor NSR applies to:

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

A minor NSR modification is:

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

Minor NSR does not apply to the emissions of a pollutant from any of the activities identified above if the emissions of that pollutant are subject to the requirements for a new major source or a major modification (see Section 15).

14.2 APPLICABILITY DETERMINATION

As described in Section 5.1, this SPR application proposes to add two emission units (Process #s 014-458 and 014-459) and remove one existing emission unit (Process #014-239) that contribute to FMMI's PTE. Oxygen Plant Cooling Tower 2 (Process #014-460) is considered a fugitive emission unit such that it does not contribute to FMMI's PTE.

The change in PTE from the added and removed emission units is presented in Table 16.1. As shown in Table 16.1, the net increases¹ in PTE from the emission units are below the permitting exemption thresholds. Consequently, FMMI is not required to meet the minor NSR requirements for any regulated minor NSR pollutants.

¹ ADEQ clarified in an email dated 1/6/2022 that "the minor NSR program allows netting when replacing equipment, i.e. when replacing a piece of equipment with another piece of equipment that has a higher PTE, you only need to compare the difference in PTE against the permitting exemption thresholds to determine if it is a minor NSR modification."

14.3 CALCULATION METHODOLOGY

The methodology used to calculate the changes in PTE as shown in Table 16.1 is presented in Appendix E (equivalent to the calculations presented in Section 5.1). The Excel spreadsheets used to make the calculations are reproduced in Appendix F. An electronic copy of the emission calculations will be provided via email with the SPR application.

Table 14.1 Change in PTE and Comparison to the Permitting Exemption Thresholds

Process Number	Process/Emission Unit Description	Non-Fugitive or Fugitive Classification	Change in PTE (tpy)					
			PM ₁₀	PM _{2.5}	CO	NO _x	SO ₂	VOC
Operation 014: Concentrate Leach Plant								
014-239	Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber	Non-Fugitive	-3.29	-3.29	--	--	--	-25.49
014-458	Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	Non-Fugitive	2.30	2.30	--	--	--	17.84
014-459	Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	Non-Fugitive	2.30	2.30	--	--	--	17.84
Total Change in PTE (tpy)			1.31	1.31	0	0	0	10.20
Permitting Exemption Thresholds for Minor NSR Modification Applicability Purposes			7.5	5	50	20	20	20

15 COMPLIANCE ASSURANCE MONITORING (CAM) ANALYSIS

Pursuant to 40 CFR 64.5, a CAM analysis is only required to be included in applications for: (a) initial Class I permits and/or significant permit revisions for large pollutant-specific emission units (PSEUs); and (b) renewal of Class I permits for non-large PSEUs. Large PSEUs are defined as those emission units with the potential to emit (taking into account control devices to the extent appropriate) of the applicable regulated air pollutant in an amount equal to or greater than 100% of the amount, in tons per year, required for a source to be classified as a major source.

As identified in Table 5.1, none of the emission units proposed as part of this SPR application are considered large PSEUs. Therefore, a CAM analysis is not required. CAM applicability of the affected PSEUs will be addressed in the application for FMMI's next Class I permit renewal.

16 IDENTIFICATION OF CONFIDENTIAL INFORMATION

FMMI claims confidentiality of the design of the CLP as identified in process flow diagrams. This application does not contain the confidential process flow diagrams and is, therefore, appropriate for public review. The process flow diagrams of the CLP are provided to ADEQ and other appropriate regulatory agencies under a separate confidential and proprietary submittal.

The process flow diagrams of the CLP, if made public, would divulge trade secrets of FMMI as defined by Arizona Revised Statutes (A.R.S.) §49-201. Processing of copper and molybdenum concentrate via pressure leaching has been developed by, and is intended for, the exclusive use of Freeport-McMoRan Inc. facilities. The CLP operations have been protected from public disclosure and efforts to maintain the operations as a trade secret will continue. There is no law that specifically requires the process flow diagrams to be disclosed to the public, and because FMMI has a substantial investment, in both time and money, into the development of the CLP operations, disclosure of the process flow diagrams is likely to cause substantial harm to FMMI's competitive position.

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

APPENDIX A STANDARD CLASS I PERMIT APPLICATION FORM

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Division
1110 West Washington • Phoenix, AZ 85007 • Phone: (602) 771-2338

STANDARD CLASS I PERMIT APPLICATION FORM
(As required by A.R.S. § 49-426, and Chapter 2, Article 3, Arizona Administrative Code)

1. Permit to be issued to (Business license name of organization that is to receive permit):
Freeport-McMoRan Morenci Inc.
2. Mailing Address: 4521 U.S. Highway 191
City: Morenci State: Arizona ZIP: 85540
3. Name (or names) of Owners/Principals: Freeport-McMoRan Morenci Inc.
Phone: 602-234-8100 Fax: 602-234-8337 Email: _____
4. Name of Owner's Agent: N/A
Phone: N/A Fax: N/A Email: N/A
5. Plant/Site Manager/Contact Person and Title: Brent Fletcher, Manager, Environmental Services
Phone: 928-865-6484 Fax: 928-865-7810 Email: bffletche@fmi.com
6. Plant Site Name: Freeport-McMoRan Morenci Inc.
7. Plant Site Location Address: 4521 U.S. Highway 191
City: Morenci County: Greenlee ZIP: 85540
Indian Reservation (if applicable, which one): N/A
Latitude/Longitude, Elevation: 33° 03' 54" N. Latitude/109° 20' 32" W. Longitude, 4,300 feet
Section/Township/Range: _____
8. General Nature of Business: Mining and processing of copper ore.
9. Type of Organization:
☒ Corporation ☐ Individual Owner ☐ Partnership ☐ Government Entity (Government Facility Code: _____)
☐ Other _____
10. Permit Application Basis: ☐ New Source ☒ Revision ☐ Renewal of Existing Permit
For renewal or modification, include existing permit number (and exp. date): #72683, 12/20/2023
Date of Commencement of Construction or Modification: Following issuance of the significant permit revision.
Primary Standard Industrial Classification Code: 1021
11. I certify that I have knowledge of the facts herein set forth, that the same are true, accurate, and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by ADEQ as public record. I also attest that I am in compliance with the applicable requirements of the Permit and will continue to comply with such requirements and any future requirements that become effective during the life of the Permit. I will present a certification of compliance to ADEQ no less than annually and more frequently if specified by ADEQ. I further state that I will assume responsibility for the construction, modification, or operation of the source in accordance with Arizona Administrative Code, Title 18, Chapter 2 and any permit issued thereof.
Signature of Responsible Official: [Signature] for Mike Kridel
Official Title of Signer: Sr. Vice President, Morenci
Typed or Printed Name of Signer: Mike Kridel
Date: 9-27-2022 Telephone Number: 928-865-6200

APPENDIX B EQUIPMENT LIST

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment/Process ID Number
Operation 014: Concentrate Leach Plant						
CLP Feed Hopper	29.1 tph	NA	NA	NA	NA	014-235
CLP Feed Conveyor	29.1 tph	NA	NA	NA	NA	014-341
Natural Gas Startup Boiler	17.64 MMBtu/hr at 4,000 feet (21 MMBtu/hr rated)	NA	NA	NA	Post-06/09/1989	014-242
Pressure Leach Vessel 1	20 tph	NA	NA	NA	NA	014-458
Vent Gas Cyclone 1	NA	NA	NA	NA	NA	
Spray Condenser 1	NA	NA	NA	NA	NA	
PLV Scrubber 1	NA	NA	NA	NA	NA	
Pressure Leach Vessel 2	20 tph	NA	NA	NA	NA	014-459
Vent Gas Cyclone 2	NA	NA	NA	NA	NA	
Spray Condenser 2	NA	NA	NA	NA	NA	
PLV Scrubber 2	NA	NA	NA	NA	NA	
PLV Cooling Tower	600,000 gph	NA	NA	NA	NA	014-240
Oxygen Plant Cooling Tower 1	309,000 gph	NA	NA	NA	NA	014-241

Type of Equipment	Maximum Rated Capacity	Make	Model	Serial Number	Date of Manufacture	Equipment/Process ID Number
Oxygen Plant Cooling Tower 2	3,600 gpm	NA	NA	NA	NA	014-460
Flocculant Bin	0.5 tph	NA	NA	NA	NA	014-348
Flocculant Bin Vent	500 acfm	NA	NA	NA	NA	
Flocculant Feeder	0.5 tph	NA	NA	NA	NA	
Lime Silo	0.20 tph	Steel Structure, Inc.	NA	72493	2007	014-254
Lime Silo Bin Vent	NA	Modu-Kleen	Series 343-A	8000107	NA	
Super Sack Unloader	0.04 tph	NA	NA	NA	NA	014-253
Super Sack Unloader Bin Vent	NA	Modu-Kleen	Series 250	1098219	NA	

* The table only includes equipment associated with the CLP following the proposed facility changes.

APPENDIX C EMISSION SOURCE FORM

Emission Source Form
September 2022

Regulated Air Pollutant Data					Emission Point Discharge Diameters									
Emission Point		Chemical Composition of Total Stream	Air Pollutant Emission Rate		UTM Coordinates of Emission Point			Stack Sources					Non-Point	
Number	Name	Regulated Air Pollutant Name	lb/hr	tpy	Zone	East (Meters)	North (Meters)	Height Above Ground (feet)	Height Above Structure (feet)	Exit Data			Sources	
										Dia. (ft)	Vel. (fps)	Temp. (°F)	Length (ft)	Width (ft)
014-458	Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	PM	0.53	2.30	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	N/A	N/A
		PM ₁₀	0.53	2.30										
		PM _{2.5}	0.53	2.30										
		VOC	4.07	17.84										
014-459	Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	PM	0.53	2.30	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	N/A	N/A
		PM ₁₀	0.53	2.30										
		PM _{2.5}	0.53	2.30										
		VOC	4.07	17.84										
014-460	Oxygen Plant Cooling Tower 2	PM	0.27	1.18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TBD	TBD
		PM ₁₀	0.20	0.86										
		PM _{2.5}	0.0006	0.003										

Ground Elevation of Facility above Mean Sea Level: 4,300 feet

ADEQ Standard Conditions are 239 K and 101.3 kilopascals (A.A.C. R18-2-101)

* Only includes emission units addressed in this SPR application and that will remain in or be added to Class I Air Quality Permit #72683.

APPENDIX D PROCESS FLOW DIAGRAM

CONFIDENTIAL AND PROPRIETARY
(see Section 18)

Figure D.1 Concentrate Leach Plant – Prior to the Proposed Facility Changes

CONFIDENTIAL AND PROPRIETARY
(see Section 18)

Figure D.2 Concentrate Leach Plant – Following the Proposed Facility Changes

APPENDIX E CALCULATION METHODOLOGY FOR POTENTIAL EMISSION CALCULATIONS

E.1 INTRODUCTION

The methodology used to calculate the emission rates presented in Sections 5 and 16 and Appendices C and F of this application is explained in the following sections, including identification of process rates, emission factors, and control efficiencies. Emissions are calculated using the following general equations:

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

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

where:

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

E.2 CONTROLLED PRESSURE LEACH VESSELS

E.2.1 Process Rates

The annual and hourly process rates for the controlled PLVs are based on the hours of operation. The process rates of the controlled PLVs are presented in Table E.1.

E.2.2 Emission Factors

PM, PM₁₀, and VOC emissions from the controlled PLVs both prior to and following the proposed facility changes are based on voluntary emission limitations (see Section 7). PM_{2.5} emissions are assumed equal to PM₁₀ emissions as a worst-case emission estimate.

The emission factors for the controlled PLVs are presented in Table E.1.

E.2.3 Control Efficiencies

Besides best operating practices, no additional control methods are used on the controlled PLVs.

E.3 OXYGEN PLANT COOLING TOWER 2

E.3.1 Process Rates

The annual and hourly process rates for Oxygen Plant Cooling Tower 2 are based on the water circulation rates and hours of operation. The annual and hourly process rates for Oxygen Plant Cooling Tower 2 are presented in Table E.2.

E.3.2 Emission Factors

PM, PM₁₀, and PM_{2.5} emissions from Oxygen Plant Cooling Tower 2 are calculated using the following equation adapted from AP-42 Section 13.4 (01/95):

$$EF = (k) \left(\frac{Q_d}{100} \right) \left(\frac{8.34 \text{ lb circulating water}}{\text{gallon circulating water}} \right) \left(\frac{TDS}{10^6} \right) \left(\frac{1,000 \text{ gallons circulating water}}{1,000 \text{ gallons circulating water}} \right)$$

where:

EF = emission factor (lb/1,000 gallons)

k = particle size fractions

The particle size fractions were determined using the Reisman/Frisbie methodology from "Calculating Realistic PM₁₀ Emissions from Cooling Towers." This resulted in particle size fractions of 1 for PM, 0.73 for PM₁₀, and 0.0022 for PM_{2.5}.

Q_d = maximum liquid drift rate percentage (see Table E.2)

TDS = parts per million (ppm) of total dissolved solids (TDS) in the drift (see Table E.2)

The emission factors for Oxygen Plant Cooling Tower 2 are presented in Table E.2.

E.3.3 Control Efficiencies

Besides the required use of drift eliminators, no additional control methods are used on Oxygen Plant Cooling Tower 2. The drift rate of the eliminator is incorporated into the emission factor described above.

Table E.1 Process Rate and Emission Factor Information for the Controlled Pressure Leach Vessels

Process Number	Emission Unit Description	Process Rates			Emission Factors (lb/hour)			
		Hourly (hr/hr)	Annual (hr/yr)	Description	PM	PM ₁₀	PM _{2.5}	VOC
Operation 014: Concentrate Leach Plant								
014-239	Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber	1	8,760	Assume operation of 60 minutes/hour and 8,760 hours/year.	0.75	0.75	0.75	5.82
014-458	Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	1	8,760	Assume operation of 60 minutes/hour and 8,760 hours/year.	0.525	0.525	0.525	4.074
014-459	Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	1	8,760	Assume operation of 60 minutes/hour and 8,760 hours/year.	0.525	0.525	0.525	4.074

Table E.2 Process Rate and Emission Factor Information for Oxygen Plant Cooling Tower 2

Process Number	Emission Unit Description	Water Circulation Rate (gpm)	Process Rates			Emission Factor Inputs		Emission Factors (lb/1,000 gal)		
			Hourly (1,000 gal/hr)	Annual (1,000 gal/yr)	Description	TDS (ppm)	Maximum Liquid Drift Rate (%)	PM	PM ₁₀	PM _{2.5}
Operation 014: Concentrate Leach Plant										
014-460	Oxygen Plant Cooling Tower 2	3,600	216	1,892,160	Assume operation of 60 minutes/hour and 8,760 hours/year.	1,500	0.01	0.0013	0.00091	0.0000028

APPENDIX F EMISSION INVENTORY TABLES FOR POTENTIAL EMISSION CALCULATIONS

Table F.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Input Information		Units	Information Description
		Prior to the Proposed Changes	Following the Proposed Changes		
Operation 014: Concentrate Leach Plant					
014-239	Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber	8,760	--	hours	Annual hours of operation (assume continuous operation)
		1	--	hours	Hourly hours of operation (assume continuous operation)
		0.75	--	lb/hr	PM Emission Limit
		0.75	--	lb/hr	PM ₁₀ Emission Limit
		5.82	--	lb/hr	VOC Emission Limit
014-458	Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	--	8,760	hours	Annual hours of operation (assume continuous operation)
		--	1	hours	Hourly hours of operation (assume continuous operation)
		--	0.525	lb/hr	PM Emission Limit
		--	0.525	lb/hr	PM ₁₀ Emission Limit
		--	4.074	lb/hr	VOC Emission Limit
014-459	Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	--	8,760	hours	Annual hours of operation (assume continuous operation)
		--	1	hours	Hourly hours of operation (assume continuous operation)
		--	0.525	lb/hr	PM Emission Limit
		--	0.525	lb/hr	PM ₁₀ Emission Limit
		--	4.074	lb/hr	VOC Emission Limit

Table F.1 Emission Inventory Inputs - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Input Information		Units	Information Description
		Prior to the Proposed Changes	Following the Proposed Changes		
014-460	Oxygen Plant Cooling Tower 2	--	1,892,160	1,000 gallons	Annual quantity of water circulated (assume equal to the maximum capacity of the water circulation)
		--	216	1,000 gallons	Hourly quantity of water circulated (assume equal to the maximum capacity of the water circulation)
		--	1,500	ppm	Maximum total dissolved solids (TDS)
		--	0.01	%	Maximum liquid drift rate

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

Process Code	Process Description	Emission Factors				Process Rate Units	Particulate Matter Emission Factor Inputs ^a			Reference
		PM	PM ₁₀	PM _{2.5}	Units		k (PM)	k (PM ₁₀)	k (PM _{2.5})	
Pollution Control Devices										
PLVS	Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber	0.75	0.75	0.75	lb/hr	hours	--	--	--	Voluntarily Accepted Limits - Condition X.B.1.c of Attachment "C" of Class I Air Quality Permit #72683, Assume PM _{2.5} =PM ₁₀
PLVS1	Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	0.525	0.525	0.525	lb/hr	hours	--	--	--	Proposed Voluntarily Accepted Limits, Assume PM _{2.5} =PM ₁₀
PLVS2	Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	0.525	0.525	0.525	lb/hr	hours	--	--	--	Proposed Voluntarily Accepted Limits, Assume PM _{2.5} =PM ₁₀
Cooling Towers										
OCT2	Oxygen Plant Cooling Tower 2	0.0013	0.00091	0.0000028	lb/1000 gal	1000 gal	1	0.73	0.0022	AP-42 Section 13.4 (01/95), maximum TDS value and liquid drift, and particle size fractions from the Reisman/Frisbie methodology

^a k = particle size multipliers

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

Control Code	Control Description	Control Efficiency (%)	Reference
BOP	Best Operating Practices	0%	--

Emission Inventory Tables for Potential Emission Calculations
September 2022

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

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (tpy)		PM ₁₀ Emissions (tpy)		PM _{2.5} Emissions (tpy)	
						PM	PM ₁₀	PM _{2.5}				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Affected Emissions Units - Prior to the Proposed Changes																	
Operation 014: Concentrate Leach Plant																	
014-239	Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber	PLVS	NF	8,760	hours	0.75	0.75	0.75	lb/hr	BOP	0%	3.29	3.29	3.29	3.29	3.29	3.29
Total of Non-Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:												3.29	3.29	3.29	3.29	3.29	3.29
Total of Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:												0	0	0	0	0	0
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:												3.29	3.29	3.29	3.29	3.29	3.29
Affected Emissions Units - Following the Proposed Changes																	
Operation 014: Concentrate Leach Plant																	
014-458	Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	PLVS1	NF	8,760	hours	0.525	0.525	0.525	lb/hr	BOP	0%	2.30	2.30	2.30	2.30	2.30	2.30
014-459	Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	PLVS2	NF	8,760	hours	0.525	0.525	0.525	lb/hr	BOP	0%	2.30	2.30	2.30	2.30	2.30	2.30
014-460	Oxygen Plant Cooling Tower 2	OCT2	F	1,892,160	1000 gal	0.0013	0.00091	0.0000028	lb/1000 gal	BOP	0%	1.18	1.18	0.86	0.86	0.003	0.003
Total of Non-Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:												4.60	4.60	4.60	4.60	4.60	4.60
Total of Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:												1.18	1.18	0.86	0.86	0.003	0.003
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:												5.78	5.78	5.46	5.46	4.60	4.60
Total Change in Non-Fugitive Emissions:												1.31	1.31	1.31	1.31	1.31	1.31
Total Change in Fugitive Emissions:												1.18	1.18	0.86	0.86	0.003	0.003
Total Change in Non-Fugitive and Fugitive Emissions:												2.50	2.50	2.17	2.17	1.32	1.32

Emission Inventory Tables for Potential Emission Calculations
September 2022

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

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	Emission Factors			EF Units	Control Code	Pick-up or Control Eff. (%)	PM Emissions (lb/hr)		PM ₁₀ Emissions (lb/hr)		PM _{2.5} Emissions (lb/hr)	
						PM	PM ₁₀	PM _{2.5}				Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Affected Emissions Units - Prior to the Proposed Changes																	
Operation 014: Concentrate Leach Plant																	
014-239	Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber	PLVS	NF	1	hours	0.75	0.75	0.75	lb/hr	BOP	0%	0.75	0.75	0.75	0.75	0.75	0.750
Total of Non-Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:												0.75	0.75	0.75	0.75	0.75	0.75
Total of Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:												0	0	0	0	0	0
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:												0.75	0.75	0.75	0.75	0.75	0.75
Affected Emissions Units - Following the Proposed Changes																	
Operation 014: Concentrate Leach Plant																	
014-458	Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	PLVS1	NF	1	hours	0.525	0.525	0.525	lb/hr	BOP	0%	0.53	0.53	0.53	0.53	0.53	0.53
014-459	Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	PLVS2	NF	1	hours	0.525	0.525	0.525	lb/hr	BOP	0%	0.53	0.53	0.53	0.53	0.53	0.53
014-460	Oxygen Plant Cooling Tower 2	OCT2	F	216	1000 gal	0.0013	0.00091	0.0000028	lb/1000 gal	BOP	0%	0.27	0.27	0.20	0.20	0.0006	0.0006
Total of Non-Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:												1.05	1.05	1.05	1.05	1.05	1.05
Total of Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:												0.27	0.27	0.20	0.20	0.0006	0.0006
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:												1.32	1.32	1.25	1.25	1.05	1.05
Total Change in Non-Fugitive Emissions:												0.30	0.30	0.30	0.30	0.30	0.30
Total Change in Fugitive Emissions:												0.27	0.27	0.20	0.20	0.0006	0.0006
Total Change in Non-Fugitive and Fugitive Emissions:												0.57	0.57	0.50	0.50	0.30	0.30

Table F.6 Gaseous Emission Factors - Potential Emission Calculations

Process Code	Process Description	Emission Factor										Process Rate Units	Reference
		CO	NO _x	SO ₂	VOC	H ₂ SO ₄	H ₂ S	CO ₂	CH ₄	N ₂ O	Units		
Pollution Control Devices													
PLVS	Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber	0	0	0	5.82	0.75	0	0	0	0	lb/hr	hours	Voluntarily Accepted Limits - Conditions X.B.1.c and X.B.3 of Attachment "C" of Class I Air Quality Permit #72683, Assume PM=H ₂ SO ₄
PLVS1	Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	0	0	0	4.074	0.525	0	0	0	0	lb/hr	hours	Proposed Voluntarily Accepted Limits, Assume PM=H ₂ SO ₄
PLVS2	Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	0	0	0	4.074	0.525	0	0	0	0	lb/hr	hours	Proposed Voluntarily Accepted Limits, Assume PM=H ₂ SO ₄

Emission Inventory Tables for Potential Emission Calculations
September 2022

Table F.7 Annual Gaseous Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Annual Process Rate	Rate Units	Emission Factors									EF Units	Emissions (tpy)								
						CO	NO _x	SO ₂	VOC	H ₂ SO ₄	H ₂ S	CO ₂	CH ₄	N ₂ O		CO	NO _x	SO ₂	VOC	H ₂ SO ₄	H ₂ S	CO ₂	CH ₄	N ₂ O
Affected Emissions Units - Prior to the Proposed Changes																								
Operation 014: Concentrate Leach Plant																								
014-239	Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber	PLVS	NF	8,760	hours	0	0	0	5.82	0.75	0	0	0	0	lb/hr	0	0	0	25.49	3.29	0	0	0	0
Total of Non-Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:																0	0	0	25.49	3.29	0	0	0	0
Total of Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:																0	0	0	0	0	0	0	0	0
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:																0	0	0	25.49	3.29	0	0	0	0
Affected Emissions Units - Following the Proposed Changes																								
Operation 014: Concentrate Leach Plant																								
014-458	Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	PLVS1	NF	8,760	hours	0	0	0	4.074	0.525	0	0	0	0	lb/hr	0	0	0	17.84	2.30	0	0	0	0
014-459	Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	PLVS2	NF	8,760	hours	0	0	0	4.074	0.525	0	0	0	0	lb/hr	0	0	0	17.84	2.30	0	0	0	0
Total of Non-Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:																0	0	0	35.69	4.60	0	0	0	0
Total of Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:																0	0	0	0	0	0	0	0	0
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:																0	0	0	35.69	4.60	0	0	0	0
Total Change in Non-Fugitive Emissions:																0	0	0	10.20	1.31	0	0	0	0
Total Change in Fugitive Emissions:																0	0	0	0	0	0	0	0	0
Total Change in Non-Fugitive and Fugitive Emissions:																0	0	0	10.20	1.31	0	0	0	0

Emission Inventory Tables for Potential Emission Calculations

September 2022

Table F.8 Hourly Gaseous Emissions - Potential Emission Calculations

Process Number	Process/Emission Unit Description	Process Code	Non-Fug. (NF) / Fug. (F)	Hourly Process Rate	Rate Units	Emission Factors									EF Units	Emissions (lb/hr)								
						CO	NO _x	SO ₂	VOC	H ₂ SO ₄	H ₂ S	CO ₂	CH ₄	N ₂ O		CO	NO _x	SO ₂	VOC	H ₂ SO ₄	H ₂ S	CO ₂	CH ₄	N ₂ O
Affected Emissions Units - Prior to the Proposed Changes																								
Operation 014: Concentrate Leach Plant																								
014-239	Pressure Leach Vessels Controlled by the PLV 2-Stage Scrubber	PLVS	NF	1	hours	0	0	0	5.82	0.75	0	0	0	0	lb/hr	0	0	0	5.82	0.75	0	0	0	0
Total of Non-Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:																0	0	0	5.82	0.75	0	0	0	0
Total of Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:																0	0	0	0	0	0	0	0	0
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Prior to the Proposed Changes:																0	0	0	5.82	0.75	0	0	0	0
Affected Emissions Units - Following the Proposed Changes																								
Operation 014: Concentrate Leach Plant																								
014-458	Pressure Leach Vessel 1 Controlled by PLV Scrubber 1	PLVS1	NF	1	hours	0	0	0	4.074	0.525	0	0	0	0	lb/hr	0	0	0	4.07	0.525	0	0	0	0
014-459	Pressure Leach Vessel 2 Controlled by PLV Scrubber 2	PLVS2	NF	1	hours	0	0	0	4.074	0.525	0	0	0	0	lb/hr	0	0	0	4.07	0.525	0	0	0	0
Total of Non-Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:																0	0	0	8.15	1.05	0	0	0	0
Total of Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:																0	0	0	0	0	0	0	0	0
Total of Non-Fugitive and Fugitive Emissions for Affected Emissions Units - Following the Proposed Changes:																0	0	0	8.15	1.05	0	0	0	0
Total Change in Non-Fugitive Emissions:																0	0	0	2.33	0.30	0	0	0	0
Total Change in Fugitive Emissions:																0	0	0	0	0	0	0	0	0
Total Change in Non-Fugitive and Fugitive Emissions:																0	0	0	2.33	0.30	0	0	0	0

APPENDIX G SUGGESTED DRAFT PERMIT LANGUAGE

SIGNIFICANT PERMIT REVISION DESCRIPTION

This significant permit revision authorizes Freeport-McMoRan Morenci Inc., the Permittee, to make the following changes to the Concentrate Leach Plant: (a) increase the maximum capacity of each Pressure Leach Vessel (PLV) to 20 tons per hour (tph); (b) add an additional cooling tower at the Oxygen Plant; and (c) replace the existing pollution control equipment with a two-train control system (one for each PLV).

ATTACHMENT "A": GENERAL PROVISIONS

Addenda (Significant Revision # To be assigned by ADEQ) **to Operating Permit #72683 for** **Freeport-McMoRan Morenci Inc.**

No changes shall be made to the requirements set forth in Attachment "A" of Class I Air Quality Permit #72683.

ATTACHMENT "B": SPECIFIC CONDITIONS

Addenda (Significant Revision # To be assigned by ADEQ) **to Operating Permit #72683 for** **Freeport-McMoRan Morenci Inc.**

No changes shall be made to the requirements set forth in Attachment "B" of Class I Air Quality Permit #72683.

ATTACHMENT "C": MINING, ORE PROCESSING, AND SUPPORTING OPERATIONS

Addenda (Significant Revision # To be assigned by ADEQ) **to Operating Permit #72683 for** **Freeport-McMoRan Morenci Inc.**

The following changes shall be made to the requirements set forth in Attachment "C" of Class I Air Quality Permit #72683.

X. CONCENTRATE LEACH PLANT

A. Applicability

Section X applies to operations associated with the Concentrate Leach Plant (Operation 014) as identified in the last column of the Equipment List in Attachment "E."

B. Emission Limitations and Standards

1. Particulate Matter

- a. The Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere in any one hour in total quantities in excess of the amounts calculated by one of the following equations:

[A.A.C. R18-2-730.A.1]

- (1) For process sources having a process weight rate of 60,000 pounds per hour (30 tons per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$$E = 4.10P^{0.67}$$

Where:

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

P = the process weight rate in tons-mass per hour.

- (2) For process weight rate greater than 60,000 pounds per hour (30 tons per hour), the maximum allowable emissions shall be determined by the following equation:

$$E = 55.0P^{0.11} - 40$$

Where "E" and "P" are defined as indicated in Condition X.B.1.a(1) above.

- b. For purposes of Condition X.B.1.a above, 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.

[A.A.C. R18-2-730.B]

- ~~c. The Permittee shall not allow the emissions of PM or PM₁₀ from Process #014-239 to exceed 0.75 lb/hr as measured at the PLV 2-Stage Scrubber exhaust.~~

[A.A.C. R 18-2-306.01.A and -331.A.3.a]

[Material permit conditions are indicated by underline and italics]

- ~~c. The Permittee shall not allow the emissions of PM or PM₁₀ from Process #014-458 to exceed 0.525 lb/hr as measured at the PLV Scrubber 1 exhaust.~~

[A.A.C. R 18-2-306.01.A and -331.A.3.a]

[Material permit conditions are indicated by underline and italics]

- d. The Permittee shall not allow the emissions of PM or PM₁₀ from Process #014-459 to exceed 0.525 lb/hr as measured at the PLV Scrubber 2 exhaust.

[A.A.C. R 18-2-306.01.A and -331.A.3.a]

[Material permit conditions are indicated by underline and italics]

2. Opacity

- a. The opacity of any plume or effluent from any existing, stationary, point source shall not be greater than 20%.

[A.A.C. R18-2-702.B.3]

- b. If the presence of uncombined water is the only reason for an exceedance of the visible emissions requirement in Condition X.B.2.a above, the exceedance shall not constitute a violation of the applicable opacity limit.

[A.A.C. R18-2-702.C]

3. Volatile Organic Compounds (VOC)

- ~~The Permittee shall not allow the emissions VOC from Process #014-239 to exceed 5.82 lb/hr as measured at the PLV 2-Stage Scrubber exhaust.~~

[A.A.C. R 18-2-306.01.A and -331.A.3.a]

[Material permit conditions are indicated by underline and italics]

- a. The Permittee shall not allow the emissions of VOC from Process #014-458 to exceed 4.074 lb/hr as measured at the PLV Scrubber 1 exhaust.

[A.A.C. R 18-2-306.01.A and -331.A.3.a]

[Material permit conditions are indicated by underline and italics]

- b. The Permittee shall not allow the emissions of VOC from Process #014-459 to exceed 4.074 lb/hr as measured at the PLV Scrubber 2 exhaust.

[A.A.C. R 18-2-306.01.A and -331.A.3.a]

[Material permit conditions are indicated by underline and italics]

C. Operational Limitations

1. The Permittee shall not cause, allow, or permit the emission of gaseous or odorous materials from equipment, operations or premises under its control in such quantities or concentrations as to cause air pollution.

[A.A.C. R18-2-730.D]

2. Materials including solvents or other volatile compounds, paints, acids, alkalies, pesticides, fertilizers and manure 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.

[A.A.C. R18-2-730.F]

3. 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 Director may require the installation of abatement equipment or the alteration of such stack, vent, or other outlet by the Permittee to a degree that will adequately dilute, reduce or eliminate the discharge of air pollution to adjoining property.

[A.A.C. R18-2-730.G]

D. Air Pollution Prevention and Control Requirements

1. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate mist eliminators on the following equipment to minimize particulate matter emissions and comply with the applicable emission limitations and standards of Conditions X.B.1 and X.B.2 above.

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

- a. PLV Cooling Tower (Process #014-240)
- b. Oxygen Plant Cooling Tower 1 (Process #014-241)
- c. Oxygen Plant Cooling Tower 2 (Process #014-460)

2. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, operate bin vent filters on the following equipment to minimize particulate matter emissions and comply with the applicable emission limitations and standards of Conditions X.B.1 and X.B.2 above.

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

- a. Flocculant Bin (Process #014-348) (Vented inside)
- b. Lime Silo (Process #014-254)
- c. Supersack Unloader (Process #014-253)

3. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate Vent Gas Cyclone 1, Spray Condenser 1, and PLV Scrubber 1the PLV 2-Stage Scrubber to minimize particulate matter and volatile organic compound emissions from the Pressure Leach Vessel (Process #014-239)Pressure Leach Vessel 1

(Process #014-458) and comply with the applicable emission limitations and standards of Condition X.B.1.c and Condition X.B.3 above.

[A.A.C. R18-2-306.A.2 and -331.A.3.e]

[Material permit conditions are indicated by underline and italics]

4. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate Vent Gas Cyclone 2, Spray Condenser 2, and PLV Scrubber 2 to minimize particulate matter emissions from Pressure Leach Vessel 2 (Process #014-459) and comply with the applicable emission limitations and standards of Condition X.B.1.d above.

[A.A.C. R18-2-306.A.2 and -331.A.3.e]

[Material permit conditions are indicated by underline and italics]

E. Monitoring, Recordkeeping, and Reporting Requirements

The Permittee shall conduct the periodic opacity monitoring method specified in Condition I.C of Attachment "B" on a bi-weekly basis for all emission units subject to Section X.

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

F. Performance Testing Requirements

1. ~~The Permittee shall conduct performance tests for PM, PM₁₀, and VOC on the PLV 2-Stage Scrubber (Process #014-239) a minimum of once during the permit term to demonstrate compliance with the emission limits in Conditions X.B.1.c and X.B.3 above.~~

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

1. Within 180 days of initial startup of Process #s 014-458 and 014-459, the Permittee shall conduct performance tests for PM, PM₁₀, and VOC on PLV Scrubber 1 (Process #014-458) and PLV Scrubber 2 (Process #014-459) to demonstrate compliance with the applicable emission limits in Conditions X.B.1.c, X.B.1.d, X.B.3.a, and X.B.3.b above.

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

2. If the results of any performance test required by Condition X.F.1 above is less than or equal to 70% of the applicable emission limits in Conditions X.B.1.c, X.B.1.d, X.B.3.a, and X.B.3.b above, no further testing is required for PLV Scrubber 1 (Process #014-458) or PLV Scrubber 2 (Process #014-459) ~~the PLV 2-Stage Scrubber (Process #014-239)~~ during the permit term.

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

3. If the result of any performance test required by Condition X.F.1 above is greater than 70% of the applicable emission limits in Conditions X.B.1.c, X.B.1.d, X.B.3.a, and or X.B.3.b above, the Permittee shall conduct subsequent performance test(s) for PM, PM₁₀, and/or VOC on the stack of the PLV Scrubber 1 (Process #014-458) and/or PLV Scrubber 2 (Process #014-

~~459)PLV 2-Stage Scrubber (Process #014-239)~~ on an annual basis (between 11 and 13 months from the date of the previous test).

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

4. If the result of any subsequent performance test required by Condition X.F.3 above is below 70% of the applicable emission limits in Conditions X.B.1.c, ~~X.B.1.d, X.B.3.a, and-or X.B.3.b~~ above, no further testing is required for the ~~PLV Scrubber 1 (Process #014-458) and/or PLV Scrubber 2 (Process #014-459)PLV 2-Stage Scrubber (Process #014-239)~~ during the permit term.

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

5. EPA Reference Method 5 in 40 CFR 60, Appendix A and (if necessary) EPA Reference Method 202 specified in 40 CFR 51, Appendix M shall be used to determine emissions of PM. All particulate matter measured by the above reference method can be considered to have an aerodynamic diameter less than 10 microns or EPA Reference Method 201 or 201A and (if necessary) Method 202 specified in 40 CFR 51, Appendix M can be used to determine emissions of PM₁₀.

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

6. EPA Reference Method 25A in 40 CFR 60, Appendix A shall be used to determine emissions of VOC.

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

G. Permit Shield

Compliance with the requirements of Section X shall be deemed compliance with A.A.C. R18-2-702.B.3, -702.C, -730.A.1, -730.B, -730.D, -730.F, and -730.G.

[A.A.C. R18-2-325]

ATTACHMENT "D": METCALF POWER PLANT (OPERATION 005)

Addenda (Significant Revision # To be assigned by ADEQ)
to Operating Permit #72683 for
Freeport-McMoRan Morenci Inc.

No changes shall be made to the requirements set forth in Attachment "D" of Class I Air Quality Permit #72683.

ATTACHMENT "E": EQUIPMENT LIST
Addenda (Significant Revision # To be assigned by ADEQ)
to Operating Permit #72683 for
Freeport-McMoRan Morenci Inc.

The following changes shall be made to the equipment list in Attachment "E" of Class I Air Quality Permit #72683.

Process Number	Equipment Description	Maximum Rated Capacity	Make	Model	Serial Number	Date of Mfg.	Applicable Section or Condition
Operation 014: Concentrate Leach Plant							
014-239	Pressure Leach Vessel	29.1 tph	NA	NA	NA	NA	X of Attachment "C" (730)
	PLV 2-Stage Scrubber	8,760 hours/year	MikroPul	Multi-Venturi	NA	2005	X of Attachment "C" (730)
014-458	<u>Pressure Leach Vessel 1</u>	<u>20 tph</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>X of Attachment "C" (730)</u>
	<u>Vent Gas Cyclone 1</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>X of Attachment "C" (730)</u>
	<u>Spray Condenser 1</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>X of Attachment "C" (730)</u>
	<u>PLV Scrubber 1</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>X of Attachment "C" (730)</u>

Process Number	Equipment Description	Maximum Rated Capacity	Make	Model	Serial Number	Date of Mfg.	Applicable Section or Condition
Operation 014: Concentrate Leach Plant (cont'd)							
<u>014-459</u>	<u>Pressure Leach Vessel 2</u>	<u>20 tph</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>X of Attachment "C" (730)</u>
	<u>Vent Gas Cyclone 2</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>X of Attachment "C" (730)</u>
	<u>Spray Condenser 2</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>X of Attachment "C" (730)</u>
	<u>PLV Scrubber 2</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>X of Attachment "C" (730)</u>
014-241	Oxygen Plant Cooling Tower <u>1</u>	309,000 gph	NA	NA	NA	NA	X of Attachment "C" (730)
<u>014-460</u>	<u>Oxygen Plant Cooling Tower 2</u>	<u>3,600 gpm</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>X of Attachment "C" (730)</u>

APPENDIX H APPLICATION ADMINISTRATIVE COMPLETENESS CHECKLIST

Requirement		Meets Requirement?			Comment
		Yes	No	N/A	
1.	Has the standard application form been completed?	X			See Appendix A.
2.	Has the responsible official signed the standard application form?	X			See Appendix A.
3.	Has a process description been provided?	X			See Section 2.1.
4.	Are the facility's emissions documented with all appropriate supporting information?	X			See Section 5 and Appendices C, E, and F.
5.	Is the facility subject to Minor NSR requirements? [If the answer is "Yes," answer 6a, 6b, and 6c, as applicable. If the answer is "No", skip to 7.]			X	See Section 14.
6.a	If the facility chooses to implement RACT, is the RACT determination included for the affected pollutants for all affected emission units?			X	The facility is not subject to minor NSR requirements. See Section 14.
6.b	If the facility chooses to demonstrate compliance with NAAQS by screen modeling, is the modeling analysis included?				
6.c	If refined modeling has been conducted, is a comprehensive modeling report along with all modeling files included?				

Requirement		Meets Requirement?			Comment
		Yes	No	N/A	
7.	Does the application include an equipment list with the type, name, make, model, serial number, maximum rated capacity, and date of manufacture?	X			See Appendix B.
8.	Does the application include an identification and description of pollution controls? (if applicable)	X			See Section 4.
9.	For any application component claimed as confidential, are the requirements of A.R.S. 49-432 and A.A.C. R18-2-305 addressed?	X			See Section 16.
10.	For any current non-compliance issue, is a compliance schedule attached?			X	See Section 10.
11.	For minor permit revision that will make a modification upon submittal of application, has a suggested draft permit been attached?	X			See Appendix G.
12.	For major sources, have all applicable requirements been identified?	X			See Section 8.
13.	For major sources, has a CAM applicability analysis been provided? For CAM applicable units, have CAM plans been provided?			X	See Section 15.
14.	For major sources subject to requirements under Article 4 of the A.A.C., have all necessary New Source Review analyses identified in the application been presented?			X	See Section 13.