

**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT No. 99662**

I. INTRODUCTION

This Class II air quality permit is for the continued operation of Excelsior Mining, Inc.'s Johnson Camp Mine. Permit No. 99662 renews and supersedes Permit No. 71633.

The facility's potential to emit (PTE) for all criteria air pollutants, without controls or operating limitations, is less than the major source thresholds, but greater than the significant level thresholds for particulate matter as identified in Arizona Administrative Code (A.A.C.) R18-2-101.131. Therefore, a Class II air quality permit is required for this facility in accordance with A.A.C. R18-2-302.B.2.a.

A. Company Information

Facility Name: Johnson Camp Mine

Mailing Address: 2999 N. 44th St., Suite 300
Phoenix, AZ 85018

Facility Location: Approximately 65 Miles East of Tucson, AZ
Latitude: 32° 5' 59" N
Longitude: 110° 4' 9.5" W

B. Attainment Classification

The facility is located in Cochise County which is an area that is designated as nonattainment for particulate matter with an aerodynamic diameter less than or equal to a nominal 10 microns (PM₁₀) and attainment or unclassified for all other criteria air pollutants.

II. PROCESS DESCRIPTION

A. Process Equipment

Open Pit Mining Drilling, Blasting, Loading, and Unloading

Mining operations begin with the drilling and blasting of ore at the two (2) open pits – the Burro Pit and the Copper Chief Pit. Drilling is used to create holes for the placement of blasting charges. Blasting is accomplished with the use of ammonium nitrate and fuel oil (ANFO). Haul trucks then transfer the ore that requires crushing to the uncrushed sulfide ore stockpile (Emission Unit [EU] ID SP-01) before transferring it to a mobile crusher (EU ID SC-01, CR-01) via loader. Run of mine ore (i.e., material that does not require additional crushing and is deemed suitable for immediate heap leaching) is directly delivered to the heap leach pads via haul trucks. Emissions from the drilling activities include PM₁₀ and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 microns (PM_{2.5}). Blasting results in emissions of nitrogen oxides (NO_x), carbon monoxide (CO),

sulfur dioxide (SO₂), PM₁₀, PM_{2.5} and hazardous air pollutants (HAPs). Particulate matter emissions are produced during the ANFO delivery and handling as well as loading and unloading activities.

Primary Crushing and Screening Operations/Stockpiles

Haul trucks transport ore from the uncrushed sulfide ore stockpile to the mobile crusher. Subsequently, the material is loaded to a screen (EU ID SC-01) and primary crusher (EU ID CR-01), where it undergoes the crushing process before being conveyed to the crushed ore stockpile. The crushing operations and the uncrushed and crushed sulfide ore stockpiles result in PM₁₀, PM_{2.5} and HAP emissions.

Heap Leaching

Dilute sulfuric acid is applied to the ore at the surface of the leach pad in large droplets close to the ground. The acid solution leaches through the ore to extract copper. The resulting pregnant leach solution (PLS) flows through a collection system from where it is then routed to the solution extraction tanks located at the Solvent Extraction/Electrowinning (SX/EW) Plant.

Storage Tanks and Process Vessels

Additional storage and process tanks (Equipment IDs TNK-01 through TNK-014) are being added to the facility to support copper ore processing operations. The emissions from the additional storage tanks will include PM, PM₁₀, PM_{2.5}, volatile organic compounds (VOCs) and sulfuric acid mist (H₂SO₄).

B. Control Devices

Dilute sulfuric acid applied to the ore during the heap leaching process is accomplished by using large droplets close to the ground, via a wobbler or buried surface emitters in order to eliminate acid mist emissions into the atmosphere.

The mixers, settlers, and various other tanks containing organic solution utilized during the SX process are covered to minimize evaporative losses of Volatile Organic Compounds (VOCs) and Hazardous Air Pollutants (HAPs).

An acid mist suppressing agent and tarps over the EW cells are used to control sulfuric acid emissions from electrowinning to limit evaporative losses. Other effective methods may be used as indicated in the permit.

Water sprayers are used to control particulate emissions from the mobile crusher and its associated transfer points.

III. COMPLIANCE HISTORY

During the previous permit term, the Arizona Department of Environmental Quality (ADEQ) conducted five (5) annual compliance certification reviews and one (1) physical inspection. No deficiencies were found during the annual compliance certification reviews or physical inspection.

Consent Order (CO) No. 213941

On June 30, 2023, the Permittee submitted a permit deviation report since a renewal permit application was not submitted on time. The renewal permit application should have been submitted by March 3, 2023, but it was instead submitted on July 6, 2023. As a result, CO No. 213941 was issued on July 25, 2023.

IV. EMISSIONS

Emissions are created by drilling, crushing and screening, electrolyte heaters, SX/EW processes, draindown pond evaporators and heap leach evaporative sprays as well as storage tanks at the facility. For the electrolyte heaters, PTE was calculated using *Compilation of Air Pollutant Emissions Factors* (AP-42) Chapter 1.4 on *Natural Gas Combustion*. For the SX/EW processes, PTE was calculated using emission factors from the *Hydrometallurgy of Copper Presentation (1999)* as submitted by the facility as part of their 2013 renewal application, and the *Measurement of Sulfuric Acid Mist Emissions from the Cyprus Twin Buttes Copper Company Electrowinning Tankhouse Report (02/98)* as submitted by Rosemont Copper Company on March 19, 2012, and approved by ADEQ. For the draindown pond evaporators and heap leach evaporative sprays, PTE was calculated using the *Development of Pond Evaporation System Site-Specific Emission Factors Report* as submitted to ADEQ in July 2015. For the storage tanks, PTE was calculated using BREEZE TankESP Software using AP-42 Chapter 7 on *Liquid Storage Tanks*. For crushing and screening operations, PTE was calculated using emission factors from AP-42 Chapter 11.19.2 on *Crushed Stone Processing and Pulverized Mineral Processing*. For drilling operations, PTE was calculated using emission factors from AP-42 Chapter 11.9 on *Western Surface Coal Mining*.

The facility's PTE is provided in Table 1:

Table 1: Potential to Emit (tpy)

Pollutant	Previous PTE	Change in PTE	Current PTE	Permitting Exemption Threshold	Minor NSR Triggered?
NO _x	4.09	+0.00	4.09	20	No
PM ₁₀	14.90	+4.37	19.27	7.5	No
PM _{2.5}	11.16	+0.86	12.02	5	No
CO	1.72	+0.00	1.72	50	No
SO ₂	0.00	+0.00	0.00	20	No
VOCs	3.78	+0.01	3.79	20	No
HAPs	1.35	+2.25	3.60	N/A	No

V. VOLUNTARILY ACCEPTED EMISSION LIMITATIONS AND STANDARDS

The permit contains the following voluntary emission limitations and standards:

A. Solvent Extraction/Electrowinning Processes

The facility accepted voluntary emission standards for the SX tanks and the EW Tankhouse Cells in order to control acid emissions. The SX tanks are required to be covered and the EW Tankhouse Cells are required to have dispersion balls (or an equivalent control method). The control requirement was incorporated into Installation Permit No. 46673 on August 18, 2008.

B. Evaporation Processes

The facility accepted voluntary limitations for the PLS/Draindown Pond Evaporators and Heap Leach Evaporative Spray Nozzles in order to control particulate matter emissions. These were incorporated as amended by Minor Permit Revision No. 63302 on March 14, 2016.

C. Electrolyte Heaters

The facility accepted voluntary fuel restrictions on the electrolyte heaters in order to control sulfur dioxide emissions and maintain compliance with the National Ambient Air Quality Standards. These were incorporated into Installation Permit No. 46673 on August 18, 2008.

VI. APPLICABLE REGULATIONS

Table 2 identifies applicable regulations and why that standard applies. It also contains a discussion of any regulations an emissions unit is exempt from.

Table 2: Applicable Regulations

Unit	Control Device	Rule	Discussion
Electrolyte Heaters	N/A	A.A.C. R18-2-724.C.1 A.A.C. R18-2-724.J	Standards of Performance for Fossil-fuel Fired Industrial and Commercial Equipment are applicable to the fuel burning equipment. They are applicable to industrial and commercial installations which are less than 250 MMBtu/hr capacity, but in the aggregate on any premises are rated at greater than 0.5 MMBtu/hr, and in which fuel is burned for the primary purpose of producing steam, hot water, hot air or other liquids, gases, or solids and in the course of doing so the products of combustion do not come into direct contact with process materials.

Unit	Control Device	Rule	Discussion
Solvent Extraction/ Electrowinning Processes	Covers on tanks; Dispersion balls or equivalent method to control acid emissions	A.A.C. R18-2- 730.D A.A.C. R18-2- 730.F A.A.C. R18-2- 730.G	Standards of Performance for Unclassified Sources are applicable to the Solvent Extraction / Electrowinning Processes. These rules are applicable to unclassified sources not otherwise subject to standards of performance under Articles 7, 9, or 11 of the A.A.C. Title 18, Chapter 2.
Gasoline Dispensing Facility	Submerged filling device; Pump / compressor seals	40 CFR Part 63 Subpart CCCCC A.A.C. R18-2- 710	These standards apply to each gasoline dispensing facility that is located at an area source of HAPs as defined in 40 CFR Part 63 Subpart CCCCC Standards of Performance for Existing Storage Vessels for Petroleum Liquids apply to existing storage vessels for petroleum liquids.
Volatile Organic Liquid Storage Vessels	N/A	A.A.C. R18-2- 730	Standards of Performance for Unclassified Sources are applicable to the volatile organic liquid storage vessels. These rules are applicable to unclassified sources not otherwise subject to standards of performance under Articles 7, 9, or 11 of the A.A.C. Title 18, Chapter 2. Standards of Performance for Volatile Organic Liquid Storage Vessels is not applicable because the volatile organic liquid storage vessels contain sulfuric acid which is not an organic liquid.
Mobile Crusher and Screen	Water Sprays	40 CFR Part 60 Subpart LL	Standards of Performance for Metallic Mineral Processing Plants are applicable to the mobile crusher and screen because these produce metallic mineral concentrates from ore.
Storage Piles and Material Transfer Points (Ore and ANFO)	Water Sprays	A.A.C. R18-2- 721	Standards of Performance for Existing Nonferrous Metals Industry Sources apply to material handling facilities and ore storage piles.

Unit	Control Device	Rule	Discussion
Fugitive Dust	Water Trucks, Dust Suppressants	A.A.C. R18-2 Article 6 A.A.C. R18-2- 702	These standards are applicable to all fugitive dust sources at the facility.
Abrasive Blasting	Wet Blasting; Dust Collecting Equipment; Other Approved Methods	A.A.C. R-18-2- 702 A.A.C. R-18-2- 726	These standards are applicable to any abrasive blasting operation.
Spray Painting	Enclosures	A.A.C. R18-2- 702 A.A.C. R-18-2- 727	These standards are applicable to any spray painting operation.
Demolition/Renovation	N/A	A.A.C. R18-2- 1101.A.12	This standard is applicable to any asbestos related demolition or renovation operations.

VII. PREVIOUS PERMIT REVISIONS AND CONDITIONS

A. Previous Permit Revisions

Table 3 provides a description of the permit revisions made to Permit No. 71633 during the previous permit term.

Table 3: Permit Revisions to Permit No. 71633

Permit Revision No.	Permit Revision Type	Brief Description
76992	Minor Permit Revision	Addition of evaporative equipment and replacement of two heaters.

B. Changes to Current Renewal

Table 4 addresses the changes made to the Sections and Conditions from Permit No. 71633:

Table 4: Previous Permit Conditions

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "A"		X		General Provisions: Revised to represent the most recent template language.
Att. "B" Section I		X		Facility Wide Requirements: Revised to represent the most recent template language.

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "B" Conditions II.C.1-2		X		Solvent Extraction/ Electrowinning Process (SX/EW): Updated citations.
Att. "B" Condition III.B.3		X		Evaporation Processes: Updated citation.
Att. "B" Condition IV.B		X		Electrolyte Heaters: Updated citation.
Att. "B" Section VI	X			Metallic Mineral Processing Subject to NSPS Subpart LL: Added section due to new equipment being added.
Att. "B" Section VII	X			Metallic Mineral Processing Subject to A.A.C. R18-2- 721: Added section due to new equipment being added.
Att. "C"		X		Equipment List: Revised to reflect the most recent equipment operating at the facility and to include equipment information provided.

VIII. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

Table 5 contains an inclusive but not an exhaustive list of the monitoring, recordkeeping and reporting requirements prescribed by the air quality permit. The table below is intended to provide insight to the public for how the facility is required to demonstrate compliance with the emission limits in the permit. Records are required be kept for a minimum of 5 years as outlined in Section XII of Attachment “A” of the permit.

Table 5: Permit No. 99662

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Solvent Extraction/ Electrowinning Processes	PM	20% Opacity	Conduct quarterly surveys of visible emissions.	Maintain records of the name of the observer, the date on which the instantaneous survey was made, and the results of the instantaneous survey.	Report all 6-minute periods for which the opacity exceeded 20%.
Electrolyte Heaters	PM	N/A	N/A	N/A	N/A
Gasoline Dispensing Facility	VOCs	N/A	N/A	Maintain records of monthly throughput of gasoline and vapor pressure of the gasoline stored in the tank, dates of storage in the tank, and of dates when the storage tank is empty.	N/A
Mobile Crusher and Screen	PM	0.05 g/dscm 7% Opacity for Stack Emissions	Calibrate, maintain, and operate monitoring devices.	Record the observer name, date, results of the instantaneous survey or 6-minute observation, and, if applicable, any corrective action taken to lower the	Report all 6-minute periods for which the opacity exceeded the applicable requirement.

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
		10% Opacity for Fugitive Emissions		opacity of any excess emissions.	
Storage piles and all material transfer points for ore and ANFO	PM	20% Opacity	Conduct biweekly surveys of visible emissions.	Record the observer name, date, results of the instantaneous survey or 6-minute observation, and, if applicable, any corrective action taken to lower the opacity of any excess emissions.	Report all 6-minute periods for which the opacity exceeded 20% opacity.
Fugitive Dust	PM	40% Opacity	Conduct monthly surveys of visible emissions.	Record of the dates and types of dust control measures employed, and if applicable, results of the instantaneous survey or 6-minute observation, and any corrective action taken to lower the opacity of any excess emissions.	N/A
Abrasive Blasting	PM	20% Opacity	N/A	Record the date, duration and pollution control measures of any abrasive blasting project.	N/A
Spray Painting	VOC	20% Opacity	N/A	Maintain records of the date, duration, quantity of paint used, any applicable MSDS, and pollution	N/A

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
		Control 96% of the overspray		control measures of any spray painting project.	
Demolition/ Renovation	Asbestos	N/A	N/A	Maintain records of all asbestos related demolition or renovation projects including the “NESHAP Notification for Renovation and Demolition Activities” form and all supporting documents.	N/A

IX. ENVIRONMENTAL JUSTICE ANALYSIS

The Environmental Protection Agency (EPA) defines Environmental Justice (EJ) to include the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and polices. The goal of completing an EJ assessment in permitting is to provide an opportunity for overburdened populations or communities to allow for meaningful participation in the permitting process. Overburdened is used to describe the minority, low-income, tribal and indigenous populations or communities that potentially experience disproportionate environmental harms and risks due to exposures or cumulative impacts or greater vulnerability to environmental hazards.

The renewal slightly increases emissions and thus, it will not result in any additional impacts.

X. AMBIENT AIR IMPACT ANALYSIS

Nord Resources Corporation, the previous owner, conducted an ambient air impact analysis for Permit No. 46673 to demonstrate protection of the National Ambient Air Quality Standards (NAAQS). The highest predicted impact for criteria air pollutants was from PM₁₀ with a predicted concentration of 83% of the NAAQS 24-hour limit. The predicted maximum concentrations of all criteria air pollutants from the facility are not expected to exceed the NAAQS as demonstrated in Table 6.

Table 6: Results of Ambient Air Impact Analysis

Criteria Air Pollutant (Averaging Time)	NAAQS (µg/m ³)	Maximum Predicted Concentration (µg/m ³)	Percentage of NAAQS
PM ₁₀ (24-hour)	150	124	83%
PM ₁₀ (annual)	50	22.7	45%
SO ₂ (3-hour)	1,300	47	4%
SO ₂ (24-hour)	365	18.4	5%
SO ₂ (annual)	80	3.2	4%
NO _x (annual)	100	5.4	5%
CO (1-hour)	40,000	845.1	2%
CO (8-hour)	10,000	671.3	7%

XI. LIST OF ABBREVIATIONS

- A.A.C.....Arizona Administrative Code
- ADEQ.....Arizona Department of Environmental Quality
- ANFO.....Ammonium Nitrate and Fuel Oil
- ARS.....Arizona Revised Statutes
- CFR.....Code of Federal Regulations
- CO.....Consent Order
- EPA.....Environmental Protection Agency
- EU.....Emission Unit
- g.....Gram
- HAPs.....Hazardous Air Pollutant

hr Hour
JCM Johnson Camp Mine
NAAQS National Ambient Air Quality Standard
NO_x Nitrogen Oxides
NSPS New Source Performance Standards
Pb Lead
PLS Pregnant Leach Solution
PM Particulate Matter
PM₁₀ Particulate Matter less than 10 µm nominal aerodynamic diameter
PM_{2.5} Particulate Matter less than 2.5 µm nominal aerodynamic diameter
PTE Potential to Emit
SO₂ Sulfur Dioxide Significant Impact Levels
SX/EW Solvent Extraction/ Electrowinning
TPY Tons per Year
VOCs Volatile Organic Compounds
yr Year