Final

MOJAVE MICRO MILL PROJECT

Prevention of Significant Deterioration

Prepared for
PSGM3, LLC

May 2024

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Prepared for
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D202001141.00

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List of Abbreviations

Abbreviation	Term/Phrase/Name
°F	degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter
AC	alternating current
acf	actual cubic foot/feet
acfh	actual cubic feet per hour
AERMOD	American Meteorological Society/U.S. Environmental Protection Agency Regulatory Model
AP-42	*AP-42: Compilation of Air Pollution Emission Factors* (U.S. Environmental Protection Agency)
ATC	Authority to Construct
BACT	Best Available Control Technology
Cal/OSHA	California Division of Occupational Safety and Health
CARB	California Air Resources Board
CCR	California Code of Regulations
CCS	carbon capture system
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CI	Coccidioides immitis
CMC	Commercial Metals Company
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent (greenhouse gases)
Control Officer	Eastern Kern Air Pollution Control District Air Pollution Control Officer
CPM	condensable particulate matter
DC	direct current
DEC	direct evacuation control
EAF	electric arc furnace
ECS	endless charging system
EID	Emission Source Identification
EIQ	emissions inventory questionnaire
EKAPCD	Eastern Kern Air Pollution Control District
EPA	United States Environmental Protection Agency

Abbreviation	Term/Phrase/Name
ESP	electrostatic precipitator
FLAG	Federal Land Managers' Air Quality Related Values Work Group
FLM	Federal Land Managers
g/m^2	grams per square meter
$g/m^2/yr$	grams per square meter per year
GEP	good engineering practice
GHG	greenhouse gas
gph	gallons per hour
gr/acf	grains per actual cubic foot
gr/dscf	grains per dry standard cubic foot
H_2SO_4	sulfuric acid
HAP	hazardous air pollutant
hp	horsepower
km	kilometers
LAER	Lowest Achievable Emission Rate
lb	pounds
lb/gr	pounds per grain
lb/hr	pounds per hour
lb/ton	pounds per ton
LMS	ladle metallurgy station
m/s	meters per second
MACT	Maximum Available Control Technology
MMBtu/yr	Million British thermal units per year
mph	miles per hour
MSBH	melt shop baghouse
NAAQS	national ambient air quality standards
NESHAP	National Emissions Standard for Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standard
NSR	New Source Review
PCBs	polychlorinated biphenyls
PM	total particulate matter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter

Abbreviation	Term/Phrase/Name
PM_{10}	particulate matter less than 10 microns in diameter
project	Mojave Micro Mill
PSD	Prevention of Significant Deterioration
PSGM3	PSGM3, LLC
PTO	Permit to Operate
RACT	Reasonably Available Control Technology
RBLC	RACT/BACT/LAER Clearinghouse
RICE	Reciprocating Internal Combustion Engine
SCR	selective catalytic reduction
SER	Significant emission rate
SNCR	selective non-catalytic reduction
SO_2	sulfur dioxide
SO_X	sulfur oxides
TAC	toxic air contaminant
TDS	total dissolved solids
tpy	tons per year
TRS	total reduced sulfur
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compounds
VSD	Variable-speed drive

EXECUTIVE SUMMARY

PSGM3, LLC (PSGM3), a subsidiary of Pacific Steel Group, is submitting this Prevention of Significant Deterioration (PSD) construction permit application for the proposed construction of the Mojave Micro Mill (referred to herein as "project"), a new all-electric steel micro mill facility, to the Eastern Kern Air Pollution Control District (EKAPCD). The project would be located in unincorporated southeastern Kern County, in central California. The micro mill facility would be developed on two vacant parcels in unincorporated southeastern Kern County totaling approximately 174 acres at 860 Sopp Road near the community of Mojave, along Sierra Highway. The project site is located approximately 57 miles southeast of the city of Bakersfield, 4 miles north of the community of Rosamond, and 8 miles south of central Mojave.

This document describes all emissions sources at the proposed PSGM3 facility in accordance with the definition of "stationary source" in EKAPCD Rule 210.1, Section II.BB. All air pollutant–emitting activities described in Chapter 3 are part of the same stationary source with respect to the PSD regulations. EKAPCD requires a separate application for an Authority to Construct and Permit to Operate for each distinct process that involves the aggregation of equipment items operating together to perform a given function and has the potential to cause the emission of an air contaminant. This report addresses these individual permits as "county air permits," whereas "PSD permit" refers to the authority to construct the entire facility in accordance with PSD regulations. Chapter 8 of this report breaks down the facility processes or equipment to align with individual county air permit obligations. **Appendix A** presents the individual Application for Authority to Construct forms (PER-01) for each county air permit, as well as supplemental forms when necessary.

The project would involve the construction and operation of an all-electric micro mill facility and associated infrastructure necessary to produce and fabricate reinforcing steel commonly known as "rebar." The project would include air pollutant emission sources from the manufacture of steel products from scrap metal (e.g., shredded automobiles, appliances, structural and sheet metal, and other pre-processed steel bundles) through various recycling processes. Iron ore would not be processed at the mill. The project would consist of electric arc furnace melting and refining operations; ladle metallurgy station operations; casting, rolling, and finishing operations; handling of raw and product materials; and the use of other associated equipment to produce steel products.

Additional site components would include 63 acres of ground-mounted solar panels, a carbon capture system, a substation to support solar panels, a fume treatment plant, a water treatment plant, a slag processing plant, dolomite and lime silos, staging and spare-parts storage, numerous alternating current power unit substations located throughout the project site to power the various buildings, on-site access corridors, perimeter security fencing, and an on-site parking area.

The steel micro mill would operate 24 hours per day, seven days per week, with a maximum annual steel production rate of 456,000 tons per year (tpy).

This permit application contains the following analyses and assessments regarding emissions of regulated pollutants during the construction and operation of the project:

- Evaluation of ambient air quality in the area for each regulated pollutant for which the project would result in a PSD significant net emissions increase. This evaluation will be provided to EKAPCD as part of a supplemental submittal.
- Demonstration that emissions increases resulting from the project would not cause or contribute to an increase in ambient concentrations of pollutants exceeding the remaining available PSD increment and the national ambient air quality standards (NAAQS), as applicable. This evaluation will be provided to EKAPCD as part of a supplemental submittal.
- Assessment of any adverse impacts on soils, vegetation, visibility, and growth in the area.
- Best Available Control Technology (BACT) analysis for each PSD-regulated pollutant for which the project would result in a significant net emissions increase, and for pollutants that would be emitted that do not trigger PSD compliance but are affected pollutants emitted from new emissions units as required by EKAPCD Rule 210.1–III.A.

Table ES-1 summarizes potential project-related emissions. For a full description of equipment associated with the project, see Chapter 2 of this application.

ES.1 Hazardous Air Pollutant Emissions

The project is an area source of hazardous air pollutants (HAPs)—less than 25 tpy of total HAPs and less than 10 tpy of any single HAP.

ES.2 Best Available Control Technology Analysis

A “top-down” BACT analysis was performed for each pollutant identified in Table ES-1 that is subject to PSD compliance or to an ambient air quality standard. Carbon monoxide (CO), particulate matter equal to and less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$) and carbon dioxide equivalent (CO_2e) (greenhouse gases) are subject to PSD BACT because their maximum potential emission levels would exceed their associated significant emissions rates as defined in Code of Federal Regulations Title 40, Section 52.21(b)(23)(i). Potential emissions of particulate matter equal to and less than 10 microns in diameter (PM_{10}), nitrogen oxides (NO_X), volatile organic compounds (VOC), and sulfur dioxide (SO_2) are less than their significant emissions rates; however, per EKAPCD Rule 210.1–III.A, BACT is required because these are affected pollutants expected to be emitted from new emissions units.

TABLE ES-1
POTENTIAL PROJECT-RELATED EMISSIONS AND ASSOCIATED PSD THRESHOLDS AND SIGNIFICANCE LEVELS

Pollutant	Preliminary Estimated Project Emissions	Federal PSD Threshold	Federal Significance Emission Rate Threshold	Federal NNSR Threshold	EKAPCD Offset Threshold
	tpy	tpy	tpy	tpy	tpy
NO_X	22.79	100	40	25	25
CO	418.99	100	100	–	–
PM	17.70	100	25	–	–
PM_{10}	12.84	100	15	–	15
$PM_{2.5}$	10.95	100	10	–	–
SO_2	23.12	100	40	–	27
VOC	22.70	100	40	25	25
H_2SO_4 Mist	0.00	–	7	–	–
Lead	0.05	–	0.6	–	–
Fluorides	0.00	–	3	–	–
H_2S	0.00	–	10	–	–
TRS	0.00	–	10	–	–
Mercury	0.04	–	–	–	–
CO_2e	100,092	–	75,000	–	–
Total HAPs	1.30	-	-	-	-

NOTES: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; EKAPCD = Eastern Kern Air Pollution Control District; H_2S = hydrogen sulfide; H_2SO_4 = sulfuric acid; NNSR = Non–Attainment New Source Review; NO_X = nitrogen oxides; PM = total particulate matter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter; PSD = Prevention of Significant Deterioration; SO_2 = sulfur dioxide; tpy = tons per year; TRS = total reduced sulfur; VOC = volatile organic compounds

State-of-the-art pollution control equipment has been selected for the project, which are lower than currently established BACT for steel mills with EAF technology. **Table ES-2** displays the proposed emissions levels for the project's emissions sources.

TABLE ES-2
SUMMARY OF PROPOSED EMISSION LEVELS

Equipment	Pollutant	BACT Rate	Control Device	Compliance Method and Averaging Period
Electric Arc Furnace, Ladle Metallurgy Station, Caster, and Melt Shop	VOC	0.075 lb/ton of steel produced	Wet scrubber and activated carbon injection	Stack test—30-day rolling average
	CO	1.819 lb/ton of steel produced	DEC with an air gap, scrap management plan	Stack test—30-day rolling average
	$PM/PM_{10}/PM_{2.5}$	0.0467 lb/ton of steel produced	Primary and secondary baghouses	Stack test—Average of three 1-hour test runs
	NOx	0.090 lb/ton of steel produced	DEC and selective non-catalytic reduction	Stack test—30-day rolling average
	SO_2	0.101 lb/ton of steel produced	Low-sulfur-content carbon and scrap management plan	Stack test—30-day rolling average
	Greenhouse gases	438 lb/ton of steel produced	Improved process control network (neural network) Adjustable-speed drives UHP transformers Bottom stirring/stirring gas injection Foamy slag practice Post-combustion of the flue gases Oxy-lances (oxy-fuel burners operated without natural gas combustion) Scrap preheating using the ECS process No reheat furnace Engineered refractories Airtight operation Variable-speed drives Eccentric bottom tapping Energy monitoring and management system Zero natural gas usage in steelmaking process	Stack test—12-month rolling average
Cooling Towers	$PM/PM_{10}/PM_{2.5}$	0.0005%	Drift eliminators	Vendor performance data
Storage Piles and Drop Points	$PM/PM_{10}/PM_{2.5}$	See Section 5.3.4.1	Various controls (e.g., watering, partial enclosures, minimize drop height)	Emissions calculations and recordkeeping
Roads	$PM/PM_{10}/PM_{2.5}$	See Section 5.3.3	Fugitive dust control plan	Emissions calculations and recordkeeping

Equipment	Pollutant	BACT Rate	Control Device	Compliance Method and Averaging Period
Emergency Engines	VOC	83 lb/1,000 gallons of fuel	Propane as fuel	Emissions calculations and recordkeeping
	CO	129 lb/1,000 gallons of fuel	Propane as fuel	Emissions calculations and recordkeeping
	$PM/PM_{10}/PM_{2.5}$	5 lb/1,000 gallons of fuel	Propane as fuel	Emissions calculations and recordkeeping
	NOx	139 lb/1,000 gallons of fuel	Propane as fuel	Emissions calculations and recordkeeping
	SO_2	0.35 lb/1,000 gallons of fuel	Propane as fuel	Emissions calculations and recordkeeping
	Greenhouse gases	139 lb/MMBtu of fuel	Propane as fuel	Emissions calculations and recordkeeping

NOTES: BACT = Best Available Control Technology; CO = carbon monoxide; DEC = direct evacuation control; ECS = endless charging system; gr/dscf = grains per dry standard cubic foot; lb = pounds; MMBtu = million British thermal units; NO_X = nitrogen oxides; PM = particulate matter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter; SO_2 = sulfur dioxide; UHP = ultra-high-power

ES.3 Air Quality Analysis

The site of the proposed Mojave Micro Mill is located in Mojave, Kern County, California. Eastern Kern County, where the project would be located, is currently designated as severe nonattainment for the federal ozone eight-hour standard. With respect to the California ambient air quality standards, eastern Kern County is designated as nonattainment for both the one-hour and eight-hour ozone standards and the PM_{10} standard. Eastern Kern County is designated as attainment or unclassified for all other criteria pollutants. The project is included in the 28 source categories with PSD major source threshold of 100 tons per year [40 CFR 52.21(b)(1)(i)] and its potential emissions indicate that the project would be a major source; as a result, the project is subject to a PSD construction permit review.

The air dispersion modeling has been conducted in accordance with the most recent version of the U.S. Environmental Protection Agency's (USEPA) *Guideline on Air Quality Models* (USEPA 2017). The air dispersion modeling protocol was submitted to EKAPCD, USEPA Region 9, the U.S. Department of Agriculture, and the National Park Service on May 5, 2023. The modeling analysis that demonstrates that the project would not cause or contribute to a violation of the NAAQS or PSD Class II Increment will be provided in a separate submittal.

ES.4 Additional Impacts Analysis

The potential impacts of the project on visibility, soils, vegetation, and growth are discussed in Chapter 7 of this application. As indicated by the analysis, the project would not have a significant impact on visibility, soils, growth, or vegetation in the surrounding area.

CHAPTER 1
Introduction

PSGM3, LLC (PSGM3), a subsidiary of Pacific Steel Group, is proposing to construct an all-electric steel micro mill on a 174-acre site located at 860 Sopp Road, at the southeast corner of Sopp Road and Sierra Highway, in unincorporated southeastern Kern County, California. The proposed facility is called the Mojave Micro Mill (referred to herein as "project"). The project would include air pollutant emissions sources for the manufacture of steel products from scrap steel and scrap substitutes. Iron ore would not be processed at the mill. The steel micro mill would operate 24 hours per day, seven days per week, with a maximum annual steel production rate of 456,000 tons per year.

The following processes and emission units are proposed for the project:

- Melt shop, including:
  - Electric arc furnace melting and refining operations.
  - Ladle metallurgy station.
  - Ladle and tundish refractory repairs.
  - Casting operations.
  - Scrap cutting torches.
  - Ladle and tundish skull cutting.
- Rolling operations.
- Storage and handling of raw and waste materials.
- Slag yard.
- Contact and noncontact cooling towers.
- Propane-fired emergency engines.
- Haul roads.
- Fuel storage tanks.

The project is a listed source category per Code of Federal Regulations (CFR) Title 40, Part 52.21(b((1)(i), and its potential emissions indicate that the project would be a major source; as a result, the project is subject to Prevention of Significant Deterioration (PSD) construction permit review. A PSD permit requires a BACT analysis and an assessment of ambient impacts for those pollutants subject to PSD review.

Construction permit application forms required by the Eastern Kern Air Pollution Control District (EKAPCD) are included in Appendix A of this application.

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CHAPTER 2
Project Description

The all-electric micro mill facility and associated infrastructure would be located in unincorporated southeastern Kern County, in central California (**Figure 2-1** and **Figure 2-2**; note that this and all other figures referenced in this report are presented in **Appendix B**). The micro mill facility would be developed on approximately 174 acres located at 860 Sopp Road, near the community of Mojave, California, along Sierra Highway in Kern County. The project site is located approximately 57 miles southeast of the city of Bakersfield, 4 miles north of the community of Rosamond, and 8 miles south of central Mojave.

Eastern Kern County, where the project would be located, is currently designated as severe nonattainment for the federal ozone eight-hour standard and nonattainment for the California ozone one-hour, ozone eight-hour, and PM_{10} standards. Eastern Kern County is designated as attainment or unclassified for all other criteria pollutants. The project is a listed source category per 40 CFR 52.21(b)(1)(i) and its potential emissions indicate that the project would be a major source; as a result, the project is subject to a Prevention of Significant Deterioration (PSD) construction permit review. The project's potential air pollutant emissions indicate that the PSD significance level would be exceeded for several pollutants (**Table 2-1**).

Based on the estimated potential emissions shown in Table 2-1, it is expected that carbon monoxide (CO), particulate matter equal to and less than 2.5 microns in diameter ($PM_{2.5}$), and carbon dioxide equivalent (CO_2e) (greenhouse gases [GHGs]) would be subject to PSD review. **Figure 2-3** shows a process flow diagram (see Appendix B). The processes that would be followed at the steel micro mill are described in the following sections.

TABLE 2-1
TOTAL POTENTIAL EMISSIONS AND PSD MAJOR-SOURCE THRESHOLDS

Pollutant	Preliminary Estimated Project Emissions tpy	Federal PSD Threshold tpy	Federal Significance Emission Rate Threshold tpy	Federal NNSR Threshold tpy	EKAPCD Offset Threshold tpy
NO_X	22.79	100	40	25	25
CO	418.99	100	100	–	–
PM	17.70	100	25	–	–
PM_{10}	12.84	100	15	–	15
$PM_{2.5}$	10.95	100	10	–	–
SO_2	23.12	100	40	–	27
VOC	22.70	100	40	25	25

Pollutant	Preliminary Estimated Project Emissions	Federal PSD Threshold	Federal Significance Emission Rate Threshold	Federal NNSR Threshold	EKAPCD Offset Threshold
	tpy	tpy	tpy	tpy	tpy
H_2SO_4 Mist	0.00	–	7	–	–
Lead	0.05	–	0.6	–	–
Fluorides	0.00	–	3	–	–
H_2S	0.00	–	10	–	–
TRS	0.00	–	10	–	–
Mercury	0.04	–	–	–	–
CO_2e	100,092	–	75,000	–	–
Total HAPs	1.30	-	-	-	-

NOTES: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; EKAPCD = Eastern Kern Air Pollution Control District; H_2S = hydrogen sulfide; H_2SO_4 = sulfuric acid; NNSR = Nonattainment New Source Review; NO_X = nitrogen oxides; PM = total particulate matter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter; PSD = Prevention of Significant Deterioration; SO_2 = sulfur dioxide; tpy = tons per year; TRS = total reduced sulfur; VOC = volatile organic compounds

SOURCE: Data compiled by Environmental Science Associates in 2024

2.1 Raw-Material Handling

Recycled scrap metal for the project would be purchased from outside suppliers and transported to the facility by truck. Scrap metal received would include unshredded and shredded scrap largely from crushed automobiles and may also include old appliances, machinery, sheet metal, rectangular bundles, and miscellaneous scrap metal. Unshredded scrap metal would be processed by suppliers off-site to meet industry-standard size and cleanliness. This scrap metal would arrive in a form either suitable for direct use in the steelmaking process or in a larger size that would require cutting by mechanical shears before use in the process. In instances where using shears would not be feasible, the scrap would be cut with a torch cutter located within the melt shop. The shredded and unshredded scrap metal would be stored either at the 24,300-square-foot scrap bay, or at the proposed overflow scrap storage piles and then would be moved into the scrap bay by front-end loader or other material-handling mobile equipment. The usual process flow for storage of scrap metal is to unload and store it within the scrap bay, which minimizes the handling, labor, cost, and emissions associated with storing the scrap in overflow piles and then moving it to the scrap bay. However, market conditions may result in scrap inventory overflow, requiring the use of the overflow scrap storage piles. Emissions impacts described in this PSD construction permit application are based on a conservative assumption that 50 percent of the scrap metal received would be directly deposited to the scrap bay and the remainder would be stored in the overflow scrap storage piles.

Once the scrap metal is inside the proposed scrap bay, a magnetic crane would load it onto the primary conveyor feed system for transport to the proposed electric arc furnace (EAF).

In addition to the recycled scrap metal, the new micro mill facility would use raw materials in the steelmaking process, including carbon (petroleum coke or biocarbon) and fluxing agents (e.g., lime, dolomite). The carbon and fluxing agents would be delivered to the project site by truck and moved into storage silos via a pneumatic system. The carbon and fluxing agents would be pneumatically transferred from these silos to the proposed EAF and ladle metallurgy station (LMS) as needed. The carbon and fluxing agent silos would be equipped with fabric filter bin vents. The fabric filter bin vents are pulse jet–style industrial dust collectors typically used to vent displaced air and harmful products in bins, silos, or any other device or process that must contain or control dust particles. The exhaust from the dust collectors would be ducted through the inlet of the melt shop baghouse.

Alloy aggregates would also be used in the proposed EAF and LMS for refining steel metallurgy. Alloys would be transported by truck to the project site in aggregate form and would be unloaded into storage bins. The alloys would be transferred by front-end loader or forklift to the melt shop for use in the proposed EAF or LMS as needed. As part of the steelmaking process, ferro silicon 75 (FeSi75), ferro silicon manganese (FeC_5H_5MnSi), silicon carbide (SiC), calcium carbide (CaC_2), and metallurgical carbon alloys would be used. Additionally, alloys such as ferro vanadium (FeV), ferro chrome (FeCR), and calcium silicon (CaSi) may also be used as part of the steelmaking process. No fluoride-containing fluxing agents or alloys will be used in the process, thus eliminating emissions of fluorides.

A preliminary scrap management plan is provided in **Appendix C**.

2.2 Melt Shop

The melt shop process would involve the use of the EAF, LMS, casting operations, ladle and tundish preheaters, and refractory repairs. Scrap metal would be preheated by the EAF's exhaust heat, then fed into the EAF where molten steel would be kept to further the melting process (also referred to as the "hot heel" practice), and chemical and electrical energy would be used to melt the entire batch of scrap metal. The melted steel would then be transferred to the LMS via a ladle. The main emission-control device for these proposed operations is the fume treatment plant, as discussed further below, which would capture emissions from the EAF and LMS.

Emissions from other processes within the melt shop would be released through the completely enclosed melt shop/caster roof distribution system (secondary control circuit) and captured by the fume treatment plant. The elements of the proposed melt shop process are described further below.

- ***Electric Arc Furnace:*** The project's steelmaking process would begin with the transport of scrap metal to the EAF as discussed above. The EAF, part of the 15,500-square-foot EAF/LMS bay, would be equipped with both electrodes and oxy-lances. The oxy-lances introduce oxygen into the molten steel which increases the effective capacity of the EAF by increasing the speed of the melt and reducing the consumption of electricity and electrode material. During the first use of the EAF after downtime, scrap metal would be loaded using charge buckets, which would be transported into position over the EAF using overhead cranes. Once in position, the charge bucket would open, allowing scrap to fill the EAF. After the first batch of steel is made, scrap for subsequent batches would be fed to the EAF using a continuous conveyor called the *endless charging system* (ECS). The ECS would allow scrap metal to be fed to the EAF continuously without requiring workers to open the furnace, which would result in considerable energy savings. In addition, the section of the ECS closest to the EAF would be enclosed to allow for preheating of the scrap metal using off-gases from the EAF.

  The EAF's electrodes would be lowered and energized once the furnace is filled with scrap metal. The energy from the electrodes would be transferred to the scrap metal to raise the temperature to approximately 3,000 degrees Fahrenheit (°F). A direct evacuation control (DEC) system would capture the EAF's emissions and vent the emissions through a large duct to the fume treatment plant.

All off-gases would be captured by the fume treatment plant via the EAF canopy, melt shop/caster canopy, and DEC systems.

During the melting and refining processes that would take place in the EAF and the LMS, raw materials such as fluxing agents, metallurgic coal, bio coke, and oxygen would be added to the molten steel to achieve the desired product chemistry and properties and promote the formation of slag. (*Slag* is a product of steelmaking, produced when the molten steel is separated from impurities in the EAF, and is a complex solution of silicates and oxides that solidifies upon cooling.)

Flux, in metallurgy, is any substance introduced in the smelting of ores to promote fluidity and to remove objectionable impurities in the form of slag. Limestone and dolomite are commonly used for this purpose in smelting iron ores. Once the desired steel properties are reached in the EAF, the molten steel would be poured (i.e., “tapped”) into a refractory-lined transport vessel called a *ladle*. The molten steel then would be transferred to the LMS via a ladle car.

The slag formed in the EAF would be emptied by tipping the EAF to the side and allowing the hot slag to be poured into a pile within the EAF/LMS bay. As the slag cools, some limited combustion of residual coke in the slag may occur. The slag would be subsequently removed from the pit using a front-end loader, quenched using process water, and transported to an outdoor storage pile before being processed on-site.

- ***Ladle Metallurgy Station:*** The ladles filled with molten steel would be transferred from the EAF to the LMS via the ladle car. At the LMS, the steel would be subjected to additional heating by electrical energy to maintain its molten state. The molten steel would be further refined with the injection and mixing of raw materials such as fluxing agents, carbon, and alloys into the molten steel. Once the molten steel reaches the desired temperature and composition (dependent on the physical properties of the desired product), the ladle would transport the molten steel to a continuous casting machine (described below under “Casting Operations”). Emissions from the LMS would be captured by the LMS roof and connected ladle duct. These captured emissions would be directed via the canopy hood to the melt shop baghouse. A baghouse removes particulate emission by passing the gas stream through porous fabric filters (bags) that trap the particles on the fabric. The emissions not captured by the ladle duct would vent to the melt shop and be captured by the meltshop canopy hood.
- ***Melt Shop Complex Structure***: The processes performed in the EAF and LMS, as described in detail above, would be controlled in the 22,680-square-foot Melt Shop Complex structure, which would house the necessary transformers, hydraulics, programmable logic controller, and personnel to run the processes.
- ***Casting Operations:*** After reaching the desired temperature of approximately 3,000°F and composition in the LMS, the ladle would be transported to a continuous casting machine within the 12,500-square-foot caster bay. During casting, steel would flow out of the bottom of the ladle via a slide gate into a tundish. A *tundish* is an intermediate holding vessel used to ensure continuous casting while ladles are switched out. Emissions from the process would be released through the caster canopy and captured by the fume treatment plant.

  From the tundish, the steel would flow into a single mold. In the mold, the steel would be water-cooled to approximately 2,000°F and formed into a continuous billet.
- ***Ladle and Tundish Preheater:*** Refractory materials would line the ladles and tundishes, which must be dried completely before steel production. Additionally, the ladles and tundishes must be preheated before the transfer of molten steel to prevent heat losses. Electrical ladle and tundish preheaters and dryers would be installed. The tundish would also use a refractory material that does not require curing.

- ***Refractory Repair:*** The refractory would be made up of a layer of refractory bricks (with manganese and calcium oxide bases) and would be used in the EAF, ladles, and tundishes. For the EAF, the refractory would be changed only when the furnace is re-lined. For the ladles and tundishes, refractory repairs and replacements would be required periodically. This would involve the use of organic binding agents (binder) to hold the refractory bricks in place. Emissions from the binder would be routed to the ladle maintenance bay's canopy. When the refractory is replaced or repaired, spent refractory materials would be recycled or disposed of, along with other various wastes generated in the steel production process. Ladle maintenance, including refractory repairs, would be completed in the 8,700-square-foot ladle maintenance bay.
- ***Induction Furnace:*** An induction furnace would be located between the caster and the rolling mill to elevate and stabilize temperatures before the steel enters the first stand.

2.3 Rolling Mill Process

The project's rolling mill process is a metal-forming process in which metal stock would be passed through one or more pairs of rolls to reduce the metal's thickness and make it uniform. Roll stands, holding pairs of rolls, would be grouped together into rolling mills that could quickly process steel into rebar. The elements of the proposed rolling mill process are described further below.

- ***Rolling Mill:*** After continuous casting, the steel would be conveyed through a series of rolling mill stands within the 61,000-square-foot rolling mill bay that would reduce the steel's cross-sectional area and create a hot-form, final rolled steel reinforcing bar, or *rebar*. The rolled steel would then be sheared to length, cooled on natural convection cooling beds, and bundled and stored, or would be fed directly into spooler machines that would form the rebar into a spool. As production for a particular size of rebar has been completed, the rolling mill stands would be taken to the 18,700-square-foot roll shop, where employees would replace worn parts and insert a new set of mill rolls in each stand to be able to produce the next size of product.

  The 61,000-square-foot rolling mill bay would house the following utility systems necessary to feed the rolling mill:

  - Electrical and automation with programmable logic controllers.
  - Switchgear and motor control centers.
  - Air oil system pumps and a tank for lubrication of the rolls.
  - Grease unit pumps and tanks for roller bearings.
  - A lube oil system with pumps and tanks for oil in the rolling mill gearboxes.
  - A hydraulic system including hydraulic fluid tank and pump to pressurize hydraulic lines.
  - Air compressors and tanks.
- ***Cooling Beds:*** The products exiting the rolling mill would be water quenched for tempering (to improve hardness, strength, and toughness and decrease brittleness in fully hardened steel) and directed to the cooling beds for time and space to cool in the ambient air.
- ***Spooler:*** The products exiting the rolling mill, if not directed to the cooling bed, would instead be directed to the spooling machines. Two spoolers would form the reinforcing bar into spooled packages.

- ***Finishing and Transportation:*** After the products have cooled, a shear blade would cut the products to customer-requested lengths. Automated bundling systems would prepare products for movement by overhead crane to storage areas or directly to trucks.

2.4 Fabrication Process

Because all rebar must be cut to length and often bent before it can be placed in a construction project, the Mojave Micro Mill Project would include an on-site 245,000-tons-per-year “cut and bend” facility. Typically, reinforcing steel is exported off-site to separate fabrication shops, many sited at various locations on the West Coast. The on-site location of the project’s fabrication shop would eliminate the need for an off-site fabrication shop to maintain an independent inventory, would reduce scrap (because of the mill’s capability to cut to custom lengths), and would ensure that the scrap generated would be recycled. There are no air emissions from the fabrication process. The elements of the proposed fabrication process are described further below.

- ***Stock Bay:*** The 93,000-square-foot stock bay, the first bay of the fabrication shop, would serve as a temporary rebar stock and feeding area for fabrication equipment.
- ***Fabrication Bay:*** After the rebar is fed into the fabrication equipment, it would be fabricated to customers’ specific requirements within the 93,000-square-foot fabrication bay. The finished product would be loaded on trucks for shipment.

2.5 Ancillary Buildings

2.5.1 Storeroom and Vehicle Maintenance Building

The 27,385-square-foot storeroom and vehicle maintenance building would be used for on-site servicing of equipment and vehicles: trailers, trucks, carts, and forklifts. Maintenance conducted in this building would consist of general wear-and-tear maintenance such as oil changes, tire rotations, light repair/replacement, engine servicing, and coolant and filter maintenance. Auto body repairs would be made off-site. Vehicles and equipment would be brought to the storeroom and vehicle maintenance building on a routine basis and when problems arise. The building would also include maintenance, repair, and spare parts. Items such as spare mill rolls, safety supplies, bearings, pumps, cylinders, fasteners, and electrical and plumbing components would be housed in the storeroom. Parts and consumable items would be stored on racks and in bins as appropriate.

2.5.2 Power Control Rooms

A majority of the machines and electricity used on the project site would use alternating current (AC) power provided by the local utility, Southern California Edison. AC power at 13.8 kilovolts from the local utility would be distributed to the various buildings and various substations installed on the project site. Several power control rooms around the project site, totaling 5,500 square feet, would receive power from the main substation and transform that power to usable voltage for the specific area in which the power control room is located. Power control rooms would consist of transformers, motor control centers, and programmable logic controllers for operation of the facility’s equipment.

2.5.3 Office Building, Locker Room, Guard Shack/Scale House, and Trucker Restroom Facility

The project site would also include other buildings not part of the micro mill process:

- A 10,500-square-foot office building, which would include administrative offices for the micro mill facility.
- A 4,400-square-foot locker room, which would include showers, bathroom facilities, and employee lockers.
- A 900-square-foot guard shack/scale house, which would be constructed at the trailer entrance to the project site, off the proposed private road along the site's eastern boundary.
- A 36-square-foot trucker restroom facility, which would be provided along the proposed private road near the entrance to the project site.

Water and sewage disposal for operational systems, as well as on-site bathroom facilities, would be provided through connection to the Antelope Valley–East Kern Water Agency and engineered on-site septic systems, respectively.

2.5.4 Water Pretreatment Building

The project site would also include a 9,000-square-foot water pretreatment building. This building would house the equipment that would take the initial source water (initially filling the water treatment plant system) and makeup water (replacing water lost through the process) from the Antelope Valley–East Kern Water Agency's water main and would treat the water using an ultrafiltration and reverse osmosis process. Water coming into direct contact with contaminants in the steelmaking process (contact water) would be treated on-site. Water that has run through the steelmaking process would flow to a settling basin where settleable matter would drop out. In addition, an oil skimmer would remove oils from the water in the basin. Water would be pumped to a sand filter for further treatment, then stored in a clarified water tank where chemical dosing units would be used to balance the water's chemistry. A cooling tower would be used to reduce the temperature of the system, then collect water in the basin before pumping cooled water back to the process. The water treatment in the PSGM3 facility is a closed loop system.

Cooling water that would not come into contact with contaminants (i.e., noncontact water), would be used to control the temperatures of the steelmaking process. This water would be in an enclosed system as it runs through the building. A cooling tower would reduce the temperature of the system. Water would then be collected in the basin and would be chemically balanced and strained before being pumped back to the process. In addition, a system for the pretreatment of raw water and post-water treatment would be installed.

2.6 Carbon Capture System

The project would install a carbon capture system (CCS) to capture the carbon dioxide (CO_2) from the combustions that would occur during the steelmaking process in the EAF. As CCS has not been demonstrated in practice in the steel industry, the system is designed with a bypass option. Therefore, no credit is considered for the CCS in the potential to emit calculations for GHG emissions.

The CCS process would consist of the following stages:

- Heat recovery from the EAF's primary fumes.
- Dust removal by the fumes filtration system before the CO_2 enters the CCS.
- Cooling of the fumes by the fumes cooling system.
- Operation of a fumes pressure control system to keep the carbon capture operation efficient.
- Use of a CO_2 removal system based on a solvent that is resistant to the presence of oxygen, limiting the need for refills and for disposal of residues.
- Operation of a CO_2 liquefaction system, complete with a compression, dehydration, and purification unit that would allow the removal of impurities in the product and storage. The liquefied CO_2 would then be stored for future transportation via trucks.

2.7 Fume Treatment Plant

Emissions captured in the melt shop would be directed to the fume treatment plant and captured by the furnace exhaust system. There are several pollution control technologies occurring within the fume treatment plant to minimize pollutant discharges to the atmosphere from the melt shop processes. A primary circuit would capture emissions from the EAF and include the following pollution control mechanisms:

- A settling chamber with urea injection to control NO_x via selective non-catalytic reduction and large particulates via settling.
- A primary baghouse to control $PM/PM_{10}/PM_{2.5}$ emissions.
- A wet scrubber to control SO_2 and $PM/PM_{10}/PM_{2.5}$ (filterable and condensable).

Emissions from the LMS and canopy would be passed through a secondary circuit which would use a hydrated lime injection system for the LMS stream to control SO_2. The secondary circuit will capture all other emissions from inside the meltshop baghouse. This emission stream would then combine with the primary circuit and pass through the following control mechanisms:

- An activated carbon injection system to control emissions of mercury and VOCs.
- A secondary baghouse to further control $PM/PM_{10}/PM_{2.5}$ emissions.

Dust collected by the fume treatment plant baghouses would be transferred to a dust silo controlled with a bin vent filter. The dust would then be shipped off-site by truck for recycling. The bin vent filter would be ducted to the inlet of the fume treatment plant control system.

2.8 Slag and Mill Scale Handling and Crushing

Slag, a product of the steelmaking process, is produced when fluxing agents are added to molten steel to remove impurities. The function of the slag, composed mainly of lime (calcium oxide [CaO]), is to refine the steel from sulphur (desulfurization) and absorb the oxides, formed as a result of deoxidation (also known as *killing process*). Most slag at the facility would be produced in the EAF, with a smaller amount formed in the LMS. The EAF slag would be emptied into a slag pit below the furnace to cool. After the slag is removed from the melt shop, quenched, and stored in an outdoor storage pile, the slag would be processed by an on-site slag processing plant. A slag processing area would be developed as part of the project. At the slag processing plant, large pieces of slag would first be reduced in size by a drop ball crushing process. Slag would then be processed through a system consisting of conveyors, hoppers, a jaw crusher, and a double-deck screen.

In addition to the transportation by the conveyor system, loaders would transport slag to the various piles. The processed slag stored in the piles would be transported off-site by truck to be sold to consumers, disposed of, or recycled.

2.9 Emergency Combustion Engines

The project would include emergency backup generators. The site would include one 2,682 horsepower (hp) propane emergency generator, one 600 hp propane fire pump, and one 200 hp propane generator for the cooling water pump.

2.10 Haul Roads

Materials hauled on- and off-site would be transported via truck on paved and unpaved roads. This traffic would generate particulate emissions.

2.11 Fuel Storage Tanks

The project would have an 8,000-gallon diesel storage tank, a 2,000-gallon diesel storage tank, a 500-gallon gasoline storage tank, and a 250-gallon gasoline fuel tank. A small emissions of volatile organic compounds would occur from these tanks because of breathing and working losses.

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CHAPTER 3
Emissions Estimates

As proposed, the project would generate air pollutant emissions from various elements of the steelmaking process: handling of scrap and raw materials; electric arc furnace (EAF) operations; operation of the ladle metallurgy station (LMS); casting operations; rolling mill operations; handling and storage of various raw materials; slag handling and storage; use of auxiliary equipment such as cooling towers, fuel tanks, emergency engines; and fugitive dust emissions from paved and unpaved roads caused by vehicle movement within the facility. This section describes the methodologies used to calculate potential project-related emissions of criteria pollutants, hazardous air pollutants (HAPs), and greenhouse gases (GHG). For detailed emissions calculations, see **Appendix D**.

3.1 General Description

3.1.1 Methodology

PSGM3 has used established methodologies by the U.S. Environmental Protection Agency (USEPA) to calculate potential emissions from various project activities. The hierarchy of calculation methodologies used was as follows:

(1) Vendor specifications, as available.

(2) Engineering estimates.

(3) Data from publicly available tests conducted at other similar steel plants.

(4) USEPA methodologies listed in *AP-42: Compilation of Air Pollution Emission Factors* (AP-42) (USEPA 2024a), using site-specific inputs to the extent available during this stage of the design.

(5) Federal and/or California operating or emissions limits for specific activities.

(6) Typical emissions from similar emissions sources.

Several assumptions were made in the emission calculations because of the lack of complete design data at this stage. These assumptions, inputs to the calculations, and the methodology used for each emission unit are described in detail in Appendix D.

3.1.2 Facility Throughputs

The facility-wide emissions calculations were based on the project's design throughputs (**Table 3-1**), operating hours for various processes (**Table 3-2**), and project site-specific parameters (**Table 3-3**).

TABLE 3-1
FACILITY THROUGHPUTS USED IN AIR POLLUTANT EMISSION CALCULATIONS

Throughput Type	Data/Value	Units
Total Scrap Handled per Year	500,780	tpy
Total Steel Produced per Year	456,000	tpy
Annual Scrap Cutting	18,000	tpy
Total Slag Produced per Year	59,280	tpy
Slag Crushing and Screening	1,200	tpy
Total Alloy Used per Year	11,902	tpy
Total Lime Used per Year	9,550	tpy
Total Dolomite Used per Year	9,550	tpy
Total Carbon Used per Year	9,550	tpy
Total Lube Oil Used in Rolling Mill per Year	21,000	gal/yr
	78.75	tpy
Total Acetylene Usage per Year (scrap cutting torches)	32,000	cft/yr
Total Diesel Usage per Year	52,000	gal/yr
Total Gasoline Usage per Year	3,500	gal/yr

NOTES: cft/yr = cubic feet per year gal/yr = gallons per year; tpy = tons per year
SOURCE: Data compiled by Environmental Science Associates in 2024

TABLE 3-2
PROPOSED OPERATING HOURS FOR VARIOUS ELEMENTS OF THE MOJAVE MICRO MILL PROJECT

Element	Data/Value	Units
Electric Arc Furnace	8,760	hrs/yr
Melt Shop Baghouse	8,760	hrs/yr
Slag Crushing and Screening MRP	2,920	hrs/yr
Scrap Cutting	2,920	hrs/yr
Carbon Loading to Silo	500	hrs/yr
Lime Loading to Silo	500	hrs/yr
Dolomite Loading to Silo	500	hrs/yr
Emergency Generator Engines	200	hrs/yr
Emergency Fire Pump Engines	200	hrs/yr
Diesel Tanks	8,760	hrs/yr
Gasoline Tank	8,760	hrs/yr
Outdoor Storage Piles	8,760	hrs/yr
Slag Handling (MRP)	8,760	hrs/yr
Haul Roads	8,760	hrs/yr

NOTE: hrs/yr = hours per year; MRP = mixed residual plastic
SOURCE: Data compiled by Environmental Science Associates in 2024

TABLE 3-3
SITE-SPECIFIC PARAMETERS USED IN CALCULATIONS OF AIR POLLUTANT EMISSIONS

Input Parameter	Data/Value	Units
Slag Moisture Content	3	%
Scrap Moisture Content [M]	2	%
Alloy Moisture Content	5.4	%
Scrap silt content	2	%
Alloy Silt Content	9.5	%
Slag Silt Content	5.3	%

NOTE: M = moisture content
SOURCE: Data compiled by Environmental Science Associates in 2024

3.1.3 Emission Source Identification Numbers

Each of the project's emissions sources was assigned a unique Emission Source Identification (EID) number for determining facility-wide emissions. These EIDs have been consistently used in the air permit application. **Table 3-4** lists the proposed emissions sources and their respective EIDs.

TABLE 3-4
EMISSION SOURCE IDENTIFICATION NUMBERS FOR THE MOJAVE MICRO MILL PROJECT

Area	Source Description	EID Number
Scrap	Scrap Material Storage and Handling—Indoor	EID-01
	Scrap Material Storage and Handling—Outdoor	EID-02
	Scrap Pile—Wind Erosion	EID-03
Raw Material—Alloy	Alloy Material Storage and Handling—Outdoor	EID-04
	Alloy Storage Pile—Wind Erosion	EID-05
Melt Shop Baghouse	Melt Shop Baghouse	EID-06
	Electric Arc Furnace—Direct Evacuation Control	EID-06_01
	Electric Arc Furnace—Fugitives	EID-06_02
	Ladle Metallurgy Station—Direct Evacuation Control	EID-06_03
	Casting Operation Fugitives	EID-06_04
	Slag Dump	EID-06_05
	Ladle and Tundish Refractory Repairs	EID-06_06
	Ladle and Tundish Dumping	EID-06_07
	Melt Shop Baghouse Dust Silo Bin Vent	EID-06_08
	Melt Shop Baghouse Dust Loadout	EID-06_09
	Activated Carbon Injection Bin Vent	EID-06_10
	Carbon Silo Bin and Hopper Vent	EID-06_11
	Flux Silo 1 Bin and Hopper Vent—Lime	EID-06_12
	Flux Silo 2 Bin and Hopper Vent—Dolomite	EID-06_13
	Scrap Cutting Torches	EID-06_14

Area	Source Description	EID Number
Caster	Caster Spray Vent Stack	EID-07
Rolling Mill	Roll Mill Vent	EID-08
Slag	Slag Material Storage and Handling—Outdoor	EID-09
	Slag Pile Wind Erosion	EID-10
	Slag Screening and Crushing	EID-11
Cooling Towers	Cooling Tower 1	EID-12
	Cooling Tower 2	EID-13
	Cooling Tower 3	EID-14
	Cooling Tower 4	EID-15
Engines	Emergency Fire Water Pump	EID-16
	Emergency Cooling Water Pump	EID-17
	Emergency Generator	EID-18
Diesel and Gasoline Tanks	Diesel Tank—8,000 Gallons Capacity	EID-19
	Diesel Tank—2,000 Gallons Capacity	EID-20
	Gasoline Tank—500 Gallons Capacity	EID-21
	Gasoline Tank—250 Gallons Capacity	EID-22
Roads	Paved Facility Roads	EID-23
	Unpaved Facility Roads	EID-24

NOTE: EID = Emission Source Identification
SOURCE: Data compiled by Environmental Science Associates in 2024

3.1.4 Summary of Facility-wide Emissions

Table 3-5 summarizes potential facility-wide emissions of criteria pollutants and total HAPs for the project. The table also lists various federal and California regulatory thresholds applicable to this project. A summary of individual HAP emission levels can be found in Appendix D.

TABLE 3-5
SUMMARY OF POTENTIAL FACILITY-WIDE EMISSIONS

Pollutant	Estimated Project Emissions	Federal PSD Threshold	Federal Significance Emission Rate Threshold	Federal NNSR Threshold	EKAPCD NNSR Threshold
	tpy	tpy	tpy	tpy	tpy
NO_X	22.79	100	40	25	25
CO	418.99	100	100	–	–
PM	17.70	100	25	–	–
PM_{10}	12.84	100	15	100	15
$PM_{2.5}$	10.95	100	10	–	–
SO_2	23.12	100	40	–	27
VOC	22.70	100	40	25	25
H_2SO_4 Mist	0.00	–	7	–	–

Pollutant	Estimated Project Emissions	Federal PSD Threshold	Federal Significance Emission Rate Threshold	Federal NNSR Threshold	EKAPCD NNSR Threshold
	tpy	tpy	tpy	tpy	tpy
Lead	0.05	–	0.6	–	–
Fluorides	0.00	–	3	–	–
H_2S	0.00	–	10	–	–
TRS	0.00	–	10	–	–
Mercury	0.04	–	–	–	–
CO_2e	100,092		75,000	–	–
Total HAPs	1.30	–	–	–	–

NOTES: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; EKAPCD = Eastern Kern Air Pollution Control District; H_2S = hydrogen sulfide; H_2SO_4 = sulfuric acid; NNSR = Nonattainment New Source Review; NO_X = nitrogen oxides; PM = total particulate matter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter; PSD = Prevention of Significant Deterioration; SO_2 = sulfur dioxide; TBD = to be determined; tpy = tons per year; TRS = total reduced sulfur; VOC = volatile organic compounds

SOURCE: Data compiled by Environmental Science Associates in 2024

A summary of the methodologies used in calculation of potential emissions from the various emission sources are listed in Table 3-6. Details of the calculation methodologies for individual emissions sources are described in the following sections.

TABLE 3-6
SUMMARY OF METHODOLOGY FOR EMISSION CALCULATIONS

Source Description	Emission Point ID (EID)	Emission Calculations Methodology
Scrap Material Storage and Handling-Indoor	EID-01	AP-42, Section 13.2.4: Aggregate Handling and Storage Piles Drop Equation (Equation 1)
Scrap Material Storage and Handling-Outdoor	EID-02	AP-42, Section 13.2.4: Aggregate Handling and Storage Piles Drop Equation (Equation 1)
Scrap Pile (Wind Erosion)	EID-03	AP 42- Ch 13.5.2 Wind Erosion- Table 13.2.5-2 (Equation 4)
Alloy Material Storage and Handling-Outdoor	EID-04	AP-42, Section 13.2.4: Aggregate Handling and Storage Piles Drop Equation (Equation 1)
Alloy Pile (Wind Erosion)	EID-05	AP 42- Ch 13.5.2 Wind Erosion- Table 13.2.5-2 (Equation 4)
Meltshop Baghouse (MS BH)	EID-06	Vendor Specifications
Electric Arc Furnace (EAF) DEC	EID-06_01	
EAF Fugitives	EID-06_02	
Ladle Metallurgical Furnace (LMF) DEC	EID-06_03	
Casting Operation (fugitives)	EID-06_04	
Slag dump	EID-06_05	
Ladle and Tundish refractory repairs	EID-06_06	
Ladle and Tundish dumping	EID-06_07	

Source Description	Emission Point ID (EID)	Emission Calculations Methodology
MS BH Dust Silo Bin Vent	EID-06_08	Vendor Specifications
MS BH Dust Loadout	EID-06_09	
Activated Carbon Injection Bin Vent	EID-06_10	
Carbon Silo Bin and Hopper Vent	EID-06_11	
Flux Silo 1 Bin and Hopper Vent - Lime	EID-06_12	
Flux Silo 2 Bin and Hopper Vent - Dolomite	EID-06_13	
Scrap Cutting Torches	EID-06_14	
Caster Spray Stack	EID-07	Published Test Data from similar facilities
Roll mill vent	EID-08	USEPA: "Volatized Lubricant Emissions from Steel Rolling Operations"
Slag Material Storage and Handling Outdoor	EID-09	AP-42 1/95, Table 11.19.2-2, Fines Crushing
Slag Pile Wind Erosion	EID-10	AP 42- Ch 13.5.2 Wind Erosion- Table 13.2.5-2 (Equation 4)
Slag Screening and Crushing	EID-11	AP-42 Chapter 11.19.2 Table 11.19.2-2 (controlled)
Cooling Tower 1	EID-12	PM = water circulation rate * drift rate * total dissolved solids (TDS); Reiman and Frisbie method for calculating PM_{10} and $PM_{2.5}$
Cooling Tower 2	EID-13	
Cooling Tower 3	EID-14	
Cooling Tower 4	EID-15	
Emergency Fire Water Pump	EID-16	CARB Emission Factors for Propane
Emergency Cooling Water Pump	EID-17	
Emergency Generator	EID-18	
Diesel Tank - 8000 Gallons Capacity	EID-19	AP-42 Section 7.1 - Organic Liquid Storage Tanks
Diesel Tank - 2000 Gallons Capacity	EID-20	
Gasoline Tank - 500 Gallons Capacity	EID-21	
Gasoline Tank - 250 Gallons Capacity	EID-22	
Paved Facility Roads	EID-23	AP-42 Ch 13.2-1 - Paved Roads
Unpaved Facility Roads	EID-24	AP-42 Ch 12.2-2 - Unpaved Roads

3.2 Scrap Handling and Storage (EID-01, EID-02, EID-03)

3.2.1 Scrap Material Storage and Handling—Indoor (EID-01)

Scrap would be stored indoors in the scrap bay and moved by a magnetic crane to the endless charging system (ECS) feeding the EAF. Emissions from this activity would be from dropping the scrap on the ECS. Two drop points have been considered for this emission source, one on the bay and one on the ECS conveyor. The emissions would be particulate matter only: total particulate matter (PM), particulate matter equal to and less than 10 microns in diameter (PM_{10}), and particulate matter equal to and less than 2.5 microns in diameter ($PM_{2.5}$).

The emission factor from this source was estimated using the aggregate transfer equation (often referred to as the *drop equation*) found in AP-42 Section 13.2.4, *Aggregate Handling and Storage Piles*. The equation used is as follows:

$$E = k(0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}(pounds\ [lb]/ton)$$

where:

E = emission factor (lb/ton)

k = particle size multiplier (dimensionless)—AP-42 Section 13.2.4

U = mean wind speed (miles per hour [mph])

M = material moisture content (percent)—see Table 3-2 above

EID-01 would be inside the scrap bay building (Building 1A); therefore, a low wind velocity of 2 mph was used in the emissions calculations. The building will have enclosure on all sides with openings only for scarp bay doors. Therefore, a conservative enclosure control efficiency of 85 percent was assumed for the particulates for discharge to the atmosphere.

The drop equation used to develop the emission factor is based on the characteristics of processed aggregate, where emissions come from aggregate fines which are released to the atmosphere upon exposure to air currents either from material transfer or from high winds. The raw material scrap that would be used by PSGM3 is made up of various scrap, shredded metal, and larger pieces, which would have a negligible amount of aggregate fines. To conservatively account for the potential release of particulate emissions from scrap handling, it has been assumed that up to 20% of the annual scrap handled per year could contain fines that generate air emissions. Annual emissions were based on the product of the emission factor calculated above and 20% of the total annual scrap handled per year (Table 3-1). Annualized hourly emissions were based on 8,760 hours of operations per year.

3.2.2 Scrap Material Storage and Handling—Outdoor (EID-02)

Large pieces and shredded scrap would be brought by trucks into the facility and deposited in front of the scrap bay doors. In some instances, incoming scrap may instead be stored in outdoor overflow scrap storage piles as shown in the site layout drawing. The preferred normal process would be to avoid using the overflow piles and instead store scrap in the scrap bay; however, this application conservatively assumes that 50 percent of incoming scrap would be stored in the overflow piles before being moved to the scrap bay. Emissions from this activity would be from depositing the scrap on the scrap piles. As described in Section 3.2.1 for drop point emissions for scrap, the emissions from the material drop are based on 20% of the handled scrap containing fines that could generate air emissions. The emissions would be $PM/PM_{10}/PM_{2.5}$ only.

Emissions from this source were calculated similar to those from EID-01 with the following changes:

- Mean wind speed was based on site-specific meteorological data (14 mph).
- Because this activity would occur outdoors, no enclosure control efficiency was assumed.
- Scrap loading to pile and loadout from pile were estimated separately.

3.2.3 Scrap Pile—Wind Erosion (EID-03)

Fugitive emissions from wind erosion of the scrap storage piles would be $PM/PM_{10}/PM_{2.5}$ only. The emissions were estimated using AP-42 Section 13.2.5, *Industrial Wind Erosion*. Particulate matter emissions from wind erosion were calculated based on the following equation:

$$E = k \sum_{i=1}^{N} P_i$$

where:

E = emissions from the pile, in grams per square meter per year ($g/m^2/yr$)

k = particle size multiplier (1.0 for PM, 0.5 for PM_{10}, and 0.075 for $PM_{2.5}$)

N = number of disturbances per year

P_i = erosion potential corresponding to observed (or probable) fastest mile of wind for the i^{th} period between disturbances (grams per square meter [g/m^2])

A conservative approach was used for determining wind erosion emissions from the piles. To calculate the overall emission from a pile, the analysis assumed that once the wind speed criterion for erosion was met for one part of the pile, the criterion was assumed to have been met for the entire pile.

The calculation of erosion potential can be expanded as follows:

$$P = 58(u^* - u_t^*)^2 + 25(u^* - u_t^*)$$

$$P = 0 \; for \; u^* \leq u_t^*$$

where:

P = erosion potential (g/m^2)

u^* = friction velocity (meters per second [m/s])

u_t^* = threshold friction velocity (m/s)

Table 13.2.5-2 in AP-42 lists suggested values for the threshold friction velocity (u_t^*). A conservatively low threshold friction velocity value of 1.33 from scoria was used for the scrap pile because of the relatively large size and density of the scraps and because these materials are not granular. PSG expects the threshold friction velocity to be higher in practice.

Once u_t^* is determined, the values of u^* must be calculated. AP-42 Section 13.2.5 gives the following equation:

$$u^* = 0.053u_{10}^+$$

where u_{10}^+ = fastest mile of reference anemometer for periods between disturbances (m/s).

The fastest mile for the site was obtained from the William J. Fox Airfield Airport, which is within approximately 15 miles from the project site. The total surface area of all the piles was calculated and then the erosion potentials were determined. Daily disturbance of the storage pile was assumed.

Based on the fastest mile for the site, the friction velocity for the scrap was calculated to be approximately 1.166 m/s. Because this friction velocity was lower than the scrap threshold friction velocity, no fugitive emissions from wind erosion of the scrap pile were indicated.

3.3 Storage and Handling of Raw Materials (EID-04, EID-05, EID-06_11, EID-06_12, EID-06_13)

3.3.1 Alloy Material Storage and Handling—Outdoor (EID-04)

Alloys would be used for formulating and refining the steel produced in the EAF. Alloys would be brought into the facility via trucks and stored in an outdoor storage pile as shown in the site layout drawing. Emissions would be generated at the alloy pile from load-ins and load-outs. The emissions would be PM/PM_{10}/$PM_{2.5}$ only.

Emissions from this source were calculated similar to Scrap Pile Storage and Handling—Outdoor (EID-02) using the drop equation, found in AP-42 Section 13.2.4, *Aggregate Handling and Storage Piles*. The following input parameters were used for alloy as shown in Table 3-2:

- Alloy silt content of 9.5 percent.
- Alloy moisture content of 5.4 percent.
- No consideration of control efficiency because the activity would occur outdoors.

The annual emissions were based on the total alloy handled per year as listed in Table 3-1. PM_{10} and $PM_{2.5}$ multipliers from AP-42 Section 13.2.4 were used to calculate the emissions of these pollutants. Annualized hourly emissions were based on 8,760 hours of operation.

3.3.2 Alloy Storage Pile—Wind Erosion (EID-05)

Fugitive emissions from wind erosion of the alloy storage piles would be PM/PM_{10}/$PM_{2.5}$ only. The emissions were estimated using AP-42 Section 13.2.5, *Industrial Wind Erosion* in a manner similar to the scrap pile wind erosion (EID-03). The difference in the calculations of alloy pile wind erosion were as follows:

- Threshold friction velocity was revised to 1.12 m/s per Table 13.2.5-2: Uncrusted Coal Pile of AP-42 Section 13.2.5.
- The storage pile area was revised to alloy pile dimensions as shown in the site layout drawing.

Hourly emissions were based on annual emissions and 8,760 hours of operation.

3.4 Melt Shop Baghouse (EID-06)

The EAF and LMS would have a direct evacuation control (DEC) system, which would vent the exhaust from this equipment to the primary melt shop baghouse (MSBH) inlet header (primary control circuit, EID-06_01). The primary MSBH outlet would be connected to a second baghouse (the secondary MSBH), which would also collect emissions from other emission sources in the melt shop as described below.

The melt shop would be ventilated from the roof canopy duct and the ventilation exhaust would also be exhausted to the inlet header of the secondary MSBH (the secondary control circuit). The secondary control circuit would capture and transport emissions from the following processes to the MSBH.

- EAF fugitives in the melt shop (EID-06_02).
- Ladle metallurgy station DEC (EID-06_03).
- Casting operation fugitives (EID-06_04).
- Slag dump (EID-06_05).
- Ladle and tundish refractory repairs (EID-06_06).
- Ladle and tundish dumping (EID-06_07).
- Scrap cutting torches (EID-06_14).

In addition, the following vents would be connected to the inlet header of the secondary MSBH:

- MSBH dust silo bin vent (EID-06_08).
- MSBH dust loadout (EID-06_09).
- Activated carbon injection bin vent (EID-06_10).
- Carbon silo bin and hopper vent (EID-06_11).

- Flux silo 1 bin and hopper vent – lime (EID-06_12).
- Flux silo 2 bin and hopper vent – Dolomite (EID-06_13).
- Scrap cutting torches (EID-06_14).

Emissions from these activities would be $PM/PM_{10}/PM_{2.5}$, NO_X, CO, SO_2, VOCs, and toxic air pollutants from the EAF and LMS such as lead and mercury.

The exhaust from the primary control circuits would pass through several control systems before exhausting to the atmosphere as described in Chapter 2, *Project Description*, of this application. The proposed control devices are:

- A settling chamber with urea injection to control NO_x via selective non-catalytic reduction and to remove large particulates via settling.
- A primary baghouse to control $PM/PM_{10}/PM_{2.5}$ emissions.
- A wet scrubber to control SO_2, VOC, and $PM/PM_{10}/PM_{2.5}$ emissions.

The secondary control circuits would have following controls:

- A hydrated lime injection system to control SO_2 from LMS.
- An activated carbon injection system to control emissions of mercury and VOCs.
- A secondary baghouse to further control $PM/PM_{10}/PM_{2.5}$ emissions.

Emission factors for the MSBH control system (EID-06) were developed based on BACT analysis and vendor specifications.

Table 3-7 lists the proposed emission factors for the criteria pollutants for the MSBH system (EID-06).

TABLE 3-7
EMISSION FACTORS FOR THE MELT SHOP BAGHOUSE SYSTEM

Pollutant	Emission Factor	Emission Factor Units
PM	0.0467	lb/ton of steel
PM_{10}	0.0467	lb/ton of steel
$PM_{2.5}$	0.0467	lb/ton of steel
NO_x	0.090	lb/ton of steel
SO_2	0.101	lb/ton of steel
CO	1.819	lb/ton of steel
VOC	0.075	lb/ton of steel

NOTES: CO = carbon monoxide; lb/ton = pounds per ton; NO_X = nitrogen oxides; PM = total particulate matter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter; SO_2 = sulfur dioxide; tpy = tons per year; VOC = volatile organic compounds

SOURCE: Data compiled by Environmental Science Associates in 2024

Annual emissions were calculated based on annual steel throughput of 456,000 tons as shown in Table 3-1. Hourly emissions were calculated based on 8,760 hours of operation per year.

3.5 Caster Spray Vent Stack Emissions (EID-07)

Water would be sprayed on the steel at the caster and this would generate air pollutant emissions. Emission factors for NO_x, CO, SO_2, and VOC were developed based on the publicly available test data from a similar facility (August 2018 PSD air permit application for Nucor Steel Florida, Inc. in Frostproof, Florida), which contains data from emissions tests performed on the caster spray stack at Nucor's facility in Crawfordsville, Indiana. These tests measured the hourly emissions in pounds per hour. The annual emissions were calculated assuming 8,760 hours per year of operation. The PM/PM_{10}/$PM_{2.5}$ emissions were similarly based on the publicly available Nucor Steel Florida, Inc. PSD air permit application from a test dated November 29, 2012, at the Nucor mini mill in Huger, South Carolina.

3.6 Roll Mill Vent (EID-08)

Water droplets that would be created from the spraying of steel billets with water can entrain minor amounts of VOCs and HAPs from oil and grease contamination of the contact water. The emissions would be vented via natural convection through a ridge ventilator on the roof.

Particulate emissions from the rolling vent are negligible and not included in the calculations. This assumption is in line with a recently submitted publicly available Title V Significant Revision application for the CMC Steel Fabricators DBA CMC Steel Arizona, Mesa, AZ. The CMC, AZ facility is very similar in operation and throughputs with the PSGM3 facility and listed the rolling mill particulate emissions as below de minimis levels.

VOC emissions from the rolling mill vent were estimated from the emission factor listed in the USEPA publication *Volatilized Lubricant Emissions from Steel Rolling Operations* (Mackus and Joshi 1981). This publication estimated approximately 4.63 percent of lube oil/grease used in the rolling mill to have vaporized and exhausted from the rolling mill vent. The VOC emissions were therefore calculated as follows:

Annual VOC emissions rate (tpy) = (4.63/100) * annual lube oil/grease usage (tpy)

The conversion of lube oil/grease usage from gallons per year to tpy was calculated based on average lube oil/grease density of 7.5 pounds per gallon per available published data.

Hourly VOC emissions were estimated from the annual emissions considering 8,760 hours of operations per year.

3.7 Slag Handling and Processing (EID-09, EID-10, EID-11)

3.7.1 Slag Material Storage and Handling Outdoor (EID-09)

Slag would be produced in the steelmaking process mainly in the EAF, but also in smaller quantities in the LMS. The slag from these operations would be skimmed and dumped inside the melt shop. The cooled slag would be then transported outdoors to the slag handling area shown in the site layout drawing, where it would be stored in the raw-slag storage pile for cooling and settling. When processing is required, the slag from this pile would be crushed in a primary crusher and then fed to a grizzly screen for separation into various sizes. The screened slag would be sent to a magnetic separator to separate and recover the scrap from the slag, which would be stored in three storage piles (Piles A, B, and Revert) in the slag processing area.

The nonmagnetic slag from the magnetic separator would be transferred by conveyors and stored in three different storage piles: oversized nonmagnetics, medium nonmagnetics, and fines nonmagnetics.

There would be a number of transfer points in the slag handling process. The emissions from these processes would be $PM/PM_{10}/PM_{2.5}$ only. Emissions were calculated based on emission factors from AP-42 Section 11.19.2, Table 11.19.2-2. Water would be sprayed at all of these transfer points during use. Therefore, controlled emission factors from AP-42 Table 11.19.2-2 have been used. The emission factors were used with the annual slag handling quantity to calculate annual emissions. Hourly emission rates were calculated based on annual emissions and operating hours of 2,920 per year. Annualized hourly emissions were based on 8,760 hours per year.

3.7.2 Slag Pile Wind Erosion (EID-10)

The processed scrap storage piles in the slag processing area (Piles A, B, and Revert) were assumed to have no fugitive emissions, because of the large size of the scraps the friction velocity threshold for the scrap storage pile is expected to exceed the site's friction velocity. Therefore, only slag storage piles are considered for this emissions source.

Fugitive dust would be generated when processed slag is dropped into the slag storage piles and when the slag storage piles experience wind erosion. Based on discussion with the vendor, only the following slag storage piles would generate fugitive dust:

- Raw slag storage pile.
- Nonmagnetic fines slag storage pile.
- Finished fines product stockpile.

The medium-sized and oversized nonmagnetic slag storage piles and processed slag storage piles are not expected to have any fugitive emissions, because of the large size of the slag materials for which the friction velocity thresholds for these piles are expected to exceed the site's calculated friction velocity.

The fugitive emissions from slag drops were calculated using a methodology similar to that used for scrap drop fugitive emissions (EID-02), with the following revision:

- Slag moisture content was considered to be 3 percent per vendor data.

The fugitive emissions from the slag storage piles were calculated using a methodology similar to that used for scrap pile wind erosion (EID-03), with the following revision:

- A friction velocity threshold of 1.12 m/s (uncrusted coal pile) was used as a conservative assumption.

Hourly emission rates were calculated based on annual emissions and 8,760 hours per year of operation.

3.7.3 Slag Screening and Crushing (EID-11)

As mentioned above, slag would be processed in a crusher before the separation of sizes in a grizzly screen. Water would be sprayed during operation of the crusher and at the conveyors to and from the crusher to control dust. PM/PM_{10}/$PM_{2.5}$ emission factors based on AP-42, Chapter 11.19.2, Table 11.19.2-2 (controlled) and Table 11.19.2-1 (controlled) were used for the conveyors and crusher, respectively. The emission factors were used with total annual handled slag quantity to calculate annual emissions. Hourly emissions were based on a total of 2,920 hours of operation per year. Annualized hourly emissions were based on 8,760 hours per year.

3.8 Auxiliary Equipment—Cooling Towers (EID-12, EID-13, EID-14, EID-15)

Four cooling tower systems would be used to remove the heat absorbed by the water system throughout the plant:

- *Cooling Tower 1*—non-contact cooling water—four cells.
- *Cooling Tower 2*—contact cooling water—two cells.
- *Cooling Tower 3*—carbon capture system no. 1—two cells.
- *Cooling Tower 4*—carbon capture system no. 2—one cell.

PM/PM_{10}/$PM_{2.5}$ would be the only emissions from the cooling towers. PM emissions were estimated based on AP-42 Section 13.4; PM_{10} and $PM_{2.5}$ emissions were refined by the method detailed in the paper *Calculating Realistic PM_{10} Emissions from Cooling Towers* by Reisman and Frisbie (2004), often referred to as the “Frisbie Method.”

The cooling tower calculation methodology presented in AP-42 Section 13.4 was used to estimate PM emissions as follows:

PM = water circulation rate * drift rate * total dissolved solids (TDS)

High-efficiency drift eliminators would control drift to 0.0005 percent, based on the BACT analysis. A conservative TDS of 4,000 parts per million by weight was used for all cooling towers. The cooling tower recirculation rates were based on preliminary data from vendors.

This calculation assumes that all TDS emitted in “drift” particles (liquid water entrained in the air stream and carried out of the tower through the induced draft fan stack) would be PM emissions. As per AP-42 Section 13.4, this results in a conservatively high PM_{10} and $PM_{2.5}$ emission rate if all PM is assumed to be PM_{10}/$PM_{2.5}$. The method described by Reisman and Frisbie was therefore used in conjunction to calculate a more realistic estimate of PM_{10} and $PM_{2.5}$ emissions. This method uses a representative drift droplet-size distribution (based on drift eliminator test data) and the TDS concentration in the water to calculate the solid mass in each drop size. Using this drift droplet-size distribution, the percentage of drift mass containing particles small enough to produce PM_{10} and $PM_{2.5}$ can be calculated. This fraction can then be applied to the PM emission rate to determine the PM_{10} and $PM_{2.5}$ emission rates. Annual emissions were calculated from the hourly emission rates based on 8,760 hours of operation per year.

3.9 Auxiliary Equipment—Emergency Engines (EID-16, EID-17, EID-18)

The facility would have the following emergency engines, all of which would be fueled by propane:

- One 600-horsepower (hp) fire pump engine (EID-16).
- One 200 hp cooling water pump engine (EID-17).
- One 2,682 hp emergency generator engine (EID-18).

Emissions from the engines would be generated during combustion of propane and would include $PM/PM_{10}/PM_{2.5}$, NO_X, CO, VOC, SO_2, and HAPs. Emission factors in pounds per 1,000 gallons of propane from the California Air Resources Board (CARB) (1999) and the hourly propane usage were used in the calculations of hourly emissions. Annual emissions were calculated based on 200 hours of non-emergency operations for each engine as restricted by CARB requirements for emergency engines. Annualized hourly emissions were based on 8,760 hours per year.

3.10 Fuel Tanks—Diesel and Gasoline (EID-19, EID-20, EID-21, EID-22)

The facility would have the following aboveground storage tanks to fuel various pieces of equipment:

- One 8,000-gallon diesel tank with 1,200 gallons per hour (gph) filling rate (EID-19).
- One 2,000-gallon diesel tank with 800 gph filling rate (EID-20).
- One 500-gallon gasoline tank with 100 gph filling rate (EID-21).
- One 250-gallon gasoline tank with 100 gph filling rate (EID-22).

A small amount of VOC emissions would result from tank breathing and working losses. VOC emissions were estimated using USEPA's methodology in AP 42 Chapter 7. Annualized hourly emissions were based on 8,760 hours per year.

3.11 Haul Roads Fugitive Emissions—Paved Roads (EID-23) and Unpaved Roads (EID-24)

Several haul roads would be used for bringing material on-site or hauling materials off-site. These haul road segments are designated as follows to coincide with specific materials:

- Scrap
- Fluxing agents
- Alloy
- Carbon

- Spent refractory
- Finished product
- Slag
- Mill scale
- Baghouse dust
- Miscellaneous vehicles

The emissions would be particulate matter ($PM/PM_{10}/PM_{2.5}$) only.

The roads used for hauling materials on-site would be a combination of paved and unpaved roads. The emissions from the haul roads were estimated based on AP-42 Section 13.2.1, *Paved Roads* and Section 13.2.2, *Unpaved Roads*.

PSGM3 would use best management practices for the haul roads to minimize emissions.

3.11.1 Paved Haul Roads

Uncontrolled PM emissions from haul road traffic were estimated using the following size-specific emission calculation equation applicable to paved roads:

$$E = k * (sL)^{0.91} * (W)^{1.02}$$

where:

E = particulate emission factor

sL = silt loading (g/m^2)

W = mean vehicle weight (tons)

k = constant (AP-42, Table 13.2-1.1)

The silt loading of 9.7 g/m^2 was based on AP 42 Section 13.2, Table 13.2.1-3, for iron and steel production. The mean vehicle weight of 40 tons was estimated based on currently available data and by averaging the loaded and unloaded vehicle weights for all haul roads. $PM_{10}/PM_{2.5}$ emissions were based on particle size multipliers (k value) listed in AP 42 Section 13.2, Table 13.2.1-1.

PSGM3 would water and sweep the paved haul road as needed. To account for this, a control technique with an efficiency of 90 percent was applied to the calculations of uncontrolled emissions on paved haul roads based on the USEPA report *Control of Open Fugitive Dust Sources* (USEPA 1988).

3.12 Unpaved Haul Roads

Emissions from traffic on haul roads were estimated using the following emission calculation equation applicable to unpaved surfaces at industrial sites:

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

where:

E = particulate emission factor

s = surface material silt content (percent)

W = mean vehicle weight (tons)

k = constant (AP-42, Table 13.2.2-2)

a = constant (AP-42, Table 13.2.2-2)

b = constant (AP-42, Table 13.2.2-2)

A silt content of 6 percent was used based on typical silt content values for iron and steel production per AP-42 Section 13.2.2, Table 13.2.2-1.

PSGM3 would water the unpaved haul road as needed. To account for this control technique, a control efficiency of 50 percent was applied to the uncontrolled emissions on unpaved haul roads, using the methodology listed in the Mojave Desert Air Quality Management District and Antelope Valley Air Pollution Control District's *Emissions Inventory Guidance, Mineral Handling and Processing Industries* (MDAQMD and AVAPCD 2000). Watering is the most common control technique for unpaved roads and the equation used provides a control efficiency for a given water application rate.

Hourly emissions were calculated based on 8,760 hours of operation per year.

3.13 Hazardous Air Pollutant Emissions

The MSBH (EID-06) would emit HAPs such lead, mercury, and other metals as part of the EAF/LMS process. The facility will not use any fluoride based fluxing or alloying agents and therefore fluoride emissions are not expected. Vendor data indicated that there will be negligible emissions of sulfuric acid mist (H_2SO_4) and total reduced sulfur (TRS) including hydrogen sulfide (H_2S).

Emissions for lead, mercury, and other metallic HAPs were estimated based on the test data reported in the publicly available PSD application for the Nucor Frostproof, FL facility (Burns McDonnell 2018). As reported in this application, Nucor Corporation conducted analyses of EAF baghouse dust emissions from 2009 to 2011 for the Nucor Berkeley facility in South Carolina. The composition of HAPs in the baghouse dust was conservatively estimated to be the average over the three-year period plus two standard deviations. The metals analysis of the baghouse dust was used to calculate emissions of HAPs from the melt shop baghouse at the PSGM3 facility.

In addition, small quantities of HAP emissions are expected from the rolling mill vent (EID-08) and emergency engines (EID-16, EID-17, and EID-18). HAPs from engines are based on emission factors from natural gas-fired engines in AP-42. HAPs from the rolling mill vent are scaled from published data in the Nucor Florida permit application which is a similar facility. While scrap torch cutting (EID-06_14) would involve the combustion of acetylene gas, HAP emissions are considered negligible due to the minimal volume of gas used for this intermittent activity and because these emissions will be captured in the Meltshop Baghouse.

3.14 Greenhouse Gas Emissions

Greenhouse gas (GHG) emissions are expected mainly from the melt shop baghouse (EID-06) as part of the EAF process. Smaller quantities of GHG emissions are expected from the combustion of propane in the emergency engines (EID-16, EID-17, and EID-18). Combustion air would be introduced at the outlet duct of the EAF to oxidize CO to carbon dioxide (CO_2). This post-combustion control of CO is widely used throughout the industry as the best technology for CO control. CO_2 emissions are also generated from the use of oxygen lances in the EAF. Oxygen lances increase heat transfer while reducing heat losses and reduce tap-to-tap time. GHG emissions from EAF operations (EID-06) were based on BACT limits for similar facilities. GHG emissions from scrap torch cutting (EID-06_14) emergency engines (EID-16, EID-17, and EID-18) were calculated based on emission factors in USEPA's Mandatory GHG Reporting Rule (40 CFR 98 Subpart C).

The facility plans to install and operate a carbon capture system (CCS) to reduce GHG emissions significantly. As CCS has not been demonstrated in practice in the steel industry, the system is designed with a bypass option. Therefore, no credit is considered for the CCS in the potential to emit calculations for GHG emissions.

CHAPTER 4
Regulatory Review

This part of the application describes the applicability of federal regulations and Eastern Kern Air Pollution Control District (EKAPCD) provisions. Note that some of the discussions may describe how a regulation is not applicable.

In certain instances, there may be multiple applicable regulatory requirements that identify differing levels of emission limitations. For instance, where a Best Available Control Technology (BACT) emission limitation is established for a specific pollutant and a New Source Performance Standard (NSPS) regulation is also applicable, the BACT limitation may be more stringent than an applicable NSPS emission limitation for the same pollutant. In these situations, compliance with the most restrictive requirement would be considered demonstration of compliance for other less-stringent requirements.

4.1 EKAPCD Rule 201—Permits Required (Authority to Construct and Permit to Operate)

EKAPCD Rule 201 requires that any source that may cause the emission of air contaminants first obtain authorization for such construction from the EKAPCD Air Pollution Control Officer (Control Officer). Because the project would be a new source of air contaminants, PSGM3 would require the issuance of an Authority to Construct (ATC) by the Control Officer for each distinct process before construction may begin. Before any new source may operate, the source must obtain a Permit to Operate (PTO) from the Control Officer.

This application package includes the required elements for the Control Officer's review that together demonstrate that the proposed PSGM3's processes and equipment are designed, controlled, and equipped to comply with all applicable federal, state, and EKAPCD rules and regulations, such that an ATC can be issued as described in EKAPCD Rule 208. The project would be constructed in accordance with all the ATCs so that the Control Officer could issue the associated PTOs as described in Rule 208. Chapter 8 of this report breaks down the facility processes or equipment that require an individual county air permit.

4.2 EKAPCD Rule 210.1—New and Modified Stationary Source Review

EKAPCD Rule 210.1 applies to all new and modified stationary sources subject to Rule 201 with the following purposes:

(1) Provide for preconstruction review of new or modified stationary sources of affected pollutants to ensure that emissions will not interfere with the attainment of ambient air quality standards.

(2) Ensure that appropriate new and modified sources of affected pollutants are constructed with BACT.

(3) Provide for no significant net increase in emissions from new and modified stationary sources for all nonattainment pollutants and their precursors.

This application addresses BACT, where required for the new emission sources, in Chapter 5.

Table 4-1 shows the attainment designation status in eastern Kern County for the national and California ambient air quality standards.

TABLE 4-1
EASTERN KERN AIR POLLUTION CONTROL DISTRICT ATTAINMENT STATUS

Pollutant	National Standards (NAAQS)	California Standards (CAAQS)
Ozone (1-hour standard)	Attainment/Maintenance[a b]	Nonattainment
Ozone (8-hour standard)	Nonattainment–Severe	Nonattainment
CO	Unclassified/Attainment	Unclassified
NO_2	Unclassified/Attainment	Attainment
SO_2	Unclassified/Attainment	Attainment
PM_{10}	Unclassified/Attainment[d]	Nonattainment
$PM_{2.5}$	Unclassified/Attainment	Unclassified
Lead	Unclassified/Attainment	Attainment
Visibility-Reducing Particles	N/A	Unclassified
Sulfates	N/A	Attainment
Hydrogen Sulfide	N/A	Unclassified
Vinyl Chloride[c]	N/A	N/A

NOTES: CAAQS = California ambient air quality standard; CO = carbon monoxide; N/A = not applicable; NAAQS = national ambient air quality standard; NO_2 = nitrogen dioxide; PM = total particulate matter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter; SO_2 = sulfur dioxide

a. The NAAQS for 1-hour ozone was revoked on June 15, 2005, for all areas except Early Action Compact areas.
b. Eastern Kern Air Pollution Control District (EKAPCD) was in attainment for the 1-hour ozone NAAQS at the time of revocation. The proposed attainment maintenance designation's effective date was June 21, 2005; therefore, it did not become effective.
c. In 1990, the California Air Resources Board (CARB) identified vinyl chloride as a toxic air contaminant and determined that it does not have an identifiable threshold. Therefore, CARB does not monitor or make status designations for this pollutant.
d. The project area is located in the part of EKAPCD that is unclassified/attainment, the Kern River/Cummings Valleys area is classified as nonattainment–serious, and the Indian Wells Valley is classified at attainment maintenance.

SOURCES: USEPA 2024b; CARB 2024a.

As shown in Table 4-1, eastern Kern County is designated as severe nonattainment relative to the federal eight-hour ozone ambient air quality standard. With respect to the California ambient air quality standards, eastern Kern County is designated as nonattainment with both the one-hour and eight-hour ozone standards, along with the standard for particulate matter less than 10 microns in diameter (PM_{10}). Although the area is designated as unclassified or attainment for the other pollutants, some of these pollutants are classified as precursors of nonattainment pollutants. A *precursor* is a pollutant directly emitted to the atmosphere that then contributes to the formation of a nonattainment pollutant in the atmosphere. Nitrogen oxides (NO_X) and volatile organic compounds (VOC) are defined as precursors to ozone formation; NO_X, VOC, and sulfur oxides (SO_X) are defined as precursors to PM_{10} formation. Under

EKAPCD Rule 210.1, emissions offsets are required when the emissions of nonattainment pollutants or their precursors exceed the following trigger levels:

- PM_{10}—15 tons per year (tpy).
- SO_X (as sulfur dioxide [SO_2])—27 tpy.
- VOC—25 tpy.
- NO_X (as nitrogen dioxide [NO_2])—25 tpy.

Offsets are emissions reductions, generally obtained from existing sources located in the vicinity of a project, which would offset the proposed emissions increase of a new or modified source. PSGM3 is voluntarily proposing limits on emissions of PM_{10}, SO_X, VOC, and NO_X that are more stringent than what would be considered BACT for similar sources, which would result in facility-wide emission levels that avoid triggering the emissions offset requirements. For a detailed summary of potential emissions, see Table 2-1; calculations are provided in Appendix D.

4.3 EKAPCD Rule 210.4—Prevention of Significant Deterioration

EKAPCD has incorporated the federal Prevention of Significant Deterioration (PSD) regulations in 40 CFR Part 52.21 as part of the rules and regulations of the district's Rule 210.4, with exclusions as described in Rule 210.4.IV.B. Pursuant to 40 CFR 52.21 and EKAPCD Rule 210.4, PSD review applies to the construction of a new major stationary source located in an area designated as attainment or unclassified whose potential to emit a regulated PSD pollutant exceeds the PSD significance level for that pollutant. The PSD regulations defined in 40 CFR 52.21 require that the following issues be addressed:

- Determination of BACT on a case-by-case basis, considering costs as well as energy, environmental, and economic impacts.
- Demonstration that the increase in emissions would not cause or contribute to an exceedance of the national ambient air quality standards (NAAQS) or PSD increment.
- Analysis of the impairment, if any, to visibility, soils, vegetation, and growth.

As described below, three criteria were evaluated to determine PSD applicability to the project:

(1) Whether the project is sufficiently large (in terms of its emissions) to be a "major stationary source" or "major modification."

(2) Whether the source is in a region designated as attainment or unclassified.

(3) Whether the pollutants emitted from a major stationary source equal or exceed the significant emission rates (SERs) defined by 40 CFR 52.21(b)(23)(i).

- **Is the project a major stationary source?** Steel mills are a listed source in 40 CFR 52.21(b)(1)(i)(a), which describes source categories that are major stationary sources if they have the potential to emit 100 tpy or more of any regulated pollutant. 40 CFR 52.21(b)(1)(iii) describes how listed sources must include fugitive emissions when determining whether they are subject to major-source permitting. The project would satisfy the first criterion of PSD applicability as a new major stationary source because of its potential to emit carbon monoxide (CO) in excess of the major source threshold of 100 tpy.

- **Is the region designated as attainment or unclassified?** If the area in which the project would be located is designated as nonattainment for a pollutant and a proposed new source would have potential emissions of that pollutant equal to or greater than the corresponding major-source threshold, that pollutant would not be subject to PSD review; rather, the pollutant would be subject to nonattainment new-source review, which is discussed in Section 4.4 of this application. For the proposed Mojave Micro Mill, potential CO emissions would exceed the major-source threshold of 100 tpy in an area designated as unclassified/attainment with the CO ambient air quality standards; therefore, the second criterion of PSD applicability is satisfied, and CO is subject to PSD review.
- **Do emission levels equal or exceed an SER?** With the source meeting the definition of a new major stationary source, any other regulated pollutant with potential emissions equal to or exceeding the SERs identified in 40 CFR 52.21(b)(23) must also undergo PSD review for that pollutant. Regulated PSD pollutants in EKAPCD's jurisdictional area include NO_X, SO_2, CO, particulate matter (PM), PM_{10}, particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), VOC, hydrogen sulfide, total reduced sulfur, sulfuric acid (H_2SO_4) mist, fluorides, mercury, and lead. **Table 4-2** shows the project's maximum potential emission levels for each regulated PSD pollutant and compares those emission levels to their corresponding PSD significance levels. The project has the potential to emit pollutants at levels exceeding their SERs. Thus, the project meets the third criterion for PSD applicability.

TABLE 4-2
MAXIMUM FACILITY-WIDE POTENTIAL EMISSION LEVELS

Pollutant	Preliminary Estimated Project Emissions	Federal PSD Threshold	Federal Significance Emission Rate Threshold	Federal NNSR Threshold	EKAPCD Offset Threshold
	tpy	tpy	tpy	tpy	tpy
NO_X	22.79	100	40	25	25
CO	418.99	100	100	–	–
PM	17.70	100	25	–	–
PM_{10}	12.84	100	15	–	15
$PM_{2.5}$	10.95	100	10	–	–
SO_2	23.12	100	40	–	27
VOC	22.70	100	40	25	25
H_2SO_4 Mist	0.00	–	7	–	–
Lead	0.05	–	0.6	–	–
Fluorides	0.00	–	3	–	–
H_2S	0.00	–	10	–	–
TRS	0.00	–	10	–	–
Mercury	0.04	–	–	–	–
CO_2e	100,092	–	75,000	–	–

NOTES: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; EKAPCD = Eastern Kern Air Pollution Control District; H_2S = hydrogen sulfide; H_2SO_4 = sulfuric acid; NNSR = Nonattainment New Source Review; NO_X = nitrogen oxides; PM = total particulate matter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter; PSD = Prevention of Significant Deterioration; SO_2 = sulfur dioxide; tpy = tons per year; TRS = total reduced sulfur; VOC = volatile organic compounds

SOURCE: Data compiled by Environmental Science Associates in 2024

The project satisfies all three criteria for determining the applicability of PSD review. Because potential emissions of CO would exceed the major-source threshold of 100 tpy, the proposed Mojave Micro Mill meets the definition of a new major source. Because it is a major source, the potential emission levels of pollutants equal to or exceeding their corresponding SERs must undergo PSD review. CO, $PM_{2.5}$, and CO_2e trigger PSD review.

4.4 EKAPCD Rule 210.1.A—Major New and Modified Stationary Source Review

EKAPCD Rule 210.1.A provides for preconstruction review of any new major stationary source, or major modification of an existing major stationary source, of a nonattainment pollutant. Eastern Kern County is designated as severe nonattainment with respect to the federal eight-hour ozone ambient air quality standard. With respect to the California ambient air quality standards, eastern Kern County is designated as nonattainment relative to both the one-hour and eight-hour ozone standards along with the PM_{10} standard. Because ozone is not directly emitted by sources, major-source thresholds instead apply to the ozone precursor emissions of NO_X and VOC. The major-source threshold for either NO_X or VOC in an area classified as severe nonattainment is 25 tpy. PSGM3 has proposed enforceable limitations on facility emissions so that they would not exceed these 25 tpy thresholds for NO_X and VOC. Maximum potential emissions of PM_{10} are less than the major-source threshold of 100 tpy. Therefore, EKAPCD Rule 210.1.A does not apply to this permit action.

4.5 EKAPCD Rule 201.1—Permits to Operate for Sources Subject to Title V of the Federal Clean Air Act Amendments of 1990

EKAPCD Rule 201.1 is intended to implement the requirements of Title V of the federal Clean Air Act Amendments of 1990. Title V of the federal Clean Air Act requires facilities with the potential to emit more than 100 tons of a regulated criteria pollutant, 10 tons of a single hazardous air pollutant (HAP), or 25 tons of all HAPs combined on an annual basis, to obtain a Title V Air Operating Permit. In severe nonattainment areas for ozone, the major-source threshold for the precursor pollutants NO_X and VOC is 25 tpy. As shown in Table 4-2 of this report, potential facility-wide emissions of CO are expected to exceed 100 tpy; therefore, a Title V Air Operating Permit would be required. PSGM3 would submit a Title V Air Operating Permit application within 12 months of the commencement of operation, as described in Rule 201.1, Section V.B.1.b.

4.6 EKAPCD Rule 422—Standards of Performance for New Stationary Sources

Under 40 CFR Part 60 (adopted by reference in EKAPCD Rule 422), the project would be subject to federal standards of performance for new stationary sources, commonly referred to as the New Source Performance Standards or NSPS. Relevant NSPS are listed below, along with a description of how the project plans to meet the applicable standards.

4.6.1 NSPS 40 CFR Part 60, Subpart A

Elements of Subpart A apply to each affected facility under any NSPS rule, as specified in each NSPS source-category standard. Subpart A contains general requirements for notifications, monitoring, performance testing, reporting, recordkeeping, operation, and maintenance.

4.6.2 NSPS 40 CFR Part 60, Subpart AAb—Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarbonization Vessels Constructed After May 16, 2022

Subpart AAb applies to electric arc furnaces (EAFs) in the steel industry that are installed or modified after May 16, 2022. Discharges from the EAF control device (baghouse) are limited to 0.16 pound of particulate matter per ton of steel produced and 3 percent opacity. Melt shops containing affected facilities are limited to 0 percent opacity during melting and refining and 6 percent opacity during charging. The BACT requirements for this emission source are more stringent than this NSPS limitation. *Dust-handling systems* are equipment used to handle particulate matter collected by the EAF baghouse such as control device dust hoppers, dust-conveying equipment, any silo, dust storage equipment, dust-treating equipment, dust transfer equipment, and any secondary control devices used with the dust transfer equipment. Dust-handling systems are limited to 10 percent opacity. A continuous-opacity monitor is required on the baghouse unless the operator conducts daily Method 9 visible emissions readings and installs a bag leak detection system.

4.6.3 NSPS 40 CFR Part 60, Subpart JJJJ

Subpart JJJJ–Standards of Performance for Stationary Spark Ignition Internal Combustion Engines became effective March 18, 2008, and applies to the three propane-fired emergency engines (600-horsepower [hp] fire water pump, 200 hp cooling water pump, and 2,682 hp generator).

NSPS Subpart JJJJ states that emergency spark-ignited rich-burn engines larger than 25 hp manufactured after January 1, 2009, are subject to the emission standards and other requirements for new nonroad spark ignition engines in 40 CFR Part 1048. Manufacturers of such engines must certify that their engines achieve these standards.

The project's emergency engines would satisfy these requirements based on certificates from the manufacturer. PSGM3 would comply with the requirements of 40 CFR Part 60, Subpart JJJJ, to maintain certification of such engines by operating and maintaining the engines according to the manufacturer's emission-related written instructions. PSGM3 would keep records of maintenance conducted on the engines. PSGM3 would operate the emergency engines only in emergency situations or for maintenance and testing purposes.

4.7 EKAPCD Rule 423—National Emission Standards for Hazardous Air Pollutants and Source Categories

The National Emission Standards for Hazardous Air Pollutants (NESHAPs) are contained in 40 CFR Part 63 (adopted by reference in EKAPCD Rule 423). The NESHAPs are emissions standards set by the U.S. Environmental Protection Agency (USEPA) for particular source categories. The NESHAPs for new sources require that certain HAP emissions be reduced to the maximum degree that USEPA determines to be achievable, which is known as the *Maximum Achievable Control Technology standards*. The project would be considered an area source of HAP emissions for rule applicability.

4.7.1 NESHAP 40 CFR Part 63, Subpart A

All affected sources are subject to the general provisions of 40 CFR 63, Subpart A, unless specifically excluded by the source-specific NESHAP. Subpart A requires initial notification and performance testing, recordkeeping, and monitoring; provides reference methods; and mandates general control device requirements for all other subparts as applicable.

4.7.2 NESHAP 40 CFR Part 63, Subpart ZZZZ

The Stationary Reciprocating Internal Combustion Engine (RICE) NESHAP is applicable to stationary RICEs at major and area sources of HAP emissions.

The emergency generator and emergency pump engines would be affected sources under 40 CFR 63, Subpart ZZZZ. The engines would be subject only to the requirements of 40 CFR 60, Subpart JJJJ, based on their classification as new emergency stationary RICEs located at an area source of HAP emissions pursuant to 40 CFR 63.6590(c)(1).

The emergency generators and emergency fire pump engines would comply with the applicable requirements of this rule based on certificates from the manufacturer.

4.7.3 NESHAP 40 CFR Part 63, Subpart YYYYY

The NESHAP for EAF Steelmaking Facilities affects EAFs at steelmaking facilities that are area sources of HAP emissions. The project's EAF would be subject to this subpart.

The facility would be required to follow a pollution prevention plan to inspect metallic scrap and remove chlorinated plastics, free organic materials, and lead. Alternatively, the facility can opt to not charge scrap from motor vehicle bodies, engine blocks, oil filters, oily turnings, machine shop borings, transformers or capacitors containing polychlorinated biphenyls (PCBs), lead-containing components, chlorinated plastics, or free organic liquids. A draft pollution prevention and scrap management plan for the site is provided in Appendix C.

For scrap containing motor vehicle scrap, mercury switches must be removed from scrap before charging to the EAFs. The facility's scrap specifications must require the removal of mercury switches from vehicle bodies used to make the scrap. The facility must prepare and operate according to a plan demonstrating how the facility would implement this scrap specification. There are two alternatives to this:

- The facility can certify in its notification of compliance status that it participates in a USEPA-approved program for removal of mercury switches, and that it purchases motor vehicle scrap only from scrap providers who participate in this type of program.
- The facility can certify in its notification of compliance status that the only materials from motor vehicles in the scrap are materials recovered for their specialty alloy (e.g., chromium, nickel, molybdenum, or other alloys) content, such as certain exhaust systems, and that based on the nature of the scrap and purchase specifications, the type of scrap is not reasonably expected to contain mercury switches.

For scrap that does not contain motor vehicle scrap, the facility must certify in its notification of compliance status and maintain documentation that this scrap does not contain motor vehicle scrap.

The proposed Mojave Micro Mill would have a maximum capacity greater than 150,000 tons of steel production per year; therefore, the EAF baghouse exhaust would be limited by this regulation to no more than 0.0052 grain per dry standard cubic foot (gr/dscf) of particulate matter exhaust flow. Opacity from the melt shop would be limited to 6 percent opacity. The BACT requirements for this emission source are more stringent than these area-source Maximum Achievable Control Technology standards.

4.7.4 NESHAP 40 CFR Part 63, Subpart YYYYYY

The area source NESHAP for Ferroalloys Production Facilities affects EAFs at these facilities. A ferroalloys production facility manufactures silicon metal, ferrosilicon, ferrotitanium using the aluminum reduction process, ferrovanadium, ferromolybdenum, calcium silicon, silicomanganese zirconium, ferrochrome silicon, silvery iron, high-carbon ferrochrome, charge chrome, standard ferromanganese, silicomanganese, ferromanganese silicon, calcium carbide or other ferroalloy products using electrometallurgical operations including EAFs or other reaction vessels. The project's EAF would not be subject to this subpart because PSGM3 would not produce ferroalloys.

4.8 Additional EKAPCD Regulations

This section describes additional EKAPCD regulations that apply to the project.

4.8.1 Regulation I—General Provisions

EKAPCD Regulation I contains various rules for implementing an air quality program. Some are procedural, such as providing regulatory definitions of terms used throughout the rules, while others establish requirements for sources of air contaminants. Rules relevant to the review of this application and issuance of an ATC have been summarized.

4.8.1.1 EKAPCD Rule 103—Confidential Information

Rule 103 describes how information provided to EKAPCD is a public record. Trade secrets are not public records under this rule. Any person furnishing records may label as "trade secret" any part of those records that are entitled to confidentiality. Written justification for the "trade secret" designation must be furnished with the record and the Control Officer shall make a ruling to accept or reject the claim of trade secret.

4.8.1.2 EKAPCD Rule 108.2—Emissions Statement Requirements

Rule 108.2 requires that any source with the potential to emit NO_X or VOC provide EKAPCD with a written statement of actual NO_X and VOC emissions. This emission statement must be provided annually. PSGM3 would supply the required emissions statements of actual or potential NO_X and VOC emissions.

4.8.1.3 EKAPCD Rule 113—Separation and Combination

Rule 113 states that if air contaminants from two or more source operations are combined before emission and there are not adequate or reliable means to reasonably separate the components of the combined emissions to measure the individual source contribution, then Regulation I requirements must be applied to the combined emissions stream as if it originated from a single source, and the most stringent limitations and requirements of Regulation I apply. The project's melt shop baghouse would contain combined emissions from the EAF, ladle metallurgy station, caster, melt shop baghouse dust silo bin vent and loadout, raw material silo bin and hopper vents, and scrap cutting torches; therefore, this rule is applicable to the project.

4.8.1.4 EKAPCD Rule 115—Applicability of Emission Limits

Rule 115 states that when multiple rules apply to any emissions source, the rule or combination of rules resulting in the lowest level of emissions shall apply unless specifically exempted.

4.8.2 Regulation II—Permits

EKAPCD Regulation II houses the rules for permitting and operating sources of air pollutant emissions. Some of these rules have already been discussed in this section based on how their applicability may guide the reviewer with the regulatory setting. Additional rules relevant to the project are summarized here. Note that some of the following discussions describe how a rule does not apply to the project.

4.8.2.1 EKAPCD Rule 201.2—Synthetic Minor Sources

Rule 201.2 describes how owners or operators of specified stationary sources that would otherwise be major stationary sources may request and accept a federally enforceable emissions limit sufficient to enable to the sources to be considered "synthetic minor" stationary sources. A synthetic minor source is not a major source and therefore would not be required to apply for a Title V Operating Permit unless required for a reason other than being a major source.

PSGM3 is voluntarily proposing some emissions limits that are more stringent than would be required by BACT to avoid exceeding the major-source thresholds for NO_X and VOC; however, emissions of CO would exceed its major-source threshold and PSGM3 would be required to apply for a Title V Operating Permit. PSGM3 is proposing voluntary emissions limits for NO_X and VOC to avoid exceeding the major-source thresholds for those pollutants and nonattainment new-source-review permitting that would be required by EKAPCD Rule 210.1.A. A voluntary emission limit for SO_2 is also proposed so that maximum facility-wide emissions would not trigger the emissions offset obligations for SO_2 required by EKAPCD Rule 210.1. The proposed limits for PM_{10}, NO_X, and VOC would also serve to avoid triggering the emissions offset obligations required by EKAPCD Rule 210.1 for those pollutants.

4.8.2.2 EKAPCD Rule 201.3—Federally Enforceable Limits on Potential to Emit

Rule 201.3, and the amended version of this rule dated January 12, 2012, address a similar concept of limiting an otherwise major stationary source from Title V Operating Permit applicability via federally enforceable limits on emissions. The proposed Mojave Micro Mill would require a Title V Operating Permit because of the potential for CO emission levels to exceed the major-source threshold; therefore, this rule does not apply.

4.8.2.3 EKAPCD Rule 202—Permit Exemptions

Rule 202 describes some exemptions from ATC and PTO requirements for certain sources of air pollutant emissions. An ATC would be required for most emissions sources at the Mojave Micro Mill facility; however, there would be emissions sources at the facility that would meet exemption criteria. These include vehicles, storage of refined lubricating oils, liquid storage vessels 19,800 gallons or less for diesel, liquid storage vessels 250 gallons or less for gasoline, and storage of liquified gases in unvented pressure vessels.

4.8.2.4 EKAPCD Rule 204—Applications

Rule 204 requires that every application for an air quality permit required under Rule 201 be filed in the manner and form prescribed by the Control Officer. The standard EKAPCD forms are included in Appendix A.

4.8.2.5 EKAPCD Rule 205—Permit Renewal

Rule 205 requires that a PTO be obtained from the Control Officer before the operation of any new or modified equipment. A PTO may be denied if the equipment is found to not conform to the standards set forth in an ATC, or if the appropriate permit fees have not been paid. The PTO shall be renewed annually by payment of the annual permit renewal fee. This rule also describes how an ATC shall expire two years from the date of issuance unless a renewal has been granted in a manner described in this rule. PSGM3 intends to begin project construction in July 2024.

4.8.2.6 EKAPCD Rule 206—Action on Applications

Rule 206 requires that the Control Officer act on a permit application within a reasonable time and notify the applicant in writing of approval, conditional approval, or denial.

4.8.2.7 EKAPCD Rule 208—Standards for Granting Applications

Rule 208 requires that the Control Officer deny an ATC for new or modified equipment unless the applicant shows that the equipment complies with all applicable federal, state, and local rules and regulations. If compliance can be assured by including appropriate conditions pursuant to Rule 209, an ATC shall be issued. In addition, the applicant must submit a signed California Environmental Quality Act (CEQA) indemnity agreement in response to a request for such an agreement by the Control Officer. A PTO for new or modified equipment shall be denied if the equipment has not been constructed or is not operating in accordance with the ATC. This application is intended to supply all the necessary elements for the Control Officer's review and issuance of the ATC. PSGM3 intends to comply with the conditions of an ATC such that the PTO can be issued.

4.8.2.8 EKAPCD Rule 208.1—Disclosure of Air Toxics Information

Rule 208.1 requires that an air permit for a new or modified source include a condition for compliance with the California Air Toxics "Hot Spots" Information and Assessment Act. This program requires stationary sources to report the types and quantities of certain toxic air pollutants that are emitted to the air.

4.8.2.9 EKAPCD Rule 209—Conditional Approval

Rule 209 states that conditions required for a source to comply with the requirements of Rule 208 and 208.1 must be specified in writing. These conditions are to be included in an ATC and PTO issued by the Control Officer.

4.8.2.10 EKAPCD Rule 209.1—Permit Conditions

Rule 209.1 requires that equipment not be operated contrary to any conditions specified in the PTO.

4.8.2.11 EKAPCD Rule 210.2—Standards for Permits to Operate

Rule 210.2 requires that the Control Officer deny a PTO for a new source unless the source, or any source or modification that provides offsets, has been constructed and/or modified to operate and emit quantities of air contaminants consistent with the conditions of the ATC. Offsets required as a condition of the ATC would commence at the time of, or before, initial operation of the new source and would be maintained throughout its operation.

4.8.2.12 EKAPCD Rule 210.3—Emissions Reductions Banking

Rule 210.3 facilitates the use of emissions reductions by industry as tradeoffs or offsets for new or modified stationary sources of air contaminants.

4.8.2.13 EKAPCD Rule 210.5—Visibility Protection

Rule 210.5 states that any new major stationary source that would emit NO_X, SO_2, or PM in significant amounts and that must utilize BACT/Lowest Achievable Emission Rate for such pollutants must demonstrate that an adverse impact on visibility will not occur. The proposed Mojave Micro Mill would be a new major stationary source with potential $PM_{2.5}$ emissions in significant amounts; therefore, this requirement applies to the project. The visibility analysis is included in Chapter 7 of this document.

4.8.2.14 EKAPCD Rule 211—Further Information

Rule 211 establishes that before acting on an application for a permit, the Control Officer may require the applicant to furnish information for further plans or specifications.

4.8.3 Regulation III—Fees

EKAPCD Regulation III describes the various fees associated with the application for, issuance, and renewal of an ATC and PTO.

4.8.3.1 EKAPCD Rule 301—Permit Fees

Rule 301 establishes that every applicant for an ATC or PTO shall pay a filing fee of $130. In addition, the issuance of an ATC or PTO requires the payment of fees as described in Rule 302 (permit fee schedules for equipment) and Rule 303 (miscellaneous fees including application processing, preparation of CEQA documents, preliminary consultation, and priority processing). EKAPCD would determine the appropriate fees due for the issuance of an ATC or PTO that shall be mailed or delivered to the applicant. This application includes the filing fee payment of $130 for each permit required for construction and operation of the facility.

4.8.3.2 EKAPCD Rule 301.4—Greenhouse Gas Fee

Rule 301.4 requires that any stationary source with actual greenhouse gas emissions greater than or equal to 100,000 tons of carbon dioxide equivalent per calendar year to pay a Consumer Price Index–adjusted greenhouse gas fee as determined by EKAPCD.

4.8.3.3 EKAPCD Rule 302—Permit Fee Schedules

Rule 302 establishes equipment schedules that are used to determine fees associated with the issuance and renewal of a PTO. When determining the fees to be charged, applicable equipment within each process that requires a permit must be totaled for each schedule. EKAPCD would determine the appropriate fees due for issuance of an ATC or PTO based on information provided by the applicant, which shall be mailed or delivered to the applicant.

4.8.3.4 EKAPCD Rule 303—Miscellaneous Fees

Rule 303 describes additional potential fees associated with the review of permit applications and the issuance of an ATC or PTO. The application processing fee, which is a per-hour engineering analysis fee for the time required to process the application and the cost of all notices required by Rules 210.1, 201.1, and 210.3, would apply to this action. A fee would be required for any CEQA documentation prepared by EKAPCD, and (on a per-hour basis) for any time spent in preliminary consultation regarding the issuance of an ATC.

PSGM3 requests priority processing for this application, which includes the priority processing fee as described in this rule—1.5 times the hourly salary rate of an Air Quality Engineer II for every hour of overtime devoted to the processing of this application. PSGM3 is willing to pay for up to 100 hours of overtime processing for this application.

4.8.4 Regulation IV—Prohibitions

EKAPCD Regulation IV contains general emissions standards that apply to sources of air pollutant emissions. Other applicable regulations may result in limitations on emissions that are more stringent than these standards. District emissions standards that would apply to the project are summarized below.

4.8.4.1 EKAPCD Rule 401—Visible Emissions

Rule 401 requires that a person not discharge into the atmosphere, from any single emissions source, any air contaminant for a period or periods aggregating more than three minutes in any one hour that is either of the following:

- As dark or darker in shade than number 1 on the Ringlemann Chart, as published by the United States Bureau of Mines.

- Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described by number 1 on the Ringlemann Chart.

4.8.4.2 EKAPCD Rule 402—Fugitive Dust

Rule 402 requires that a person not cause or allow fugitive dust emissions from the following:

- Any active project, open storage pile, or disturbed surface area, where such emissions remain visible in the atmosphere beyond the property line of the emission source.
- Any applicable source, where that the dust causes 20 percent opacity or greater during each observation and the total duration of such observations (not necessarily consecutive) is a cumulative three minutes or more in any one hour. Only opacity readings from a single source are included in the cumulative total used to determine compliance.

An owner/operator of any active project subject to Rule 402 must implement one or more of the Reasonably Available Control Measures listed in Table 1 of the rule, or Bulk Material Control Measures listed in Table 2 of the rule, to limit visible dust emissions to no more than 20 percent opacity and meet the conditions for a stabilized surface as defined in the rule.

Outdoor handling, storage, and transport of bulk materials is prohibited unless the appropriate Bulk Material Control Measures are sufficiently implemented to limit visible dust emissions to no more than 20 percent opacity. The Conditions of Stabilized Surface, as defined in Section III.RR of Rule 402, must also be met.

An owner/operator must submit a fugitive dust emission control plan to the Control Officer prior to the start of any Large Project as defined in Section III.CC of Rule 402. Activity cannot commence until the Control Officer has approved or conditionally approved the fugitive dust emission control plan.

4.8.4.3 EKAPCD Rule 404.1—Particulate Matter Concentration–Desert Basin

Rule 404.1 requires that particulate matter emissions not exceed 0.1 grains per standard cubic foot (gr/scf) of gas from any single-source operation. All point sources of particulate matter associated with the project would comply with this emissions standard, and in many cases, they would be subject to more stringent limitations based on other applicable regulations such as NSPS or BACT.

4.8.4.4 EKAPCD Rule 405—Particulate Matter–Emission Rate

Rule 405 requires that particulate matter emissions from any source operation not exceed the process weight rates described in the rule. All sources of particulate matter associated with the project would comply with this emissions standard, and in many cases, they would be subject to more stringent limitations based on other applicable regulations such as NSPS or BACT.

4.8.4.5 EKAPCD Rule 407—Sulfur Compounds

Rule 407 requires that sulfur compounds not exceed 0.2 percent by volume calculated as SO_2 from any source. All sources of sulfur emissions associated with the project would comply with this emissions standard, and in many cases, they would be subject to more stringent limitations based on other applicable regulations such as NSPS or BACT.

4.8.4.6 EKAPCD Rule 410.1A—Architectural Coating Controls

The purpose of Rule 410.1A is to limit VOC emissions from architectural coatings. This rule specifies VOC content limits, storage, cleanup, and labeling requirements for architectural coatings. The project would comply with the VOC content limits specified in this rule.

4.8.4.7 EKAPCD Rule 411—Storage of Organic Liquids

Rule 411 applies to equipment used to store organic liquids and petroleum distillates with a true vapor pressure of greater than 1.5 pounds per square inch absolute. The project would have two aboveground gasoline storage tanks that would be of relatively small capacity relative to the requirements of this rule. These tanks would employ pressure relief devices as required for aboveground gasoline tanks of 19,800 gallons or less capacity.

4.8.4.8 EKAPCD Rule 412—Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants

Rule 412 applies to stationary storage containers with capacities greater than 250 gallons. Each of these tanks must be equipped with a California Air Resources Board (CARB)–certified permanent submerged fill pipe using a properly maintained Phase I vapor recovery system and pressure-vacuum relief valves.

4.8.4.9 EKAPCD Rule 412.1—Transfer of Gasoline to Vehicle Fuel Tanks

Rule 412.1 applies to the transfer of gasoline into vehicle fuel tanks from stationary storage containers subject to the requirements of Rule 412. The gasoline dispensing unit must be equipped with a CARB-certified Phase II vapor recovery system. However, this requirement does not apply to gasoline tanks with a throughput less than or equal to 24,000 gallons per year or 10,000 gallons in any one month.

The project's gasoline storage tanks are not expected to exceed these throughput rates; therefore, the Phase II vapor recovery systems would not be required. PSGM3 would comply with the administrative requirements for demonstrating the project's compliance with this exemption.

4.8.4.10 EKAPCD Rule 419—Nuisance

Rule 419 states that a person shall not discharge air contaminants or other material which cause injury, detriment, nuisance, or annoyance to the public; or which endanger the comfort, repose, health or safety of the public; or which cause or have a natural tendency to cause injury or damage to business or property. PSGM3 would operate the project in compliance with this rule.

4.8.4.11 EKAPCD Rule 429.1—Cooling Towers (Hexavalent Chromium)

The requirements of Rule 429.1 apply to anyone who owns or operates—or who plans to build, own, or operate—a cooling tower in which the circulating water is exposed to the atmosphere, and to anyone who sells water treatment chemicals for cooling towers. This rule prohibits the addition of compounds containing hexavalent chromium to circulating water in cooling towers. The project would have four cooling towers as part of normal process operations. No hexavalent chromium compounds would be added to the circulating water in the project's cooling towers.

4.9 National Ambient Air Quality Standards

An ambient air quality analysis and dispersion modeling has been performed for the project and will be provided in a separate submittal. The project is not expected to cause or contribute to a violation of the NAAQS. For a full description of the NAAQS modeling analyses, see the separate submittal.

4.10 Additional Impact Analysis

The impact of the project on soils, vegetation, visibility, and growth was considered as part of the PSD process. Construction and operation of the project is not expected to have a detrimental effect on plants, soils, or industrial, commercial, and residential growth. For a full analysis of these impacts, see Chapter 7 of this application.

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CHAPTER 5
Best Available Control Technology Analysis

Federal regulations in 40 CFR 52.21(j)(2) require new major stationary sources to apply Best Available Control Technology (BACT) for each regulated New Source Review (NSR) pollutant that they would have the potential to emit in significant amounts. The *potential to emit* is defined in 40 CFR 52.21(a)(4) as follows:

> *Potential to emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source.*

Chapter 3, *Emissions Estimates*, lists the NSR pollutants from the proposed facility and the proposed allowable emissions rates, considering control technologies. **Table 5-1** lists these potential emission rates and compares them to federal and Eastern Kern Air Pollution Control District (EKAPCD) significant-amount emission rates. The Prevention of Significant Deterioration (PSD) major-source threshold is listed as 100 tpy because the project facility falls into one of the 28 source categories of stationary sources listed in 40 CFR 52.21(i)(a).

As shown in Table 5-1, emissions of the NSR pollutant carbon monoxide (CO) would trigger the PSD "Major Source" threshold of 100 tons per year (tpy). In addition, emissions of particulate matter equal to and less than 2.5 microns in diameter ($PM_{2.5}$) would exceed the PSD "Significant Emission Rate" thresholds listed in 40 CFR 52.21(a)(23). Emissions of greenhouse gases (GHGs) (carbon dioxide equivalent [CO_2e]) also will trigger PSD because one of the criteria pollutants (CO) has triggered PSD and the CO_2e emissions exceed their significant emission rate. Therefore, the federal BACT analysis in this chapter is limited to the following pollutants:

- CO.
- $PM_{2.5}$.
- GHGs (CO_2e).

EKAPCD Rule 210.1.III.A requires a BACT analysis for all affected air contaminants expected to be emitted from a new emissions unit. Affected air contaminants are those for which there are ambient air quality standards. Thus, additional EKAPCD-specific BACT analysis is required for PM_{10}, nitrogen oxides (NO_X) and sulfur dioxide (SO_2). VOC is also included in this BACT analysis because it is a precursor of ozone, which has a national ambient air quality standard (NAAQS). This EKAPCD pollutant BACT analysis is also included in this section.

TABLE 5-1
SUMMARY OF POTENTIAL FACILITY-WIDE EMISSIONS

Pollutant	Preliminary Estimated Project Emissions tpy	Federal PSD Threshold tpy	Federal Significant Emission Rate Threshold tpy	EKAPCD Major-Source Threshold tpy	EKAPCD Non-attainment Major-Source Threshold tpy
NO_X	22.79	100	40	100	25
CO	418.99	100	100	100	
PM	17.70	100	25	100	
PM_{10}	12.84	100	15	100	15
$PM_{2.5}$	10.95	100	10	100	
SO_2	23.32	100	40	100	27
VOC	22.70	100	40	100	25
H_2SO_4 Mist	0.00	100	7	–	–
Lead	0.05	100	0.6	–	–
Fluorides	0.00	100	3	–	–
H_2S	0.00	100	10	–	–
TRS	0.00	100	10	–	–
CO_2e	100,092	–	75,000	–	–

NOTES: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; EKAPCD = Eastern Kern Air Pollution Control District; H_2S = hydrogen sulfide; H_2SO_4 = sulfuric acid; NO_X = nitrogen oxides; PM = total particulate matter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter; PSD = Prevention of Significant Deterioration; SO_2 = sulfur dioxide; TBD = to be determined; tpy = tons per year; TRS = total reduced sulfur; VOC = volatile organic compounds

SOURCE: Data compiled by Environmental Science Associates in 2024

5.1 Methodology

BACT is defined by the U.S. Environmental Protection Agency (USEPA) in 40 CFR 52.21(a)(12) (the Federal PSD Regulation) as follows:

> Best available control technology *means an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR part 60, 61, or 63.*

USEPA has directed by policy that the BACT be determined using a process referred to as the "top-down" approach. As identified in USEPA's October 1990 draft of an NSR Workshop Manual, the basic steps of the "top-down" BACT analysis used in this analysis are as follows:

- Step 1—Identify all potential control technologies.
- Step 2—Identify technically feasible control technologies.
- Step 3—Rank the technically feasible control technologies.
- Step 4—Evaluate the most effective controls and document the results.
- Step 5—Propose BACT.

One of the most acceptable ways to identify available control technologies (Step 1) is to review previous BACT determinations for similar sources. USEPA's Reasonably Available Control Technology/Best Available Control Technology/Lowest Achievable Emission Rate (RACT BACT LAER) Clearinghouse (RBLC) database was reviewed to identify recent BACT determinations for similar projects. The RBLC database is maintained on USEPA's Clean Air Technology Center website (USEPA 2024c). Standard queries of the database were conducted to identify control technology determinations from January 1, 2014, to April 1, 2024.

To identify previous control technology determinations for comparable sources, a query of the RBLC database was run using the "standard search" with the following parameters:

- Final and draft determinations.
- Standard Industrial Classification code = North American Industry Classification System = 331110–Iron and Steel Mills.
- RBLC process type codes = 81.210–Steel Production, Electric Arc Furnaces and 81.310–Steel Foundry Processes, Electric Arc Furnaces.
- Primary fuel = electric.
- Case-by-case basis = BACT-PSD.

The following general methodologies were used in reviewing the RBLC data:

- Facilities similar to the proposed Mojave Micro Mill facility in capacity and elements of physical operation, such as the use of an endless charging system (ECS), were preferred as candidate sources for comparison.
- Some RBLC database listings included separate limits for the electric arc furnace (EAF) and ladle metallurgy station (LMS). The EAF limits were selected for review because the majority of the emissions from the steelmaking process are generated in the EAF. Also, in the proposed Mojave Micro Mill facility, the LMS emissions would be directly connected to the same secondary baghouse as the EAF emissions.

The results were reviewed, and incomplete data were removed from the list. **Appendix E** presents the final RBLC data used for the BACT analysis.

5.2 Best Available Control Technology Analysis for Carbon Monoxide

Primary sources of CO emissions in an EAF steelmaking facility are the EAF and LMS. Fossil fuel combustion in the engines (fire pump, cooling-water pump, and emergency generator) and scrap cutting torches are minor sources of CO emissions.

5.2.1 Electric Arc Furnace, Ladle Metallurgy Station, and Melt Shop

In an EAF steelmaking facility, CO emissions are generated mainly when the scrap metal is melted in the EAF. These emissions result from the combustion of small amounts of greases and oils present in the scrap, the release of an electrode carbon during the melting process, and the addition of various forms of carbon to the steel to achieve the desired carbon content of the steel product.

Step 1: Identify all potential control technologies. Oxygen lances introduce oxygen into the molten steel and serves as an initial step to reduce CO emissions via oxidation. Emissions from the molten steel are ducted through the ECS. Ambient air is introduced at the juncture between the EAF and ECS via an adjustable gap which provides oxygen to combust the CO, resulting in a reduction of CO emissions. This ducting system is also referred to as a *direct evacuation control* (DEC) system and significantly reduces the amount of CO emissions.

The RBLC database lists DEC with oxy-fueled burners only for CO control. The following potentially applicable CO controls were examined:

- Direct evacuation control.
- Catalytic oxidizers.
- Thermal oxidizers.

Step 2: Identify technically feasible control technologies. The technical feasibility of each identified control strategy is described below.

Direct Evacuation Control. DEC is technically feasible and the project's EAF and LMS have been designed to include both oxygen lancing and DEC.

Catalytic Oxidizers. Catalytic oxidizers employ a catalyst bed through which the exhaust stream is vented. CO oxidation occurs at the catalyst bed. However, catalytic oxidizers are unsuitable for use as a supplemental CO control device for the EAF. The catalyst bed is prone to plugging due to the large amounts of particulate in the exhaust stream, thereby drastically reducing the surface area available for oxidation reactions and rendering it ineffective in a short time. In addition, the typical operating temperature window for catalytic oxidizers is 500–550 degrees Fahrenheit (°F). Given the large volume of air exhausted from the melt shop into the baghouse system, this temperature window would not be available in the process. Therefore, catalytic oxidizers are not a technically feasible option for CO control.

Thermal Oxidizers. Thermal oxidizers utilize a high-temperature chamber to combust or oxidize pollutants. Thermal oxidizers utilize fossil fuel such as natural gas, but in an effort to minimize environmental impacts, the design of the PSGM3 facility would not include any supply of natural gas. Other fossil fuels such as diesel oil are not practical for the continued operation of a thermal oxidizer for this facility.

Thermal oxidizers would also generate NO_X emissions because of the high temperatures involved (i.e., thermal NO_X is formed) and would create an additional emissions impact because fuel combustion is necessary to maintain the high temperatures needed for proper operation.

Additionally, thermal oxidizers are unlikely to provide a substantial reduction in CO emissions beyond those already achieved by the air gap in the DEC, which would provide oxidation given the high temperature of the EAF exhaust. Therefore, thermal oxidizers are not a technically feasible option for CO control.

Step 3: Rank the technically feasible control technologies. The only technically feasible option for CO emission control for the project's EAF is the use of oxy lancing and DEC with an air gap. Additionally, the effective use of a scrap management plan would serve to minimize the organic content present in the scrap steel, thereby helping to reduce CO emissions.

Step 4: Evaluate the most effective controls and document the results. DEC with an air gap, oxygen lancing, and effective use of a scrap management plan would minimize CO emissions from the EAF and is the most effective control technology.

Step 5: Propose BACT. The RBLC database showed CO BACT limits ranging from 1.98 to 4.5 lbs/ton of steel for various sizes of steel mills for data between 2014-2024. From the RBLC database and published permit applications, the CO BACT was 3.5 lbs/ton of steel for facilities similar to design and production as the PSGM3 facility, as shown in **Table 5-2**.

TABLE 5-2
CARBON MONOXIDE BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION FOR FACILITIES COMPARABLE TO THE PROPOSED MOJAVE MICRO MILL

Facility	Gerdau AmeriSteel, Charlotte, North Carolina	Nucor Steel, Frostproof, Florida	Nucor Steel, Sedalia, Missouri	Nucor Steel, Kingman, Arizona	CMS, Mesa, Arizona	CMC, Durant, Oklahoma
Permit ID (Issued)	19-01-V-567 (2019)	1050472-001-AC & PSD FL-446 (2019)	2018-03-048 (2018)	Application ID: 95370	V07001	2015-0643-C (2016)
Steel Production (tpy)	575,000	450,000	450,000	650,000	635,000	650,000
CO BACT	4.4	3.5	3.5	3.5	4.0	4.0

NOTES: BACT = Best Available Control Technology; CMC = Commercial Metals Company; lb/ton = pounds per ton; N/A = not applicable; PM = total particulate matter;

SOURCE: Data compiled by Environmental Science Associates in 2024

Vendor has provided specification for CO emissions of 1.819 pounds per ton (lb/ton) of steel produced for the EAF/LMS operation, achieved with state-of-the-art pollution control design. This specification is lower than the currently established BACT (i.e. Beyond BACT) for similar facilities and is proposed as BACT for CO for the PSGM3 facility.

The nature of the operation of the process is such that the startup and shutdown (SUSD) emissions from this emission unit are lower than maximum routine emissions. Therefore, a separate BACT analysis for SUSD is not required and the SUSD emissions are included as part of the proposed hourly and annual emission limits.

5.2.2 Engines

In engines, CO results from incomplete combustion. Control of CO emissions is typically accomplished by providing adequate fuel residence time and a high temperature in the combustion zone to ensure complete combustion. CO emissions may indicate early quenching of combustion gases on cylinder walls or valve surfaces. Lean-burn engines typically have higher CO emissions and lower NO_X emissions because of the air-to-fuel ratios at which they operate.

Step 1: Identify all potential control technologies. CO emissions from engines are a function of oxygen availability (excess air), flame temperature, residence time at flame temperature, combustion zone design, and turbulence. Front-end control involves controlling the combustion process to suppress CO formation. Post-combustion control involves using catalytic oxidation.

The technologies identified for reducing CO emissions from the engines are an oxidation catalyst (also referred to as a *CO catalyst*) and combustion controls. The standard technology for reducing CO emissions is to maintain “good combustion” through proper control and monitoring of the combustion process through the air-to-fuel ratio. A survey of the RBLC database (Appendix E) indicates that combustion controls is the most prevalent BACT control, with several oxidation catalysts listed as BACT.

Step 2: Rank the technically feasible control technologies. As described below, oxidation catalysts and good combustion practices were considered for reducing CO emissions from engines:

Oxidation Catalysts. Oxidation catalysts are a post-combustion technology that does not rely on the introduction of additional chemicals for a reaction to occur. The oxidation of CO to CO_2 utilizes excess air present in the engine exhaust; the activation energy required for the reaction to proceed is lowered in the presence of a catalyst. Products of combustion are introduced into a catalytic bed, with the optimum temperature range for these systems being between 700°F and 1,100°F. At higher temperatures, catalyst sintering may occur, potentially causing permanent damage to the catalyst. The addition of a catalyst bed onto the engine exhaust would create a pressure drop, resulting in back pressure to the engine. This has the effect of reducing the efficiency of the engine and the power-generating capabilities.

When operated intermittently as an emergency engine, the reciprocating internal combustion engine (RICE) would not maintain a consistent temperature hot enough for oxidation catalyst operation. Also, the infrequent scheduled use of the engine during testing and maintenance for 200 hours per year would not result in efficient operation of the oxidation catalyst. Therefore, the use of oxidation catalysts is not technically feasible method for controlling CO emissions from the RICE.

Good Combustion Practices. "Good combustion practices" include operational and design elements to control the amount and distribution of excess air in the flue gas to ensure that enough oxygen is present for complete combustion (controlling the air-to-fuel ratio). Good combustion practices are a technically feasible method of controlling CO emissions from the RICE.

Step 3: Rank the technically feasible control technologies. Using good combustion practices is the only technically feasible control and thus is the highest ranked.

Step 4: Evaluate the most effective controls and document the results. Using good combustion practices such as optimizing the fuel/air ratio through proper tuning and maintenance is the best control option.

Step 5: Propose BACT. Good combustion practices are proposed as BACT for the engines.

The BACT determinations shown in the RBLC for lean-burn combustion engines are for natural gas–fired emergency engines. The proposed Mojave Micro Mill facility would combust propane in these engines; therefore, the RBLC database data would not be exactly appropriate for these engines. The California Air Resources Board (CARB) has developed allowable CO emission factor of 129 lbs/1000 gallons of fuel for propane-fired engines in California (CARB 1999). This emission factor is considered as BACT for CO for the engines.

5.3 Best Available Control Technology Analysis for $PM_{2.5}$

5.3.1 Electric Arc Furnace, Ladle Metallurgy Station, and Melt Shop

In an EAF steelmaking facility, $PM_{2.5}$ is generated as part of particulate matter (PM) during the charging of scrap metal in the EAF, the melting of scrap via electric arc, and the pouring of the molten metal into the ladle. Most of the particulate emissions are generated during the melting of the scrap. Emissions from the EAF are vented through the DEC system, and typically controlled in downstream baghouses.

The $PM_{2.5}$ portion of the PM includes both filterable and condensable particulate matter (CPM). In regulatory language, the term "PM" normally only includes filterable particulate and does not include CPM. Filterable PM is usually measured using USEPA Method 5 and USEPA Method 201A may be used to measure the specific size fractions of filterable PM_{10} or $PM_{2.5}$. CPM is typically measured using USEPA Method 202. When describing PM_{10} or $PM_{2.5}$, CPM is included with the filterable fractions unless otherwise noted. The CPM portion in PM_{10}/$PM_{2.5}$ is highly variable and dependent on the type of scrap and other raw material used in the EAF and LMS. Thus, the $PM_{2.5}$ emissions vary widely between facilities.

Condensable particulate forms primarily from sulfate compounds (produced by sulfur added to the steel) and combustion of volatile organic compounds (VOCs) present in the scrap steel during the melting phase. The amount of sulfur and VOC varies significantly because of the various grades of steel produced and the amount of grease and oil present in the EAF charge, respectively.

Step 1: Identify All Potentially Applicable Control Technologies. Particulate emissions are generated during the charging of scrap metal and scrap substitutes into the EAF, the melting of the scrap via electric arc, and the pouring of the molten metal into the ladle. The majority of the particulate emissions are generated during the melting of the scrap. Emissions from the EAF are vented through a DEC system. The DEC cools and transports the exhaust gases to additional ducting and eventually to the baghouse control device. The EAF's DEC emissions are ducted to a primary baghouse control device (the primary control circuit). The outlet of the primary baghouse is connected to the inlet of the secondary baghouse, which collects other emissions from the melt shop via the melt shop canopy (the secondary control circuit).

The following are the potentially applicable $PM_{2.5}$ control technologies for the EAF:

- Centrifugal separator (cyclone).
- Fabric filter (baghouse).
- Electrostatic precipitator (ESP).
- Wet gas scrubber.

Step 2: Rank the technically feasible control technologies. The technical feasibility of each identified control strategy is described below. None of the identified $PM_{2.5}$ control technologies for the EAF are deemed technically infeasible for control of the EAF.

- *Centrifugal separator (cyclone):* Cyclones utilize centrifugal force and inertia to remove large and medium-sized particles from a gas stream. The particle-laden stream is introduced into the top of the cyclone in a tangential manner, causing it to spiral down a tube. The larger particles are moved outward, impact the wall of the cyclone, and then slide down to a dust receiver for collection. When the gas stream reaches the bottom of the cyclone, it reverses direction, moving upward in a smaller, inner spiral that exits from the top as a cleaned gas stream. Cyclones are considered technically feasible for PM control, although control efficiencies are lower than those of other particulate control devices.
- *Fabric Filter (Baghouse):* Fabric filters, also known as *baghouses*, remove particulate by passing the gas stream through porous fabric filters (bags) that trap the particles on the fabric. The particles collect on the fabric filters and form a porous dust cake layer, which results in a high collection efficiency, even for smaller particles. Baghouses are highly energy efficient and provide sufficient operational flexibility because of their tolerance of varying gas stream conditions inherent in EAF operations. Baghouses have been employed as BACT particulate control for the vast majority of EAFs in existence and are a proven feasible control technology.
- *Electrostatic Precipitator:* ESPs utilize an electric field to electrically charge the exhaust particles, which are then collected on an oppositely charged electric plate, thereby removing the particles from the exhaust stream. The collection plates are periodically cleaned by mechanical rapping to dislodge the particles, which are collected in a hopper. Although it is technically feasible, ESP performance is affected by the presence of metals, especially iron oxide in the EAF/LMS gas stream, which affects the electrical discharges because of its magnetic properties. ESPs could be operated as dry ESP or wet ESPs; the difference is that water is injected in wet ESPs to improve charging. Both dry and wet ESPs are technically feasible but provide low control efficiency.
- *Wet Scrubber:* Wet scrubbers have been used extensively for particulate removal in many industries. Wet scrubbers remove particulate primarily via the inertial impact of the particles with water droplets.

While wet scrubbers can have high removal efficiency for consistent, steady-state streams, the scrubbers require a high-pressure drop (which entails high energy costs) to maintain high removal efficiencies. Wet scrubbers also generate large quantities of wastewater stream as blowdown. A wet scrubber is considered technically feasible.

Step 3: Rank the Technically Feasible Control Technologies. The third step in the BACT analysis is to rank the remaining control technologies in order of control effectiveness. **Table 5-3** lists $PM_{2.5}$ control technologies by effectiveness.

The efficiency of the controls depends on the nature of the material being emitted. Electrostatic precipitators work best on high-resistivity particulate matter. Inertial separators such as cyclones and wet scrubbers work best on large-diameter particles but have only modest efficiencies on smaller (5 microns and below) particulate matter.

TABLE 5-3
EFFICIENCY RANKING OF TOTAL PARTICULATE MATTER CONTROL TECHNOLOGIES FOR ELECTRIC ARC FURNACE, LADLE METALLURGY STATION, AND MELT SHOP

	Approximate Control Efficiency (percent)	
Control Technology	**Range**	**Efficiency**
Fabric filter	99 to 99.99[a]	99.5
Dry electrostatic precipitator	99 to 99.99[b]	99.5
Wet electrostatic precipitator	99 to 99.99[c]	99.5
Wet gas scrubber	70 to 99.9[d]	85
Cyclone	50 to 99[e]	70

SOURCES:

a. USEPA 2003a, 2003b.
b. USEPA 2003c, 2003d.
c. USEPA 2003e, 2003f.
d. USEPA 2003g, 2003h, 2003i, 2003j, 2003k, 2003l, 2003m.
e. USEPA 2003n.

Step 4: Evaluate the Most Effective Control Technologies. In a review of the RBLC, fabric filters (also referred to as baghouses) are the only approved BACT methodology for $PM_{2.5}$ emissions from the EAF and LMS. The RBLC search results are included in Appendix E of this application. New Source Performance Standard (NSPS) Subpart AAa requires a control device outlet grain loading of 0.0052 grain per dry standard cubic foot (gr/dscf), which is the basis for the updated and applicable NSPS Subpart AAb PM emission standard of 0.16 lb/ton of steel. Therefore, any proposed BACT must meet or exceed this emissions control level.

A baghouse was identified as the control technology with the greatest control efficiency for the project's EAF and is proposed as BACT for particulate control from the EAF/LMS melt shop baghouse. Because a baghouse is the highest ranked technology, further analysis is not warranted.

Step 5: Propose a $PM_{2.5}$ BACT Determination for the EAF, LMS, and Melt Shop. The $PM_{2.5}$ rate should include both the front and back halves; therefore, RBLC entries for the PM front half only are not appropriate for comparison for $PM_{2.5}$.

EAF BACT $PM_{2.5}$ limits range from the RBLC data are listed below. The RBLC retrieval is included in Appendix E. However, because the RBLC listing is for "EAF," it is unknown whether the limit includes emissions from the LMS, caster, and melt shop fugitives:

- *$PM_{2.5}$ (filterable only):* 0.0018 gr/dscf to 0.0032 gr/dscf
- *$PM_{2.5}$ (filterable plus condensable):* 0.0024 to 0.0054 gr/dscf

Based on operations in facilities similar to the proposed PSGM3 (which include ECS), the $PM_{2.5}$ BACT determinations considered relevant for the project are shown in **Table 5-4**. These $PM_{2.5}$ BACT levels have been recalculated from baghouse outlet concentration in gr/dscf concentration to lb/ton of steel produced, using the permitted emission rates and steel production at these facilities.

Table 5-4
Particulate Best Available Control Technology Determination for Facilities Comparable to the Proposed Mojave Micro Mill

Facility	Gerdau AmeriSteel, Charlotte, North Carolina	Nucor Steel, Frostproof, Florida	Nucor Steel, Sedalia, Missouri	Nucor Steel, Kingman, Arizona	CMS, Mesa, Arizona	CMC, Durant, Oklahoma
Permit ID (Issued)	19-01-V-567 (2019)	1050472-001-AC & PSD FL-446 (2019)	2018-03-048 (2018)	Application ID: 95370	V07001	2015-0643-C (2016)
Steel Production (tpy)	575,000	450,000	450,000	650,000	635,000	650,000
$PM/PM_{10}/PM_{2.5}$ BACT	0.05 lb/ton (PM10-F); 0.24 lb/ton (PM10-T)	0.0018 gr/dscf (PM-F); 0.0024 (PM10-T and PM2.5-T)	0.0015 gr/dscf (PM-F); 0.0024 gr/dscf (PM/PM10/PM2.5–T)	0.0018 gr/dscf (PM-F); 0.0024 (PM10-T and PM2.5-T)	0.0018 gr/dscf (PM-F); 0.0024 (PM10-T and PM2.5-T)	0.0024 gr/dscf (PM10-T and PM2.5-T)
Electric Arc Furnace Emission Rates						
PM (tpy)-F	–	31.27	21.39	187.88	42.42	N/A
PM_{10} (tpy) – T	–	67.79	33.69	87.24	56.56	58.57
$PM_{2.5}$ (tpy)- T	–	67.07	33.66	86.87	56.56	58.57
Best Available Control Technology						
BACT PM (lb/ton)	N/A	0.14	0.10	0.58	0.13	
BACT PM_{10} (lb/ton)	0.24	0.30	0.15	0.27	0.18	0.18
BACT $PM_{2.5}$ (lb/ton)	0.24	0.30	0.15	0.27	0.18	0.18

NOTES: BACT = Best Available Control Technology; CMC = Commercial Metals Company; -F = filterable fraction of PM only; gr/dscf = grains per dry standard cubic foot; ID = identification; lb/ton = pounds per ton; N/A = not applicable; PM = total particulate matter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter; PSD = Prevention of Significant Deterioration; -T = total particulate, filterable and condensable fractions combined; tpy = tons per year

SOURCE: Data compiled by Environmental Science Associates in 2024

In these comparable facilities, the lowest BACT limit for $PM_{2.5}$ is 0.15 lb/ton of steel, corresponding to an outlet grain loading of 0.0024 gr/dscf. Utilizing state-of-the-art control technologies, such as a settling chamber, wet scrubber, and two baghouses in series, the PSGM3 project proposes to further reduce the $PM_{2.5}$ emissions to 0.0467 lbs/ton of steel as per vendor specifications.

Therefore, PSGM3 proposes the following BACT for the melt shop baghouse (EAF and LMS) based on vendor specifications:

- *$PM_{2.5}$ (Filterable and Condensable):* PSGM3 proposes the BACT as 0.0467 lb/ton of steel produced for $PM_{2.5}$, based on an average of three one-hour test runs during operation.

This emission is below the currently established BACT (i.e. Beyond BACT) for currently operational similar facilities.

In addition, the proposed BACT for the EAF, LMS, and melt shop includes the compliance requirements of the NSPS (40 CFR 60 Subpart AAb) applicable to the project as follows:

- 3 percent opacity at the exit from a control device (secondary baghouse).
- 0 percent opacity from a melt shop during melting and refining and 6 percent opacity during charging.

The nature of the operation of the process is such that the startup and shutdown (SUSD) emissions from this emission unit are lower than maximum routine emissions. Therefore, a separate BACT analysis for SUSD is not required and the SUSD emissions are included as part of the proposed hourly and annual emission limits.

5.3.2 Cooling Towers

Cooling towers use evaporation to lower the temperature of water. The latent heat of evaporation results in cooling of the water. This evaporation is usually in the form of pure water vapor, also known as drift. These water droplets in the drift from the exhaust fan of the cooling towers carry with them suspended and dissolved chemicals and minerals, which evaporates in the atmosphere, and generate particulate emissions.

Step 1: Identify All Potential Control Strategies. Particulates are emitted from the cooling towers when the total solids (suspended and dissolved metals and minerals) in the water droplets entrained in the air stream leave the cooling tower (drift). These droplets of water (containing particulates) are called drift. While the majority of the suspended water and particulates are deposited in or near the tower, some of the drift can exit through the top of the tower and enter the air as $PM_{2.5}$.

The particulate emissions from the cooling towers can be controlled by minimizing the amount of water drift that occurs and/or the amount of dissolved solids in the water. This can be accomplished by using high-efficiency drift eliminators, fewer cycles of circulating water concentration, or a combination of both. The number of cycles of water concentration is limited by the amount of water available for use, because lower levels of concentration require increased cooling tower blowdown and more water intake to offset the blowdown.

Review of the federal RBLC database for cooling towers at similar steel mills indicates that high-efficiency drift eliminators and limits on the total dissolved solids (TDS) concentration in the circulating water are the techniques that set the basis for BACT emission limits for cooling towers.

Appendix E summarizes recent BACT determinations for utility-scale mechanical draft cooling towers. The commercially available techniques listed to limit $PM_{2.5}$ releases from utility scale cooling towers include:

- High-efficiency drift eliminators.
- Limitations on TDS concentrations in the circulating water.
- Combinations of drift eliminator efficiency rating and TDS limits.

The use of high-efficiency drift-eliminating media to de-entrain aerosol droplets from the air flow exiting the wetted-media tower is a commercially proven technique to reduce $PM_{2.5}$ emissions.

In addition to the use of high-efficiency drift eliminators, management of the tower water balance to control the concentration of dissolved solids in the cooling water can reduce particulate emissions. Dissolved solids accumulate in the cooling water as a result of the increasing concentration of dissolved solids in the makeup water as the circulating water evaporates, and, secondarily, the addition of anti-corrosion, anti-biocide additives. However, to maintain reliable operation of the tower without the environmental impact of frequent acid wash cleanings, the water balance must be considered. The proposed cooling tower design is based on an engineering judgment that cooling water is estimated not to exceed a TDS concentration of 4,000 parts per million.

Step 2: Identify Technically Feasible Control Technologies. The technical feasibility of each identified control strategy is described below.

High-Efficiency Drift Eliminators. With the development of increasingly effective de-entrainment structures, equipment vendors have claimed that a cooling tower may be specified to achieve drift release no higher than 0.0005 percent of the circulating water rate. This is the most stringent BACT for cooling towers in current permits for steel mills. This level of drift elimination is found on larger cooling towers than would be installed at the proposed Mojave Micro Mill facility. High-efficiency drift eliminators are considered technically feasible for this project.

Limitations on TDS concentrations in the circulating water. Adopting a TDS limit for the circulating water is usually viewed as a measure that benefits air quality by reducing the dissolved salts that can be precipitated from drift aerosols. To reduce TDS, the facility must introduce a higher volume flow of makeup water to the tower. This has the potential environmental disadvantage of increasing the plant's overall water requirements.

Combinations of drift eliminator efficiency rating and TDS limits. Both technologies are technically feasible and can be used in combination.

Table 5-5 summarizes the technical feasibility of the control options for the cooling towers. The expected performance has been determined considering the design requirements for the cooling tower.

TABLE 5-5
SUMMARY OF TECHNICALLY FEASIBLE $PM_{2.5}$ TECHNOLOGIES FOR COOLING TOWERS

Control System		Technical Feasibility	Comments
Drift Eliminators	0.0005% to 0.001% Drift Efficiency	Feasible	The range is based on site-specific conditions.

NOTES: $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SOURCE: Data compiled by Environmental Science Associates in 2024

Step 3: Rank the Technically Feasible Control Technologies. The technically feasible option of high-efficiency drift eliminators can be implemented at different levels of stringency. Development of increasingly effective de-entrainment structures now allows a cooling tower to be specified to achieve drift release no higher than 0.001 percent of the circulating water rate. As seen in Appendix E, *RBLC Tables*, there is one facility that does not appear to be a steel mill comparable to the proposed PSGM3 that has a limit of 0.0005 percent drift eliminators. CMC Oklahoma, which has a process and output almost identical to those proposed for the project, supports a limit of 0.001 percent as BACT for cooling towers of this size. There are no significant costs or environmental factors that favor implementation of a less-stringent drift eliminator option. **Table 5-6** displays the rankings of the controls for the cooling tower.

TABLE 5-6
RANKING OF $PM_{2.5}$ CONTROL FOR COOLING TOWERS

Control System		Expected Performance % Reduction
Drift Eliminators	0.0005% to 0.001% Drift Efficiency	99.9990%

NOTES: $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SOURCE: Data compiled by Environmental Science Associates in 2024

Steps 4 and 5: Evaluate the Most Effective Control Technologies and Propose BACT for $PM_{2.5}$. PSGM3 proposes drift eliminators to control drift emissions to 0.0005 percent of the water flow through the cooling towers are proposed as BACT for $PM_{2.5}$ control on the cooling towers. This represents the highest option for BACT, and in accordance with USEPA guidance, no further control techniques were considered.

5.3.3 Haul Roads

Haul roads would be located on-site. Truck traffic would travel on paved and unpaved roads; some loaders and other equipment would travel on unpaved roads as well. Emissions of particulate matter would be filterable only and speciated into PM, PM_{10}, and $PM_{2.5}$. However, control technologies would control all sizes of particulate.

Step 1: Identify All Potentially Applicable Control Technologies. In a review of the RBLC, the following control technologies for particulate emissions from roads were identified:

- Chemical dust suppression and surfactant application.
- Watering, sweeping, and vacuuming.

- Reducing silt content.
- Traffic and speed restrictions.

Step 2: Identify Technically Feasible Control Technologies. All options listed as potentially applicable control technologies are considered technically feasible.

Step 3: Rank the Technically Feasible Control Technologies. The third step in the BACT analysis is to rank the remaining control technologies in order of control effectiveness. **Table 5-7** lists $PM_{2.5}$ control technologies by effectiveness.

TABLE 5-7
EFFICIENCY RANKING OF PARTICULATE CONTROL TECHNOLOGIES FOR HAUL ROADS

Control Technology	Approximate Control Efficiency (percent)
Watering, sweeping/vacuuming of paved roads	< 98
Paving, gravel, or asphalt	95
Water	90
Speed/traffic restrictions	–

SOURCE: Data compiled by Environmental Science Associates in 2024

Step 4: Evaluate the Most Effective Control Technology. The fourth step in the BACT analysis is to evaluate the most effective control technology based on energy, environmental, and economic impacts. Based on a review of the RBLC, the implementation of a fugitive dust control plan, including watering, vacuuming/sweeping of paved roads, and speed reduction, is considered a control method accepted as BACT for particulate emissions from roads at similar facilities. No specific BACT emission limits associated with the previously mentioned control methods were obtained from the RBLC.

Step 5: Propose a $PM_{2.5}$ BACT Determination for Roads. PSGM3 proposes to develop, maintain, and implement a fugitive dust control plan as BACT for the roads, which will include one or more of the control technologies listed in Table 5-7 as appropriate for specific conditions.

5.3.4 Material Handling

$PM_{2.5}$ emissions would be generated from the handling and storage of raw materials and steelmaking byproducts. The processes that would result in the emission of particulates include storage silos, storage piles, and other material handling.

5.3.4.1 Storage Piles and Drop Points

Material handling sources include the scrap, slag, alloy, and mill scale storage, which would occur both indoors and outdoors and would include both wind erosion from the piles and drop and transfer points at the piles.

Step 1: Identify All Potentially Feasible Control Technologies. In a review of the RLBC, the following control technologies were identified for the control of particulate emissions from storage piles, material handling, and fugitives:

- Wetting piles.
- Partial enclosure.
- Minimization of drop height.

Step 2: Identify Technically Feasible Control Technologies. Minimizing drop height and using covered conveyors are both technically feasible control technologies for handling all material types. Wetting piles or using chemical dust suppressants is technically infeasible for raw scrap piles, fluxing agents, carbon, and alloys, because if water were to contact molten steel in the EAF, a violent and unsafe reaction would occur. If wetting were used to control dust, more energy and combustion would be needed to dry out the material before its entry into the EAF. Wetting is feasible for the mill scale pile. Partial enclosures are feasible in specific cases based on the site layout and travel routes. **Table 5-8** lists the technically feasible control technologies for these sources.

TABLE 5-8
TECHNICAL FEASIBILITY OF PARTICULATE CONTROL TECHNOLOGIES FOR MATERIAL HANDLING

Material Handling Source	Wetting/Moisture	Partial Enclosure	Minimization of Drop Height
Scrap yard	Not feasible	Not feasible	Feasible
Scrap building	Not feasible	Feasible	Feasible
Alloy pile	Not feasible	Feasible	Feasible
Mill scale pile	Feasible	Not feasible	Feasible
Slag yard	Feasible	Not feasible	Feasible
Dust loadout	Not feasible	Not feasible	Feasible
Conveyor transfer points	Not feasible	Feasible	Feasible

SOURCE: Data compiled by Environmental Science Associates in 2024

Step 3: Rank the Technically Feasible Control Technologies. The above-listed control technologies do not all have numeric control efficiencies. **Table 5-9** shows the approximate control efficiencies of some of the control technologies.

TABLE 5-9
EFFICIENCY RANKING OF PARTICULATE CONTROL TECHNOLOGIES FOR MATERIAL HANDLING—DROP POINTS AND STORAGE

Control Technology	Approximate Control Efficiency (%)
Partial enclosure	50–85
Watering	50
Material moisture content	50
Minimize drop height	–

SOURCE: Data compiled by Environmental Science Associates in 2024

Step 4: Evaluate the Most Effective Control Technology. The most effective control varies by material handling source. All technically feasible controls would be implemented as appropriate for each source; therefore, no ranking can be used in the BACT analysis.

Step 5: Propose a $PM_{2.5}$ BACT Determination for Storage Piles. Table 5-10 shows the proposed BACT for the material handling.

TABLE 5-10
PROPOSED BEST AVAILABLE CONTROL TECHNOLOGY FOR PARTICULATE CONTROL OF MATERIAL HANDLING

Material Handling Source	Proposed BACT
Scrap yard	Minimizing drop height
Scrap building	Partial enclosure, minimizing drop height
Alloy pile	Partial enclosure, minimizing drop height
Mill scale pile	Wetting
Slag yard	Wetting, minimizing drop height
Dust loadout	Connected to primary melt shop baghouse
Conveyor transfer points	Partial enclosure, minimizing drop height

NOTE: BACT = Best Available Control Technology
SOURCE: Data compiled by Environmental Science Associates in 2024

5.4 Best Available Control Technology Analysis for Greenhouse Gases

5.4.1 Electric Arc Furnace

As the hot waste gases leave the EAF, combustion air is typically introduced to the ductwork to convert the CO to CO_2, because CO is a regulated criteria pollutant. This practice, called *post-combustion*, is widely used throughout the industry as the best technology for CO control.

Emissions of CO_2 are also generated from the use of oxy-lances in the EAF. These oxy-lances introduce oxygen into the molten steel, which oxidizes the CO and VOC gases in the EAF and forms CO_2. These oxy-lances increase the effective capacity of the EAF by increasing the speed of the melt and reducing the consumption of electricity and electrode material, which reduces energy-related GHG emissions. Oxy-lances also increase heat transfer while reducing heat losses and reduce tap-to-tap time.

Step 1: Identify All Potentially Applicable Control Technologies. The first step in the BACT analysis is to identify all technologies available. The following potential technologies have been identified for controlling GHG emissions associated with EAF operations (USEPA 2012).

Operational and Design Measures. There are several operational and design measures that, if implemented, could reduce overall energy requirements in the EAF steelmaking process. By reducing the energy requirements of the EAF, the following measures would indirectly reduce GHG emissions:

- **Improved Process Control (Neural Network)—**This measure involves the use of a modem control and monitoring system that integrates real-time monitoring of the process variables (e.g., steel bath temperature and carbon levels) with real-time control systems for carbon injection and lance oxygen practice.
- **Adjustable-Speed Drives—**As the rates of flue gas flow from the EAF/LMS vary during its operation, there are opportunities to adapt the speed of the dust collection fans by using adjustable-speed drives matching the demand of air flow rates. While adjusting the speed of the dust collection fans might slightly reduce the total amount of dust collected, the energy savings from operating the fans at lower speeds can be substantial. This is because the power consumption of a fan is typically proportional to the cube of its speed, meaning that even small reductions in speed can result in significant energy savings.
- **Monitoring and Control of Adjustable-Speed Drives**— Monitoring the flue gas from EAF and controlling the flue gas fans using ASDs can reduce energy usage, which in turn reduces the losses in the flue gas. ASD control systems can help maintain the proper environment inside the EAF that result from variability in the scrap and from energy fluctuations.
- **Transformer Efficiency–Ultra-High-Power Transformers—**Ultra-high-power transformers help to reduce energy loss and increase productivity through modem design.
- **Bottom Stirring/Stirring Gas Injection—**Bottom stirring is accomplished by injecting an inert gas into the bottom of the ladle to increase the heat transfer and mixing in a melt.
- **Foamy Slag Practice—**Foamy slag covers the arc and melt surface to reduce radiant heat losses. Foamy slag can be obtained by injecting carbonaceous material and oxygen or by lancing of oxygen only. Slag foaming increases the electric power efficiency by at least 20 percent in spite of a higher arc voltage. The use of the foamy slag process may also increase productivity through reduced tap-to-tap times.
- **Post-combustion of the Flue Gases—**Post-combustion is a process for utilizing the chemical energy in the CO and hydrogen evolving from the steel bath to heat the steel in the EAF ladle or to preheat scrap. Post-combustion helps to optimize the benefits of oxygen and carbon injection.
- **Direct Current (DC) Arc Furnace—**The DC arc furnace technology replaces the normal three electrodes (one for each phase) with one large electrode that uses DC instead of alternating current (AC) for heating the scrap in the EAF. Based on the distinctive feature of using the heat and magnetic force generated by the current in melting, this arc furnace achieves an energy saving of approximately 5 percent in terms of power unit consumption in comparison to the three-phase AC arc furnace.
- **Scrap Preheating Using the ECS Process—**Preheating the scrap reduces power consumption to the EAF by using the waste heat of the EAF as the energy source for the preheating operation. The ECS process consists of a conveyance system that transports the scrap through a tunnel to the EAF. In addition to energy savings, the ECS process can increase productivity by 33 percent, decrease electrode consumption by 40 percent, and reduce dust emissions.
- **Micro Mill with No Reheat Furnace—**The design of the project facility incorporates the use of a rolling mill that would roll the steel billet to the final dimensions immediately after the casting process, thus eliminating the need for a reheat furnace typically found at a steel mill that would use scrap as the feedstock. This would eliminate a significant source of GHG emissions.

- **Engineered Refractories—**Refractories in the EAF must withstand extreme temperatures, oxidation, thermal shock, erosion, and corrosion. These conditions generally lead to undesirable wear on refractories. Through the use of controlled microstructure of the refractories, these factors can be controlled, resulting in the reduction in ladle leakages and slag formation during transfer operations.
- **Airtight Operation—**During an EAF's heat cycle, large quantities of ambient-temperature air enter the EAF. The air's nitrogen and non-reacted oxygen are heated in the furnace and exit with the fumes at high temperature (around 1,800°F), resulting in significant thermal losses. Of the associated cost savings attributable to this operation, 80 percent can be attributed to the reduction in the heat losses from the flue gases and 20 percent can be attributed to the reduced thermal losses from reduced tap-to-tap time. This technology cannot be utilized 100 percent of the time, given the requirement to monitor the material in the EAF during the scrap charging process and the need to balance this requirement against the requirement to control emissions. It is typically necessary to find a balance between air tightness, scrap density, and access to the furnace for sampling the metal.
- **Monitoring and Control of Variable-Speed Drives (VSDs)—**The use of VSDs can reduce energy usage of the flue gas fans, which in turn reduces the losses in the flue gas. VSD control systems can help predict problems in the EAF that result from variability in the scrap and from energy fluctuations.
- **Eccentric Bottom Tapping—**Eccentric bottom tapping leads to slag-free tapping, shorter tap-to-tap times, reduced refractory and electrode consumption, and improved ladle life.
- **Energy Monitoring and Management System—**The Energy Monitoring and Management System plays a crucial role in tracking, analyzing, and optimizing energy usage within the facility. By incorporating adjustments to account for peak demand periods, the system helps to minimize costs, enhance efficiency, and ensure reliable operation, ultimately contributing to sustainable energy management practices.
- **Zero Natural Gas Usage in the Steelmaking Process—**Most steel micro mills use natural gas to supply additional heat energy during the steelmaking process and to pre-heat equipment such as ladles and tundishes. The project would operate as an all-electric micro mill and would not use natural gas.

In addition to the technologies discussed above, it is appropriate to consider add-on technologies such as **Carbon Capture and Sequestration System (CCS)** as possible way to capture GHG emissions emitted from the proposed Mojave Micro Mill and to prevent them from entering the atmosphere. These emerging technologies generally consist of processes that separate CO_2 from combustion process flue gas, then compress, transport, and finally inject it into geologic formations such as oil and gas reservoirs, unmineable coal seams, and underground saline formations. Of the emerging CO_2 capture technologies identified, only amine absorption is currently commercially used for state-of-the art CO_2 separation processes. Amine absorption has been applied to processes in the petroleum refining and natural gas processing industries and for exhausts from gas-fired industrial boilers. Other potential absorption and membrane technologies are currently considered developmental.

If CO_2 capture can be achieved at a steel production facility, the captured CO_2 must be dealt with. One option is for it to be routed via pipeline to a geologic formation capable of long-term storage. The long-term storage potential for a formation is a function of the volumetric capacity of a geologic formation and CO_2 trapping mechanisms within the formation, including dissolution in brine, reactions with minerals to form solid carbonates, and/or adsorption in porous rock. The DOE-NETL is currently studying the geologic formations that could potentially serve as CO_2 storage sites. Potential types of reservoirs are being discovered but these areas may contain fluids that may include natural gas, oil, or saline water, any of which may affect CO_2 storage differently. Another option is to store liquefied CO_2 in storage tanks on-site and sell it to prospective customers rather than injecting it into a pipeline.

Step 2: Identify Technically Feasible Control Technologies. Of the options listed in Step 1 of the BACT process, the following are the options that cannot be utilized due to being technically infeasible for the PSGM3 facility:

- *DC Arc Furnace*—As per "The AIST 2015 Electric Arc Furnace Roundup," the typical DC electrode technology is utilized on larger EAFs with capacity of at least 100 tons. This same reference notes that there are several steelmaking facilities that utilize three-phase electrodes on smaller EAFs (less than 100 tons) that can achieve similar efficiencies to the DC electrode technology. Because the EAF at the proposed Mojave Micro Mill would be less than 100 tons, the three-phase electrode design is indicated, thus rendering the DC electrode technology not applicable.
- *Carbon Capture System, or CCS*—CCS has not been implemented in any EAF at this time; therefore, it has not been yet achieved in practice. In addition, further studies are needed to ensure the continuous safe disposal of captured CO_2 at the project facility's location. An option to be investigated for the project is to store liquefied CO_2 in storage tanks on-site and sell it to prospective customers rather than injecting it into a pipeline.

The remaining technologies discussed in Step 1 are technically feasible.

Step 3: Rank the Technically Feasible Control Technologies. The third step in the BACT analysis is to rank the remaining control technologies in order of control effectiveness. Because all remaining technologies would be implemented, no ranking is required.

The facility plans to install and operate a carbon capture system to reduce GHG emissions significantly. CCS has not been used in any EAF application before; therefore, this application would require ongoing testing and reengineering before full-scale operation. There may be several periods when the CCS unit would be bypassed for reengineering. The estimated control efficiency for GHG is undetermined at this time. Therefore, although CCS would be implemented at the proposed Mojave Micro Mill, it is not considered BACT at this time and no credit for CCS has been considered in the emissions estimates.

Step 4: Evaluate the Most Effective Control Technologies. The fourth step in the BACT analysis is to evaluate the most effective control technologies not eliminated because of technical infeasibility. Because all technically feasible options under consideration would be utilized by PSGM3 for the project, no evaluation of the effectiveness of the control measures is required.

Step 5: Propose a BACT Determination for GHGs. PSGM3 proposes the following measures to be considered as BACT for the control of GHGs from the EAF and LMS:

- Improved process control network (neural network).
- Adjustable-speed drives.
- Ultra-high-power transformers.
- Bottom stirring/stirring gas injection.
- Foamy slag practice.
- Post-combustion of the flue gases.
- Scrap preheating using the ECS process.
- No reheat furnace.

- Engineered refractories.
- Airtight operation.
- Variable-speed drives.
- Eccentric bottom tapping.
- Energy monitoring and management system.
- Zero natural gas usage in the steelmaking process.

PSGM3 proposes the above technologies and work practices as BACT for the project's GHG emissions with an emission rate of 438 lb/ton.

The nature of the operation of the process is such that the startup and shutdown (SUSD) emissions from this emission unit are lower than maximum routine emissions. Therefore, a separate BACT analysis for SUSD is not required and the SUSD emissions are included as part of the proposed hourly and annual emission limits.

5.4.2 Propane Gas–Fired Emergency Engines

The combustion units are sources of GHG emissions as a byproduct of propane combustion.

Step 1: Identify All Potentially Applicable Control Technologies. Unlike other regulated air pollutants, which can be reduced through combustion process control or add-on controls, there currently is no corresponding way to reduce the amount of CO_2 generated during combustion, as CO_2 is an inherent product of the chemical reaction between the fuel and oxygen in which it burns. As such, the only way to reduce the amount of CO_2 generated by a fuel-burning power plant is to design and operate it through the use of the most efficient generating technologies for the anticipated load requirement.

CO_2 emissions during fossil-fueled combustion are strongly correlated with the amount of carbon in the fuel stream. Natural gas would not be available at the project site. Compared to all other potential fuels, propane gas would achieve the lowest emissions of CO_2 and other GHGs.

Step 2: Identify Technically Feasible Control Technologies. CCS has not been implemented for emergency engines at this time and therefore has not been achieved in practice. The short-term operational nature of emergency engines also prevents proper operation of CCS, which is best operated in a continuous manner. CCS is therefore not technically feasible for the emergency engines. Burning of propane gas and good combustion practices are the only technically feasible options.

Step 3: Rank the Technically Feasible Control Technologies. Burning of propane gas and good combustion practices are the only technically feasible control technologies applicable to the emergency engines.

Step 4: Evaluate the Most Effective Controls and Document the Results. There are no available control options for GHGs for the emergency engines other than burning of propane gas and good combustion practices.

Step 5: Propose BACT. The GHG BACT for these engines is proposed to be good combustion practices of propane gas at an emission rate of 139 pounds per million British thermal units for CO_2e.

5.5 EKAPCD Best Available Control Technology Analysis

EKAPCD Rule 210.1.III.A requires a BACT analysis for all affected air contaminants expected to be emitted from a new emissions unit. *Affected air contaminants* is defined in EKAPCD Rule 210.1.II.C as air contaminants and precursors for which there are ambient air quality standards. Thus, additional EKAPCD-specific BACT analysis would be required for PM/PM_{10}, VOC, NO_X, SO_2, and lead. This section describes the BACT analysis for these affected air contaminants.

5.5.1 Best Available Control Technology Analysis for PM/PM_{10}, VOC, NO_X, and SO_2

5.5.1.1 Electric Arc Furnace and Ladle Metallurgy Station

As shown in Table 5-1, the project would be a minor source for PM/PM_{10}, VOC, NO_X, SO_2, and lead. Therefore, instead of a five-step top-down BACT analysis as typically conducted for PSD-triggering pollutants, a simplified BACT analysis has been presented based on BACT determinations for recently permitted comparable facilities. Lead will be emitted as particulate and therefore the control technologies for PM/PM_{10} will also apply for lead and a separate BACT analysis for lead is not presented.

Table 5-11 shows the BACT determination for the comparable facilities.

TABLE 5-11
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION FOR COMPARABLE FACILITIES

Facility	Gerdau AmeriSteel, Charlotte, North Carolina	Nucor Steel, Frostproof, Florida	Nucor Steel, Sedalia, Missouri	Nucor Steel, Kingman, Arizona	CMS, Mesa, Arizona	CMC, Durant, Oklahoma
Permit ID (Issued)	19-01-V-567 (2019)	1050472-001-AC & PSD FL-446 (2019)	2018-03-048 (2018)	Application ID: 95370	V07001	2015-0643-C (2016)
Steel Production (tpy)	575,000	450,000	450,000	650,000	635,000	650,000
PM/PM10 BACT	Baghouse; PM(F)/PM10(T): N/A/0.24 lbs/ton of steel	Baghouse; PM(F)/PM10(T): 0.14/0.30 lbs/ton of steel	Baghouse; PM(F)/PM10(T): 0.10/0.15 lbs/ton of steel	Baghouse; PM(F)/PM10(T): 0.58/0.27 lbs/ton of steel	Baghouse; PM(F)/PM10(T): 0.13/0.18 lbs/ton of steel	Baghouse; PM(F)/PM10(T): N/A/0.18 lbs/ton of steel
VOC BACT	Good Combustion Control: 0.34 lbs/ton of steel	Good Combustion Control: 0.30 lbs/ton of steel	Good Combustion Control: 0.30 lbs/ton of steel	Good Combustion Control: 0.30 lbs/ton of steel	Good Combustion Control: 0.30 lbs/ton of steel	Good Combustion Control: 0.30 lbs/ton of steel
NO_X BACT	DEC; 0.34 lb/ton of steel	DEC; 0.30 lb/ton of steel	DEC; 0.30 lb/ton of steel	DEC; 0.35 lb/ton of steel	DEC with oxy firing; 0.30 lb/ton of steel	DEC with oxy firing; 0.30 lb/ton of steel
SO_2 BACT	DEC; 0.16 lb/ton of steel	DEC; 0.6 lb/ton of steel	DEC; 0.5 lb/ton of steel	DEC; 0.64 lb/ton of steel	DEC; 0.3 lb/ton of steel	DEC; 0.6 lb/ton of steel

Facility	Gerdau AmeriSteel, Charlotte, North Carolina	Nucor Steel, Frostproof, Florida	Nucor Steel, Sedalia, Missouri	Nucor Steel, Kingman, Arizona	CMS, Mesa, Arizona	CMC, Durant, Oklahoma

NOTES: BACT = Best Available Control Technology; CMC = Commercial Metals Company; DEC = direct evacuation control; ID = identification; lb/ton = pounds per ton; NO_X = nitrogen oxides; PM = total particulate matter; PM_{10} = particulate matter less than 10 microns in diameter; SO_2 = sulfur dioxide; tpy = tons per year; VOC = volatile organic compounds

SOURCE: Data compiled by Environmental Science Associates in 2024

PSGM3 plans to reduce the project's PM/PM_{10}, NO_X, and SO_2 emissions beyond the BACT limits established in the permits of the comparable facilities listed in Table 5-11 by utilizing state of the art pollution controls as follows:

- PM/PM_{10}: Settling chamber, wet scrubber, and two (primary and secondary) baghouses in series;
- NO_x: Selective non-catalytic reduction (SNCR) with urea injection;
- SO_2: Wet scrubber, lime injection.; and
- VOC: Wet scrubber and activated carbon injection (ACI).

Based on the above considerations and as per vendor specifications, PSGM3 proposes the following BACT for the project for PM/PM_{10}, VOC, NO_X, and SO_2:

- *PM/PM_{10}:* 0.0467 lbs/ton of steel. PM is equivalent to PM_{10} for this source as all particulate is considered to be fine particulate. This proposed BACT is under the PM emission limit of 0.16 lb/ton of steel in the NSPS (40 CFR 60 Subpart AAb) applicable to the project.
- VOC: 0.075 lbs/ton of steel.
- *NO_X:* 0.090 lb/ton of steel.
- *SO_2:* 0.101 lb/ton of steel.

The nature of the operation of the process is such that the startup and shutdown (SUSD) emissions from this emission unit are lower than maximum routine emissions. Therefore, a separate BACT analysis for SUSD is not required and the SUSD emissions are included as part of the proposed hourly and annual emission limits.

5.5.1.2 Emergency Engines

Emergency engines would be operated a maximum of only 200 hours per year. The BACT for PM/PM_{10}, VOC, and NO_X for these engines in all comparable facilities is lean-burn combustion with clean-burn technology, using natural gas fuel. Because natural gas would not be available at the project site, PSGM3 will use lean-burn engines using propane, which is a clean-burn technology like natural gas. PSGM3 proposes the following as BACT for the emergency engines, which conform to the CARB standard for propane-fired engines:

- *PM/PM_{10}:* 5 lbs/1,000 gallons of propane fuel. PM is equivalent to PM_{10} for these sources as all particulate is considered to be fine particulate.
- VOC: 83 lbs/1,000 gallons of propane fuel.

- *NO_x:* 139 lbs/1,000 gallons of propane.

The BACT for SO_2 for these engines in all comparable facilities is the use of low-sulfur fuel such as pipeline-quality natural gas. Because natural gas would not be available at the project site, PSGM3 would use propane, which is a low-sulfur fuel like natural gas. PSGM3 proposes use of propane as BACT for SO_2 for the engines which will conform to the CARB standard for propane-fired engines, which is 0.35 lb SO_2 per 1,000 gallons of propane fuel.

CHAPTER 6
Air Dispersion Modeling

Air dispersion modeling analysis for this project with Appendices F,G, and H will be provided separately as supplemental information to this application.

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CHAPTER 7
Additional Analysis of Project Impacts

This additional analysis of project impacts includes an assessment of construction impacts, soil and vegetation impacts, a growth analysis, and a visibility and deposition analysis. As listed in Chapter 3, *Emissions Estimates*, the proposed Mojave Mill Project is expected to emit the air pollutants in the quantities listed in **Table 7-1**.

TABLE 7-1
SUMMARY OF POTENTIAL FACILITY-WIDE EMISSIONS

Pollutant	Potential Project Emissions (tpy)
NOx	22.79
CO	418.99
PM	17.70
PM_{10}	12.84
$PM_{2.5}$	10.95
SO_2	23.12
VOC	22.70
H_2SO_4 Mist	0.00
Lead	0.05
Fluorides	0.00
H_2S	0.00
TRS	0.00
Mercury	0.04
GHGs (CO_2e)	100,092

NOTES: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; GHG = greenhouse gas; H_2S = hydrogen sulfide; H_2SO_4 = sulfuric acid; NO_X = nitrogen oxides; PM = total particulate matter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter; SO_2 = sulfur dioxide; tpy = tons per year; TRS = total reduced sulfur; VOC = volatile organic compounds

SOURCE: Data compiled by Environmental Science Associates in 2024

7.1 Construction Impacts

A final environmental impact report (EIR) was prepared for the project in accordance with the California Environmental Quality Act (CEQA) Guidelines. As required by CEQA, the EIR includes appropriate review and analysis of the project's environmental impacts and mitigation measures to reduce those impacts. On March 19, 2024, the Kern County Board of Supervisors certified the final Mojave Micro Mill

Project EIR (State Clearinghouse Number [SCH No.] 2022100646); adopted Section 15091 Findings of Fact and a Section 15093 Statement of Overriding Considerations; and adopted the revised Mitigation Monitoring and Reporting Program.

The certified EIR determined that construction would result in a less-than-significant impact for other emissions (such as those leading to odors) adversely affecting a substantial number of people. The EIR determined that construction would result in a significant impact related to potential conflicts with or obstructed implementation of the Eastern Kern Air Pollution Control District (EKAPCD) 2023 Air Quality Attainment Plan. However, construction would be required to comply with applicable EKAPCD rules and regulations. Further, with implementation of EIR Mitigation Measures 4.3-1 and 4.3-2, construction emissions would be reduced to below the EKAPCD significance thresholds. Therefore, construction impacts related to potential conflicts with or obstructed implementation of the EKAPCD 2023 Air Quality Attainment Plan would be reduced to a less-than-significant level.

The EIR determined that project construction would result in a significant impact related to a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard, because temporary unmitigated emissions of nitrogen oxides (NO_X) would exceed the EKAPCD significance threshold. However, with implementation of EIR Mitigation Measures 4.3-1 and 4.3-2, NO_X construction emissions would be reduced to below the EKAPCD significance threshold. Therefore, construction emissions would be reduced to a less-than-significant level.

The EIR determined that construction would result in a significant impact related to exposure of sensitive receptors to substantial pollutant concentrations. With implementation of EIR Mitigation Measures 4.3-1 and 4.3-2, construction-related health risk impacts would be reduced to a less-than-significant level. With implementation of EIR Mitigation Measures 4.3-1, 4.3-2, and 4.3-3, construction-related visibility impacts would be reduced to a less-than-significant level. With implementation of EIR Mitigation Measures 4.3-2, 4.3-4, and 4.3-5, construction-related Valley Fever impacts would be reduced to a less-than-significant level. Impacts related to carbon monoxide (CO) hotspots and asbestos would be less than significant. In summary, construction impacts related to exposure of sensitive receptors to substantial pollutant concentrations would be reduced to a less-than-significant level.

With respect to greenhouse gas (GHG) emission impacts, the EIR determined that the project would generate GHG emissions that would not conflict with applicable GHG reduction plans and policies. Further, given that GHG emission impacts are inherently cumulative, the project's incremental contribution to cumulatively significant GHG emissions would be less than cumulatively considerable, and impacts would be less than significant.

7.1.1 Mitigation Measures

Consistent with the mitigation measures included in the final EIR for the Mojave Micro Mill Project, and as described above, the following mitigation measures would be implemented to minimize the potential impacts of the project on air quality.

7.1.1.1 Mitigation Measure 4.3-1

To control NO_X and PM [particulate matter] emissions during construction and operation, the Project proponent/operator and/or its contractor(s) shall implement the following measures during by the County:

a. Off-road equipment engines over 25 horsepower shall be equipped with United States Environmental Protection Agency (EPA) Tier 4 or higher.

b. All equipment shall be maintained in accordance with the manufacturer's specifications.

c. Heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 5 minutes.

d. Notification shall be provided to trucks and vehicles in loading or unloading queues that their engines shall be turned off when not in use for more than 5 minutes.

e. Electric equipment shall be used to the extent feasible in lieu of diesel or gasoline powered equipment.

f. All vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NO_X emissions.

g. Existing electric power sources shall be used to the extent feasible. This measure would minimize the use of higher polluting gas or diesel generators.

h. The hours of operation of heavy-duty equipment and/or the quantity of equipment in use shall be limited to the extent feasible.

Time Frame for Implementation and Responsible Monitoring Agency

Mitigation Measure 4.3-1 would be implemented during construction and operation of the facility. The Kern County Planning and Natural Resources Department would be the responsible monitoring agency.

Steps to Compliance

a. This mitigation measure shall be incorporated as a condition of approval for any site plan review.

b. The Project proponent shall ensure construction and operation parameters, as identified in the mitigation measure, are adopted, and maintained.

c. Kern County Natural Resources Department shall verify in the field during the construction phase of the Project.

7.1.1.2 Mitigation Measure 4.3-2

To control fugitive PM emissions during construction, prior to the issuance of grading or building permits and any earthwork activities, the Project proponent shall prepare a comprehensive Fugitive Dust Control Plan for review and approval by the Eastern Kern Air Pollution Control District and submitted to the Kern County Planning and Natural Resources Department. The plan shall include all Eastern Kern Air Pollution Control District recommended measures, including but not limited to, the following:

a. All soil being actively excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soils areas. Watering shall take place a minimum of three times daily where soil is being actively disturbed unless dust is otherwise controlled by rainfall or use of a dust suppressant.

b. Vehicle speed for all on site (i.e., within the Project boundary) construction vehicles shall not exceed 15 mph [miles per hour] on any unpaved surface at the construction site. Signs identifying construction vehicle speed limits shall be posted along onsite roadways, at the site entrance/exit, and along unpaved site access roads.

c. Vehicle speeds on all offsite unpaved Project site access roads (i.e., outside the Project boundary) construction vehicles shall not exceed 25 mph. Signs identifying vehicle speed limits shall be posted along unpaved site access roads and at the site entrance/exit.

d. All onsite unpaved roads shall be effectively stabilized of dust emissions using water or Eastern Kern Air Pollution Control District approved dust suppressants/palliatives, sufficient to prevent wind-blown dust from exceeding 20 percent opacity for more than three minutes in an hour and to ensure fugitive dust would not be visible beyond the property line. If water is used, watering shall occur a minimum of three times daily, sufficient to keep soil moist along actively used roadways. During the dry season, unpaved road surfaces and vehicle parking/staging areas shall be watered immediately prior to periods of high use (e.g., worker commute periods, truck convoys). Reclaimed (nonpotable) water shall be used to the extent available and feasible.

e. The amount of the disturbed area (e.g., grading, excavation) shall be reduced and/or phased where possible.

f. All disturbed areas shall be sufficiently watered or stabilized by Eastern Kern Air Pollution Control District approved methods to prevent excessive dust. On dry days, watering shall occur a minimum of three times daily on actively disturbed areas. Watering frequency shall be increased whenever wind speeds exceed 15 mph or, as necessary, to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. Reclaimed (nonpotable) water shall be used to the extent available and feasible.

g. All clearing, grading, earth-moving, and excavation activities shall cease during periods when dust plumes of 20 percent or greater opacity affect public roads or nearby occupied structures.

h. All disturbed areas anticipated to be inactive for periods of 30 days or more shall be treated to minimize wind-blown dust emissions. Treatment may include, but is not limited to, the application of an Eastern Kern Air Pollution Control District approved chemical dust suppressant, gravel, hydro-mulch, revegetation/seeding, or wood chips.

i. All active and inactive disturbed surface areas shall be stabilized, where feasible.

j. Equipment and vehicle access to disturbed areas shall be limited to only those vehicles necessary to complete the construction activities.

k. Where applicable, permanent dust control measures shall be implemented as soon as possible following completion of any soil-disturbing activities.

l. Stockpiles of dirt or other fine loose material shall be stabilized by watering or other appropriate methods sufficient to reduce visible dust emissions to a limit of 20 percent opacity. If necessary and where feasible, three-sided barriers shall be constructed around storage piles and/or piles shall be covered by use of tarps, hydro-mulch, woodchips, or other materials sufficient to minimize wind-blown dust.

m. Water shall be applied prior to and during the demolition of onsite structures sufficient to minimize wind-blown dust.

n. Where acceptable to the fire department and feasible, weed control shall be accomplished by mowing instead of disking, thereby leaving the ground undisturbed and with a mulch covering.

o. All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least six inches of freeboard (minimum vertical distance between top of the load and top of the trailer) in accordance with California Vehicle Code Section 23114.

p. Gravel pads, grizzly strips, or other material track-out control methods approved for use by Eastern Kern Air Pollution Control District shall be installed where vehicles enter or exit unpaved roads onto paved roadways.

q. Haul trucks and off-road equipment leaving the site shall be washed with water or high-pressure air, and/or rocks/grates at the Project entry points shall be used, when necessary, to remove soil deposits and minimize the track out/deposition of soil onto nearby paved roadways.

r. During construction, paved road surfaces adjacent to the site access road(s), including adjoining paved aprons, shall be cleaned, as necessary, to remove visible accumulations of track-out material. If dry sweepers are used, the area shall be sprayed with water prior to sweeping to minimize the entrainment of dust. Reclaimed water shall be used to the extent available.

s. Portable equipment, 50 horsepower or greater, used during construction activities (e.g., portable generators) shall require California statewide portable equipment registration (issued by California Air Resources Board) or an Eastern Kern Air Pollution Control District permit.

t. The Fugitive Dust Control Plan shall identify a designated person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures, as necessary, to minimize the transport of dust off site and to ensure compliance with identified fugitive dust control measures. Contact information for a hotline shall be posted on site should any complaints or concerns be received during working hours and holidays and weekend periods when work may not be in progress. The names and telephone numbers of such persons shall be provided to the Eastern Kern Air Pollution Control District Compliance Division prior to the start of any grading or earthwork.

u. Signs shall be posted at the Project site entrance and written notifications shall be provided a minimum of 30 days prior to initiation of Project construction to residential land uses located within 1,000 feet of the Project site. The signs and written notifications shall include the following information: (a) Project Name; (b) Anticipated Construction Schedule(s); and (c) Telephone Number(s) for designated construction activity monitor(s) or, if established, a complaint hotline.

v. The designated construction monitor shall document and immediately notify Eastern Kern Air Pollution Control District of any air quality complaints received. If necessary, the Project operator and/or contractor will coordinate with Eastern Kern Air Pollution Control District to identify any additional feasible measures and/or strategies to be implemented to address public complaints.

w. The solar array shall obtain a permit from the Eastern Kern Air Pollution Control District and implement phased removal of vegetation from the site to ensure dust control during construction.

Time Frame for Implementation and Responsible Monitoring Agency

Mitigation Measure 4.3-2 would be implemented before the issuance of any grading permit. The Kern County Planning and Natural Resources Department and EKAPCD would be the responsible monitoring agencies.

Steps to Compliance

a. This mitigation measure shall be incorporated as a condition of approval for any site plan review.

b. The Project proponent shall prepare a Fugitive Dust Control Plan, as identified in the mitigation measure.

c. The Project proponent shall submit the Fugitive Dust Control Plan to the Eastern Kern Air Pollution Control District and the Kern County Planning and Natural Resources Department for review and approval prior to the issuance of any grading permit.

d. The Kern County Public Works Department shall verify compliance of vehicular control measures in the field during the construction and decommissioning phases of the Project.

e. The notice shall be mailed to all parcels within 1,000 feet of the Project site and one sign shall be posted at the construction site, no sooner than 30 days prior to construction.

f. Documentation shall be sent to the Kern County Planning and Natural Resources Department.

g. The Kern County Public Works Department shall verify in the field during the construction phase of the Project.

7.1.1.3 Mitigation Measure 4.3-3

Complete a screening procedure approved by the Federal Land Manager that demonstrates the 98th percentile change in light extinction is less than 5 percent for each modeled year, when compared to the annual average natural condition value for the Class I areas within 100 km [kilometers] of the proposed site.

Time Frame for Implementation and Responsible Monitoring Agency

Mitigation Measure 4.3-3 would be implemented before the issuance of building or grading permits. The Federal Land Manager and Kern County Planning and Natural Resources Department would be the responsible monitoring agencies.

Steps to Compliance

a. This mitigation measure shall be incorporated as a condition of approval for any site plan review.

b. The proponent shall submit a screening procedure to the Federal Land Manager for approval prior to the issuance of building or grading permits.

c. Contact information for the Federal Land Manager and a copy of the submitted screening procedure shall be submitted to the Kern County Planning and Natural Resources Department to be kept on file.

7.1.1.4 Mitigation Measure 4.3-4

To minimize personnel and public exposure to potential Valley Fever-containing dust on and off site, the following control measures shall be implemented during Project construction:

a. Equipment, vehicles, and other items shall be thoroughly cleaned of dust before they are moved off site to other work locations.

b. Wherever possible, grading, and trenching work shall be phased so that earth-moving equipment is working well ahead or downwind of workers on the ground.

c. The area immediately behind grading or trenching equipment shall be sprayed with water before ground workers move into the area.

d. In the event that a water truck runs out of water before dust is sufficiently dampened, ground workers being exposed to dust shall leave the area until a truck can resume water spraying.

e. To the greatest extent feasible, heavy-duty earth-moving vehicles shall be closed-cab and equipped with a HEP-filtered air system.

f. Workers shall receive training in procedures to minimize activities that may result in the release of airborne Coccidioides immitis (CI) spores, to recognize the symptoms of Valley Fever, and shall be instructed to promptly report suspected symptoms of work-related Valley Fever to a supervisor. Evidence of training shall be provided to the Kern County Planning and Natural Resources Department within 5 days of the training session.

g. A Valley Fever informational handout shall be provided to all onsite construction personnel. The handout shall, at a minimum, provide information regarding the symptoms, health effects, preventative measures, and treatment. Additional information and handouts can be obtained by contacting the Kern County Public Health Services Department.

h. Onsite personnel shall be trained on the proper use of personal protective equipment, including respiratory equipment. National Institute for Occupational Safety and Health-approved respirators shall be provided to onsite personnel, upon request. When exposure to dust is unavoidable, provide appropriate NIOSH [National Institute for Occupational Safety and Health]-approved respiratory protection to affected workers. If respiratory protection is deemed necessary, employers must develop and implement a respiratory protection program in accordance with Cal/OSHA's [California Division of Occupational Safety and Health] Respiratory Protection standard (8 CCR [California Code of Regulations] 5144).

Time Frame for Implementation and Responsible Monitoring Agency

Mitigation Measure 4.3-4 would be implemented during construction of the Project. The Kern County Public Health Services Department, Kern County Planning Department, and Kern County Public Works Department would be the responsible monitoring agencies.

Steps to Compliance

a. This mitigation measure shall be incorporated as a condition of approval for any site plan review.

b. All Valley Fever materials shall be provided to all construction personnel prior to construction activities.

c. The Project proponent shall ensure practices are implemented as outlined in mitigation.

d. The proponent shall provide training session materials, handout(s), and schedule of training to Kern County Planning and Natural Resources Department within 5 days of the training session.

e. Kern County Public Works Department shall verify compliance in the field during construction.

7.1.1.5 Mitigation Measure 4.3-5

Prior to the issuance of any grading permit, a one-time fee shall be paid to the Kern County Public Health Services Department in the amount of $3,200 for Valley Fever public awareness programs.

Time Frame for Implementation and Responsible Monitoring Agency

Mitigation Measure 4.3-5 would be implemented before the issuance of grading permits. The Kern County Public Health Services Department and Kern County Planning Department would be the responsible monitoring agencies.

Steps to Compliance

a. This mitigation measure shall be incorporated as a condition of approval for any site plan review.

b. The Project proponent shall pay the one-time fee to the Kern County Public Health Services Department.

c. The proponent shall provide proof of payment to the Kern County Planning and Natural Resources Department prior to issuance of grading permits.

7.1.1.6 Mitigation Measure 4.3-6

Prior to the issuance of grading or building permits, a COVID Health and Safety Plan shall be prepared in accordance with the California Department of Public Health Guidance. A copy of the COVID Health and Safety Plan shall be submitted to the Kern County Planning and Natural Resources Department for review and approval.

Time Frame for Implementation and Responsible Monitoring Agency

Mitigation Measure 4.3-6 would be implemented before the issuance of grading or building permits. The Kern County Planning Department would be the responsible monitoring agency.

Steps to Compliance

This mitigation measure shall be incorporated as a condition of approval.

7.2 Vegetation Impacts

This section describes the vegetation resources that could be affected by emissions of CO, carbon dioxide (CO_2), nitrogen dioxide (NO_2), particulate matter equal to and less than 10 microns or less than 2.5 microns in diameter (PM_{10}/$PM_{2.5}$), sulfur dioxide (SO_2), and volatile organic compounds (VOCs), and synergistic effects of pollutants produced by the project. Included are descriptions of the plant communities found within the immediate project vicinity and the potential effects of the project's air pollutant emissions on vegetation.

Impacts on vegetation can occur through both acute and prolonged or chronic exposures to pollution. Impacts of acute exposure have been observed as internal physical damage to leaf tissues, while impacts from chronic or prolonged exposure are associated with a decreased ability to perform physiological processes such as photosynthesis, carbon allocation, and stomatal functioning (Hill and Littlefield 1969; Hällgren 1984; USEPA 2018). Potential impacts on vegetation from the project's air pollutant emissions are evaluated below based on publicly available data and peer-reviewed papers, as well as the U.S. Environmental Protection Agency's (USEPA) Integrated Science Assessments of criteria pollutants.

USEPA has indicated that ambient air concentrations of criteria pollutants below the secondary national ambient air quality standards (NAAQS) standards generally will not result in harmful effects, although sensitive vegetation species and soil types may experience harmful effects at low ambient air concentrations for regulated pollutants for which no NAAQS are established (USEPA 1990). The project area is characterized by grasslands and shrub communities in the Mojave Basin and Range ecoregion, with a warm, dry climate (Griffith et al. 2016). As classified by the Kern County Planning and Natural

Resources Department (2023), natural vegetation communities and vegetated land cover types within the project area include the following:

- Allscale Scrub (*Atriplex polycarpa* Shrubland Alliance), dominated by allscale and interspersed with other shrub species including western Joshua trees and with a dense layer of herbaceous vegetation.
- Creosote Bush Scrub (*Larrea tridentata* Shrubland Alliance), similar to Allscale Scrub, although allscale and creosote bush are co-dominant.
- Red Brome or Mediterranean Grass Grasslands (*Bromus rubens—Schismus* [*arabicus, barbatus*] Herbaceous Semi-Natural Alliance), characterized by a dense, low-growing herbaceous layer of red brome and Mediterranean grass, along with other forbs.
- Disturbed Creosote Bush Scrub (*Larrea tridentata* Shrubland Alliance), similar to Creosote Bush Scrub, although the habitat has been altered by vegetation removal.

Although the above-listed communities are not classified as sensitive natural communities, the western Joshua tree (*Yucca brevifolia*), a state candidate species for listing as threatened, also occurs at the project site (Kern County Planning and Natural Resources Department 2023).

Overall, the project's emissions of criteria pollutants would not cause or contribute to an exceedance of the NAAQS, and the project area is designated as Unclassified/Attainment or Maintenance for all NAAQS except the eight-hour ozone standard.[1] The project area is in attainment for all California ambient air quality standards except the eight-hour ozone standard and the 24-hour PM_{10} standard. Therefore, the project is not expected to cause significant adverse impacts on vegetation. A discussion of each federally regulated criteria pollutant is included below.

7.2.1 Carbon Monoxide

Increases in CO emissions have the potential to adversely affect vegetation. Direct effects of exposure to high concentrations of CO include reduced photosynthesis rates and an increased potential for oxidative damage, and indirect effects of CO on vegetation include changes in soil pH (USEPA 2020a; Muneer et al. 2014). Plants with an increased exposure to CO overproduce reactive oxygen species (including hydrogen peroxide and singlet oxygen), resulting in reduced photosynthesis and carbohydrate and sucrose (Muneer et al. 2014). The enhanced production of reactive oxygen species can threaten plant cells and deplete energy and may affect processes such as plant growth, development, stomatal responses, and stress responses (Mittler et al. 2004). Alternatively, some plants remove gaseous air pollutants, including CO, from the air (USEPA 2020a).

The modeled maximum eight-hour and one-hour CO concentrations from emissions produced by the project are predicted to be 18.48 micrograms per cubic meter ($\mu g/m^3$) and 97.80 $\mu g/m^3$, respectively. Overall, project emissions of CO would not cause or contribute to an exceedance of the NAAQS, and the project area is designated as Unclassified/Attainment for CO; therefore, adverse impacts on vegetation from CO emissions are not anticipated. The modeling results are included in Appendix H.

1 Attainment status presented here is based on the NAAQS.

7.2.2 Carbon Dioxide

USEPA has indicated that an evaluation of additional impacts from GHG emissions is not necessary, or possible, given current climate change modeling (USEPA 2010). However, studies indicate that CO_2 does not adversely affect vegetation. Rather, vegetation exposed to elevated CO_2 levels exhibits an increase in nitrogen use and photosynthesis efficiency (Drake et al. 1997). Therefore, the project's CO_2 emissions are not expected to adversely affect vegetation within the project vicinity.

7.2.3 Sulfur Dioxide

Exposure to SO_2 can negatively affect various types of vegetative communities including trees, shrubs, herbaceous plants, and crop plants (Kozlowski and Constantinidou 1986). Acute and chronic exposure to SO_2 directly affects vegetation by inhibiting photosynthesis, disrupting photosynthetic mechanisms, and causing water loss within plant cells. These direct effects appear as flecking, bronzing, and necrosis of leaf tissue (Kozlowski and Constantinidou 1986).

Long-term exposure to high concentrations of SO_2 may also reduce the quantity and quality of plant yield. Injuries to vegetation vary by species, as well as by dose and exposure duration. In a study assessing the impact of SO_2 exposure on lichens—generally considered to be highly sensitive to air pollution, and thus a conservative indicator of potential impacts—were observed beginning when SO_2 reached concentrations of 400 $\mu g/m^3$ (lowered growth and CO_2 update over six-hour exposure) (Hart et al. 1988). Deleterious effects, including injury and decreased abundance, have also been documented at lower concentrations.

However, the project's emissions would not exceed either the federal Prevention of Significant Deterioration (PSD) threshold or the federal Significance Emission Rate threshold, and thus the project is not a major source of SO_2. The project's one-hour, three-hour, 24-hour, and annual SO_2 emissions would be approximately 5.42 $\mu g/m^3$, 2.31 $\mu g/m^3$, 0.46 $\mu g/m^3$, and 0.08 $\mu g/m^3$, respectively. Therefore, SO_2 emissions would be unlikely to adversely affect vegetation within and adjacent to the project area. The modeling results are included in Appendix H.

7.2.4 Nitrogen Oxides

Emissions of NO_X can adversely affect vegetation. Impacts on plants via foliar injury commonly occur when the plants are exposed to short-term, high concentrations of NO_X; a one-hour concentration of 7,520 $\mu g/m^3$ would result in a 5 percent foliar injury for most plant species (USEPA 1993). Further, long-term exposures of phytotoxic doses of NO_X range from 280 to 560 $\mu g/m^3$ (Taylor and McLean 1970).

However, studies indicate varying levels of NO_X sensitivity among plant species, and absorption of air pollutants is often greater under wet soil conditions because of the high turgor and larger stomal aperture (Kozlowski and Constantinidou 1986). The project area's climate is dry, and soil types in the project area are well to somewhat excessively drained and are not considered hydric. With the project area's environmental conditions prohibiting rapid absorption, vegetation in the project area may be less susceptible to exposure to high concentrations of NO_X. Because the project's emissions would not exceed either the federal PSD threshold or the federal Significance Emission Rate threshold, the project is not a major source of NO_X. The project's one-hour and annual NO_X emissions would be approximately 8.83

μg/m^3 and 0.30 μg/m^3, respectively. Therefore, NO_X emissions would be unlikely to adversely affect vegetation within and adjacent to the project area. The modeling results are included in Appendix H.

7.2.5 Particulate Matter

Studies indicate adverse effects on vegetation within the immediate vicinity of a particulate matter source, although the specific effect is highly variable and influenced by plant characteristics (Soheili et al. 2023). Particulate matter most commonly causes physical injury to plants when deposition smothers the leaf surface. Leaf surfaces are covered with a waxy cuticle that protects plants from moisture loss and damage from ultraviolet radiation; particulate matter can accumulate in this waxy layer and introduce pollutants, depending on the constituents within the particulates (USEPA 2018). Particulate matter has also been observed to injure plant tissues when absorbed as phytotoxic gases or when fine particulates enter the leave through the stoma (Grantz et al. 2003; Da Silva et al. 2006).

Vegetation that has been smothered by particulates exhibits a reduced ability to transmit light, thus inhibiting photosynthesis, and may show reduced vigor. The modeled maximum 24-hour PM_{10} and $PM_{2.5}$ concentrations from emissions produced by the project are predicted to be 3.61μg/m^3 and 0.52 μg/m^3, respectively. When considered with ambient air quality data, PM_{10} and $PM_{2.5}$ concentrations are predicted to be below the current secondary NAAQS for particulates, which were established to protect against ecological effects (USEPA 2018). Therefore, PM emissions would be unlikely to adversely affect vegetation within and adjacent to the Project area. The modeling results are included in Appendix H.

7.2.6 Synergistic Effects of Pollutants

Synergistic effects may occur when two or more pollutants interact and combine effects. The synergistic effects of pollutants would have a greater total effect on vegetation than one single pollutant. The accumulation of air pollutants in the atmosphere damages vegetation and decreases the functionality of plants. Relevant studies exhibit the synergistic effects of various combinations of CO, CO_2, NO_X, and SO_2 (USEPA 2018). Vegetation exposed to the synergistic effects of high concentrations of pollutants is reported to have an inhibited ability to photosynthesize and germinate seeds, exhibits stunted growth, and may obtain physical injuries (Reinert et al. 1975).

However, because the project site is in an area designated as Attainment/Unclassifiable for all criteria pollutants except ozone based on the federal standards, and because the project would not cause or contribute to an exceedance of the NAAQS, significant adverse synergistic effects on plants is not expected as a result of the project.

7.2.7 Volatile Organic Compounds

Although VOC emissions are regulated by USEPA, VOCs alone are not one of the six criteria pollutants with set NAAQS. Rather, the chemical reaction of VOCs with NO_X in the presence of sunlight results in the formation of ozone. Ozone, commonly referred to as "ground-level ozone," is a criteria pollutant with set NAAQS. Ozone is generated over a large area and is the primary constituent of photochemical smog, which can be transported or spread by wind.

When plants are exposed to ozone, impacts include decreased growth and visible injury to leaves. Similar to the effects of particulate matter on vegetation, ozone may affect vegetation by physically smothering the leaf surface, creating damage and injury to the plant. Smothering affects the ability of plants to produce and store food, making them more susceptible to impacts from insects, disease, other pollutants, and extreme-weather events. Negative impacts on vegetation from chronic exposures to ozone are observed at concentrations greater than or equal to 196 $\mu g/m^3$ (Heath 1975). Studies have found that local dry periods tend to decrease the incidence and severity of foliar injury (USEPA 2020b). Further, ozone injury indices have been documented to fluctuate in response to seasonal conditions and site moisture conditions in the Northeast and north-central U.S. (Smith 2012).

The project site is within an area designated as nonattainment for the ozone NAAQS, and vegetation in the project vicinity may already be subject to deleterious effects from the presence of ground-level ozone. However, the project's emissions would not exceed either the federal PSD threshold or the federal Significance Emission Rate threshold for VOCs, and the project's emissions would be subject to permit requirements such that the project's contribution to ozone is not expected to be more than *de minimis*.

7.3 Soil Impacts

According to data obtained from the U.S. Natural Resources Conservation Service's Web Soil Survey, soils within the project site are characterized by loamy sand and sandy loam, specifically:

- Cajon loamy sand, 0 to 5 percent slopes.
- DeStazo sandy loam, 0 to 2 percent slopes.
- Garlock loamy sand, 2 to 9 percent slopes.

The project vicinity is underlain by similar soils, along with rocky outcrops (NRCS 2024). These soils are well to somewhat excessively well drained, non-hydric, and formed from alluvium; rocky outcrops southwest of and outside the project area are associated with nearby mountains and hilly landforms and comprise bedrock.

In general, air pollution can enter the soil via biogeochemical pathways of acidification for NO_X and SO_2; eutrophication via introduction of nitrogen and sulfur, and direct impacts via deposition of nitrogen and sulfur in particulate matter (USEPA 2018). The impact of NO_X and SO_2 deposition on soil can be positive or negative, depending on soil composition; where soils are nitrogen limited, deposition can stimulate growth. However, where soils are sensitive, deposition of nitrogen and sulfur can cause soil acidification and negatively affect plant growth (USEPA 2018). Further, NO_X emissions from soil are among the natural sources of nitrogen oxides, and in California's agricultural regions, soil-derived NO_X actually constitutes a portion of California's overall NO_X emissions (CARB 2024b). The impacts of particulate matter deposition on soil depend on the contents of the particulates (e.g., the presence of metals or other constituents), as well as soil characteristics such as pH and moisture content (USEPA 2018). Overall, the project's anticipated NO_X, SO_2, and PM emission rates and resulting project impacts are not expected to adversely affect soils in the project area because the emissions rates would be below the NAAQS.

Soils are known to remove CO from the atmosphere; soils also sequester CO_2 in the form of decomposing plant matter. Based on a study conducted along a California freeway (Ingersoll et al. 1974), soils constantly exposed to high levels of CO have higher CO uptake capabilities; however, desert soils have the lowest potential for CO uptake capacity, and CO uptake of agricultural soils generally occurs at a lower rate than soil under natural vegetation. The rate of CO uptake by the soils in the project area is not expected to be weakened with the CO emitted by the project. Further, the project's anticipated CO emission rates are not expected to adversely affect soils in the project area because the emissions rates would be below the NAAQS.

Finally, ozone has been documented to affect soil decomposition, soil carbon, and soil nitrogen; some of these impacts relate directly to impacts of ozone on vegetation (including impacts on nitrogen cycling [USEPA 2020b]). However, as described above, the project's emissions would be below the VOC thresholds and would be subject to permit requirements such that the project's contribution to ozone is not expected to be more than *de minimis*.

7.4 Industrial, Residential, and Commercial Growth Impacts

A final EIR, certified by the Kern County Board of Supervisors on March 19, 2024, was prepared for this project in accordance with the CEQA Guidelines. The certified EIR included an evaluation of growth impacts. The EIR determined that the project would not induce substantial growth. Construction workers would be drawn primarily from the local labor pool or would temporarily stay in hotels in local communities. The construction phase is expected to last approximately 24 months and would be temporary. Additionally, approximately 515 workers would be needed during the construction phase. Therefore, because of the temporary nature of the construction phase, the project is not expected to induce substantial population growth.

During the operational phase, the project would employ approximately 440 workers. Approximately 417 of the proposed workers would be hourly and salaried employees and 23 would be third-party employees used mostly for on-site security and slag processing. The employees needed for the project's operational phase would most likely be drawn from the surrounding cities and unincorporated communities. These areas would include but not be limited to the unincorporated communities of Rosamond and Mojave and the cities of Tehachapi, Lancaster, and Palmdale. Given the size of the surrounding communities, the nature of the job, and the area's relatively high unemployment rate, the project's operational phase is not expected to induce substantial population growth.

7.5 Visibility and Deposition Analysis

The visibility impairment analysis is part of the requirement for an additional impacts analysis under the PSD program.

7.5.1 Class I Area Analysis

Class I areas are protected more stringently under the PSD program than under the NAAQS. Class I areas include national parks, wilderness areas, and other areas of special national and cultural significance. Five Class I areas are within 200 kilometers of the project site (**Table 7-2**).

TABLE 7-2
CLASS I AREAS WITHIN 200 KILOMETERS OF THE PROJECT SITE

Class I Area	State	Distance from Project Site (km)
San Gabriel Wilderness	California	67
Domeland Wilderness	California	85
Cucamonga Wilderness	California	88
Sequoia National Forest	California	150
Joshua Tree National Park	California	180

NOTE: km = kilometers
SOURCE: Data compiled by Environmental Science Associates in 2024

Following the most recent Federal Land Managers' Air Quality Related Values Work Group (FLAG) Workshop procedures (USFS et al. 2010), the screening procedure (ratio of initial cumulative annual emissions divided by distance to Class I area, referred to as "Q/D") was used to determine whether the project could opt (screen) out of an air quality–related value assessment for visibility and deposition with the CALPUFF modeling system. Following the FLAG screening procedures and using annualized emissions based on the maximum 24-hour emission rates, emissions of NO_X, SO_2, $PM_{10}/PM_{2.5}$, and H_2SO_4 mist were summed and divided by the distance to the respective Class I area. The annualized emissions rates calculated in this manner are only for the Q/D analysis and are not indicative of proposed annual sitewide emission rates listed in Section 3.0. **Table 7-3** summarizes the screening analysis for each Class I area located within 200 kilometers of the project site.

TABLE 7-3
CLASS I AREA IMPACT Q/D ANALYSIS

Class I Area	Q [1]	D (km)	Q/D
San Gabriel Wilderness	158.59	67	2.37
Domeland Wilderness	158.59	85	1.87
Cucamonga Wilderness	158.59	88	1.80
Sequoia National Forest	158.59	150	1.06
Joshua Tree National Park	158.59	180	0.88

NOTES: D = distance; km = kilometers; Q = emission rate.
[1] Sum of nitrogen oxides, sulfur dioxide, particulate matter less than 10 microns and less than 2.5 microns in diameter, and sulfuric acid mist (NO_x, SO_2, $PM_{10}/_{2.5}$, and H_2SO_4 mist, respectively), based on maximum 24-hour average emissions annualized to tons per year.
SOURCE: Data compiled by Environmental Science Associates in 2024

In accordance with the FLAG guidance, if the Q/D ratio is less than 10, no air quality–related value analysis is required. Based on the ratio of Q/D, the Class I areas listed in Table 7-3 do not require further analysis of air quality–related value. Thus, no CALPUFF analysis is anticipated to determine further impacts on air quality–related values. A notification letter would be submitted to the Federal Land Managers for concurrence with the above assessment.

7.5.2 Class II Area Analysis

The proposed Mojave Micro Mill facility would comply with the opacity limits of the New Source Performance Standard for Electric Arc Furnaces (40 CFR 60 Subpart AAb), listed as follows:

- 3 percent opacity at the exit from a control device (the secondary baghouse).
- 0 percent opacity from a melt shop during melting and refining and 6 percent opacity during charging.

In addition, particulate emissions from material handling storage silo vents and storage piles would comply with their respective Best Available Control Technology (BACT) guidelines. Particulate emissions from paved and unpaved haul roads would be minimized using watering, sweeping, and vehicle speed restriction as per BACT guidelines. Visibility degradation from project emissions in nearby Class II areas is therefore not indicated.

In accordance with recommendations of USEPA Region 9 as incorporated into the approved modeling protocol for this project, the impacts of project emissions were compared to USEPA's screening ambient threshold concentrations listed in *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals* (USEPA 1980). As a conservative approach, the one-hour averaging time was used in the American Meteorological Society/USEPA Regulatory Model (AERMOD) air dispersion model to compare with one-month and four-hour-average NO_2 impacts, and the eight-hour averaging time was used to compare with the weekly CO impact in the screening guidance.

The impacts were determined using the same modeling methodology as for Class II area impacts. The melt shop baghouse emission source (EID-06) represented 95–99 percent of the emissions of SO_2, NO_2, and CO, excluding the intermittent emissions such as those from emergency engines. To simplify the analysis, all project emissions (see Table 2-1) were modeled as emitting from the melt shop baghouse stack. For NO_2, no credit was taken for the presence of nitric oxide in the melt shop baghouse stack (i.e., 100 percent NO_2 in the stack).

Table 7-4 shows the results of this analysis. The modeling files (Appendix H) will be provided as part of the separate air dispersion analysis submittal.

TABLE 7-4
SCREENING THRESHOLD COMPARISON FOR PLANTS, SOILS, AND ANIMALS

Pollutant	Screening Concentration (μg/m^3) [1]	Maximum Modeled Concentration (μg/m^3)	Modeled Averaging Time
SO_2—1-hour average	917	5.42	1-hour
SO_2—3-hour average	786	2.31	3-hour
SO_2—annual average	18	0.08	Annual
NO_2—4-hour average	3,760	8.83	1-hour
NO_2—1-month average	564	8.83	1-hour
NO_2—annual average	94	0.30	Annual
CO—weekly average	1,800,000	16.87	8-hour

NOTES: μg/m^3 = micrograms per cubic meter; CO = carbon monoxide; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide
[1] Source: USEPA 1980.

SOURCE: Data compiled by Environmental Science Associates in 2024

7.6 Conclusion

Based on the discussions provided above, the project's emissions of criteria pollutants would not cause or contribute to an exceedance of the NAAQS, and the project site is in an area is designated as Unclassified/Attainment or Maintenance for all NAAQS. Therefore, the project is not expected to cause significant adverse impacts on vegetation or soils. With respect to industrial, commercial, and residential growth in the area, the certified final EIR developed in accordance with the CEQA Guidelines determined that the project would not induce substantial growth. Modeled ambient concentrations for all pollutants are significantly below the screening threshold concentrations for plants, soils, and animals as listed in USEPA's screening procedure guidance. Finally, the visibility and deposition analysis indicated that no adverse impacts are anticipated on Class I or Class II areas within 200 kilometers of the project site.

Based on the analysis presented in this chapter, the project would not have a significant adverse impact on air quality, soils, vegetation, visibility and/or growth in the surrounding area.

CHAPTER 8
County Air Permits

Eastern Kern Air Pollution Control District (EKAPCD) requires a separate application for an Authority to Construct and Permit to Operate for each distinct process, consisting of the aggregation of equipment items operating together to perform a given function and having the potential to cause the emission of an air contaminant. Such a process may consist of one individual piece of equipment or several equipment items, including air pollution control devices, if any. This report addresses these individual permits as “county air permits,” whereas “PSD permit” refers to the authority to construct the entire facility in accordance with Prevention of Significant Deterioration (PSD) regulations. This chapter breaks down the facility processes and equipment that require an individual county air permit.

Attributes considered when determining how to associate equipment or processes together for county air permits included functional similarity, locational proximity, and interdependence. Equipment or processes that are similar and located close to each other, such as outdoor storage piles of raw materials, are grouped together for county permits. If a particular piece of equipment or process could not operate without operating another piece of equipment or process, this functional interdependency justified grouping the equipment or processes together for county air permitting purposes. An example of functional interdependency is that the rolling mill could not operate without also operating the melt shop equipment, and vice versa, because of the continuous casting process.

The document “List and Criteria _PER-15” from the EKAPCD Applications and Forms web page describes the information required of an applicant requesting a county air permit. This document includes “List A” through “List E,” which may apply to each county permit. Because much of the content of these lists is identical for each county permit, the common information is described here. Descriptions of all equipment, processes, and expected emissions are provided in other chapters of this application. Information is provided in this chapter when relevant to justifying the grouping in a county air permit.

List A. List A business information is the same for each county air permit application, as is the statement that the type of application is for the authority to construct new equipment. Appendix A includes the individual Application for Authority to Construct forms (PER-01) for each county air permit. Chapter 1, *Introduction*, provides the facility location and general purpose of the entire facility. Chapter 2, *Project Description*, addresses the entire rebar making process, with relevant sections summarized in this chapter as they pertain to the individual county air permits. Expected emissions from facility equipment and processes are described in Chapter 3, *Emissions Estimates*.

List B. List B requires PSD major sources to provide a certification of compliance using form “NSR Compliance Certificate _TLV-03,” which can be found in Appendix A. The emissions presented for the facility and county air permits reflect Best Available Control Technology (BACT) as discussed in Chapter 5, *Best Available Control Technology Analysis*. Air dispersion modeling has been conducted in accordance with PSD requirements. The air dispersion modeling analysis will be provided separately as supplemental information to this application report.

List C. List C requires that actions subject to PSD regulations discuss the environmental setting and describe how PSD is applicable, along with providing the appropriate BACT and air quality impact analysis. The environmental setting and PSD applicability discussion is addressed in Chapter 4; BACT in Chapter 5; and air quality impact analysis will be provided separately as supplemental information to this application report.

List D. List D describes requirements for sources of toxic air contaminants (TACs). Maximum potential TAC emissions from the proposed Mojave Micro Mill facility are documented in Table 2-2 with calculations provided in Appendix D. The project would be an area source of hazardous air pollutants (HAPs). A health risk assessment was performed as part of the development of the environmental impact report (EIR) prepared for this project. That effort was based on estimated TAC levels scaled from a comparable micro mill, which were higher levels than estimated for the proposed Mojave Micro Mill because of the use of natural gas combustion in that process. PSGM3 would not use any natural gas combustion in the steelmaking process at the project site. Additionally, the project facility would use air pollution control technologies that were not used at the facility used for emissions scaling, such as a secondary baghouse and carbon injection for the melt shop, which would reduce TAC emissions to lower levels than contemplated in the EIR. The results of the EIR health risk assessment were that there would be no significant impacts on nearby sensitive receptors. This analysis is found in the EIR's Air Quality section included in **Appendix I**.

List E. List E requires that the appropriate California Environmental Quality Act (CEQA) documentation be included with an application. The construction and operation of the proposed Mojave Micro Mill was found to have significant and unavoidable impacts; therefore, it required the preparation of an EIR. On March 19, 2024, the Kern County Board of Supervisors certified the final Mojave Micro Mill Project EIR (State Clearinghouse Number [SCH No.] 2022100646); adopted Section 15091 Findings of Fact and a Section 15093 Statement of Overriding Considerations; and adopted the revised Mitigation Monitoring and Reporting Program. The Air Quality section of this EIR is included in Appendix I.

Table 8-1 summarizes the county permits required for the project.

TABLE 8-1
COUNTY PERMITS REQUIRED FOR THE MOJAVE MICRO MILL PROJECT

County Permit Grouping	Source Description	Emission Point ID
1. Raw Material Storage and Handling	Scrap Material Storage and Handling—Indoor	EID-01
	Scrap Material Storage and Handling—Outdoor	EID-02
	Scrap Pile—Wind Erosion	EID-03
	Alloy Material Storage and Handling—Outdoor	EID-04
	Alloy Storage Pile—Wind Erosion	EID-05
2. Combined Melting and Rolling Process	Melt Shop Baghouse	EID-06

County Permit Grouping	Source Description	Emission Point ID
	Electric Arc Furnace Direct Evacuation Control	EID-06_01
	Electric Arc Furnace Fugitives	EID-06_02
	Ladle Metallurgical Furnace Direct Evacuation Control	EID-06_03
	Casting Operation Fugitives	EID-06_04
	Slag Dump	EID-06_05
	Ladle and Tundish Refractory Repairs	EID-06_06
	Ladle and Tundish Dumping	EID-06_07
	Melt Shop Baghouse Dust Silo Bin Vent	EID-06_08
	Melt Shop Baghouse Dust Loadout	EID-06_09
	Activated Carbon Injection Bin Vent	EID-06_10
	Carbon Silo Bin and Hopper Vent	EID-06_11
	Flux Silo 1 Bin and Hopper Vent—Lime	EID-06_12
	Flux Silo 2 Bin and Hopper Vent—Dolomite	EID-06_13
	Scrap/Skull Cutting Torches	EID-06_14
	Caster Spray Vent Stack	EID-07
	Roll Mill Vent	EID-08
3. Slag Yard	Slag Material Storage and Handling Outdoor	EID-09
	Slag Pile Wind Erosion	EID-10
	Slag Screening and Crushing	EID-11
4. Cooling Tower 1	Cooling Tower 1	EID-12
5. Cooling Tower 2	Cooling Tower 2	EID-13
6. Cooling Tower 3	Cooling Tower 3	EID-14
7. Cooling Tower 4	Cooling Tower 4	EID-15
8. Emergency Fire Water Pump	Emergency Fire Water Pump	EID-16
9. Emergency Cooling Water Pump	Emergency Cooling Water Pump	EID-17
10. Emergency Generator	Emergency Generator	EID-18
11. Gasoline Tank—500 Gallons	Gasoline Tank—500 Gallons Capacity	EID-21

SOURCE: Data compiled by Environmental Science Associates in 2024

8.1 Raw Material Storage and Handling

Raw material in the form of scrap metal would be brought to the site by truck and deposited in front of the scrap bay or outdoor overflow storage piles. Scrap stored in the overflow piles would be moved to the scrap bay doors as needed. The scrap would be moved into the scrap bay by loaders and then lifted to the endless charging system conveyor via magnetic crane. Additional raw-material alloys would be similarly stored in outdoor storage piles and transferred to the melt shop via loaders or forklifts as needed.

8.2 Combined Melting and Rolling Process

The melt shop and rolling mill processes would be functionally interdependent because of the continuous casting process. The rolling mill would require the operation of the melt shop to provide the steel for rolling, and the melt shop would require the rolling mill to process the steel because there would be no other feasible way to stage or store the steel billet based on the continuous nature of the process.

The following emissions sources are associated with the melt shop:

- Electric arc furnace fugitives.
- Ladle metallurgy station.
- Casting operation fugitives.
- Slag dump.
- Ladle and tundish refractory repairs.
- Landle and tundish dumping.
- Dust silo bin vent for the melt shop baghouse.
- Dust loadout fugitives from the melt shop baghouse.
- Activated carbon injection bin vent.
- Flux silo bin and hopper vents.
- Scrap cutting torches.

The majority of emissions generated from the melt shop would be captured by the direct evacuation control system and routed through the air pollution control systems. A small amount of emissions would come from the scrap bay doors and caster spray stack.

Emissions from the rolling mill process would come from particulate entrained in the water droplets created from the water spraying of steel billets, as well as small amounts of emissions of volatile organic compounds and HAPs from oil and grease contamination of the contact water. The rolling mill emissions would be vented via natural convection through a ridge vent that would run along the length of the roof of the rolling mill building.

8.3 Slag Yard

Most of the slag at the facility would be produced in the EAF, and a smaller amount would be formed in the LMS. After the slag is removed from the melt shop, quenched, and stored in an outdoor storage pile, the slag would be processed by an on-site slag processing plant. At the slag processing plant, large pieces of slag would first be reduced in size by a drop ball crushing process. Slag would then be processed through a system consisting of conveyors, hoppers, a jaw crusher, and a double-deck screen.

In addition to transportation by the conveyor system, loaders would transport slag to the various piles. The processed slag stored in the piles would be transported off-site by truck to be sold to consumers, disposed of, or recycled.

8.4 Cooling Tower #1

Cooling Tower #1 would be for non-contact cooling water and would contain four cooling cells. This tower would use a high-efficiency drift eliminator rated at 0.0005 percent.

8.5 Cooling Tower #2

Cooling Tower #2 would be for contact cooling water and would contain two cooling cells. This tower would use a high-efficiency drift eliminator rated at 0.0005 percent.

8.6 Cooling Tower #3

Cooling Tower #3 would be for Carbon Capture System #1 and would consist of two cells. This tower would use a high-efficiency drift eliminator rated at 0.0005 percent.

8.7 Cooling Tower #4

Cooling Tower #4 would be for Carbon Capture System #2 and would consist of a single cell. This tower would use a high-efficiency drift eliminator rated at 0.0005 percent.

8.8 Emergency Fire Water Pump

The emergency fire water pump would be a propane-fired internal combustion engine rated at 600 horsepower (hp). Annual operations for testing and maintenance would be fewer than 200 hours per year.

8.9 Emergency Cooling Water Pump

The emergency cooling water pump would be a propane-fired internal combustion engine rated at 200 hp. Annual operations for testing and maintenance would be fewer than 200 hours per year.

8.10 Emergency Generator

The emergency generator would be a propane-fired internal combustion engine rated at 2,682 hp. Annual operations for testing and maintenance would be fewer than 200 hours per year.

8.11 Gasoline Tank—500-Gallon

There would be a 500-gallon gasoline storage tank with fuel dispenser that would require a county permit. This tank would comply with EKAPCD rules addressing storage of organic liquids and gasoline transfer by using the appropriate pressure relief devices and vapor recovery systems.

Other fuel tanks that would be used on-site are exempt from county permitting. For example, the 8,000- and 5,000-gallon diesel tanks are exempt based on EKAPCD Rule 202, Section II.G.4.a, which exempts liquid storage vessels storing petroleum distillates used as engine fuel with 0.8251 specific gravity or higher (American Petroleum Institute rating of 40 or lower) with a capacity of 19,800 gallons or less. Diesel fuel has a specific gravity of 0.82 to 0.96 and satisfies this exemption criterion (The Engineering ToolBox 2003). The 250-gallon gasoline storage tank is exempt from county permitting based on EKAPCD Rule 202, Section II.G.2, which exempts liquid storage vessels of unheated organic material with a capacity of 250 gallons or less.

CHAPTER 9
References

Burns McDonnell. 2018. Prevention of Significant Deterioration Air Construction Permit Application – Nucor Steel Florida, Inc. Available: https://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/AIR_1050472/facility!search?pagination=true&electronicDocument.airDivision=false&electronicDocument.waterDivision=false&electronicDocument.wasteDivision=false&electronicDocument.documentType=&electronicDocument.dateFrom=&electronicDocument.dateTo=&electronicDocument.dateReceivedFrom=&electronicDocument.dateReceivedTo=&electronicDocument.subject=&electronicDocument.facilityId=AIR_1050472&electronicDocument.permitId=&electronicDocument.facilityDistrict=&electronicDocument.facilityCounty=&electronicDocument.sortCriteria=&tagConfig.criteriaTagType=regular&tagConfig.genInfoTagType=regular&tagConfig.listTagType=short&showBreadCrumb=false&page=4. Accessed May 9, 2024.

CARB (California Air Resources Board). 1999. E08—Engine, Propane Fired, Uncontrolled Calculation Methods. Available: https://www.sdapcd.org/content/dam/sdapcd/documents/permits/emissions-calculation/liquid-fuels/APCD-Engine-Propane-Fired-Uncontrolled.pdf. Last updated August 24, 1999.

CARB (California Air Resources Board). 2024a. Area Designations Maps/State and National. Available: https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations. Accessed February 7, 2024.

CARB (California Air Resources Board). 2024b. NO_X Emissions from California Lands. Available: https://ww2.arb.ca.gov/our-work/programs/soil-emissions-california-lands/nox-emissions-california-lands. Accessed February 26, 2024.

Da Silva, L. C., M. A. Oliva, A. A. Azevedo, and J. M. De Araújo. 2006. Responses of Restinga Plant Species to Pollution from an Iron Pelletization Factor. *Water, Air, and Soil Pollution* 175(1):241–256.

Drake, B. G., M. Gonzales-Meler, and S. P. Long. More Efficient Plants: A Consequence of Rising Atmospheric CO_2? *Annual Review of Plant Physiology and Plant Molecular Biology* 48(1997):609–639.

Grantz, D. A., J. H. B. Garner, and D. W. Johnson. 2003. Ecological Effects of Particulate Matter. *Environment International* 23:213–239. Available: https://doi.org/10.1016/S0160-4120(02)00181-2.

Griffith, G. E., J. M. Omernik, D. W. Smith, T. D. Cook, E. Tallyn, K. Moseley, and C. B. Johnson. 2016. *Ecoregions of California*. U.S. Geological Survey Open-File Report 2016–1021, with map, scale 1:1,100,000. Available: http://dx.doi.org/10.3133/ofr20161021.

Hällgren, J-E. 1984. Photosynthetic Gas Exchange in Leaves Affected by Air Pollutants. In: *Gaseous Air Pollutants and Plant Metabolism*, ed. M. J. Koziol and F. R. Whatley, 147–160. London, UK: Buttersworth.

Hart, R., P. G. Webb, R. H. Biggs, and K. M. Portier. 1988. The Use of Lichen Fumigation Studies to Evaluate the Effects of New Emission Sources on Class I Areas. *Journal of the Air Pollution Control Association* 38(1988):144–147.

Heath, R. L. 1975. Ozone. In: *Responses of Plants to Air Pollution,* ed. J. B. Mudd and T. T. Kozlowski. New York: Academic Press.

Hill, A. C., and N. Littlefield. 1969. Ozone: Effect on Apparent Photosynthesis, Rate of Transpiration and Stomatal Closure in Plants. *Environmental Science and Technology* 3(1969):52–56.

Ingersoll, R. B., R. E. Inman, and W. R. Fisher. 1974. Soil's Potential as a Sink for Atmospheric Carbon Monoxide. *Tellus* 26(1974):151–159.

Kern County Planning and Natural Resources Department. 2023. *Draft Environmental Impact Report, Mojave Micro Mill*. State Clearinghouse No. 2022100646. November 2023.

Kozlowski, T. T., and H. A. Constantinidou. 1986. Responses of Woody Plants to Environmental Pollution, Part I: Sources and Types of Pollutants and Plant Responses. *Forestry Abstracts* 47(1986):5–51.

Mackus, C. J., and K. N. Joshi. 1981. *Project Summary: Volatilized Lubricant Emissions from Steel Rolling Operations.* EPA-600/S2-80-105. Industrial Environmental Research Laboratory, Research Triangle Park, NC. April 1981.

MDAQMD and AVAPCD (Mojave Desert Air Quality Management District and Antelope Valley Air Pollution Control District). 2000. *Emissions Inventory Guidance, Mineral Handling and Processing Industries*. April 10, 2000.

Mittler, R., S. Vanderauwera, M. Gollery, and F.V. Breusegem. 2004. Reactive Oxygen Gene Network of Plants. *Trends in Plant Science* 9,10(2004):490–498. Available: https://pubmed.ncbi.nlm.nih.gov/15465684/. Accessed March 11, 2023.

Muneer, S., T. H. Kim, B. C. Choi, B. S. Lee, and J. H. Lee. 2014. Effect of CO, NO_x, and SO_2 on ROS Production, Photosynthesis, and Ascorbate–Glutathione Pathway to Induce *Fragaria annasa* as a Hyper-Accumulator. *Redox Biology* 2:91–98.

NRCS (U.S. Natural Resources Conservation Service). 2024. Web Soil Survey. Available: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed March 11, 2024.

Reinert, R. A., A. S. Heagle, and W. W. Heck. 1975. Plant Responses to Pollutant Combinations. In: *Responses of Plants to Air Pollution*, ed. J. B. Mudd and T. T. Kozlowski. London, UK: Academic Press.

Reisman, J., and G. Frisbie. 2004. Calculating Realistic PM_{10} Emissions from Cooling Towers. *Air & Waste Management Association, 2001 Florida Conference Proceedings*. Abstract No. 216, Session No. AM-1b.

Smith, G. 2012. Ambient Ozone Injury to Forest Plants in Northeast and North Central USA: 16 Years of Biomonitoring. *Environmental Monitoring and Assessment* 184(7):4049–4065.

Soheili, F., S. Woodward, H. Abdul-Hamid, and H. Naji. 2023. The Effect of Dust Deposition on the Morphology and Physiology of Tree Foliage. *Water Air and Soil Pollution* 234(6).

Taylor, O. C., and D. C. McLean. 1970. Nitrogen Oxides and Peroxyacyl Nitrates. In: *Recognition of Air Pollution Injury to Vegetation: A Pictorial Atlas,* ed. J. S. Jacobsen, E1–E14. Pittsburgh, PA: Air Pollution Control Association.

The Engineering ToolBox. 2003. Liquids—Specific Gravities. Available: https://www.engineeringtoolbox.com/specific-gravity-liquid-fluids-d_294.html. Accessed April 2, 2024.

USEPA (U.S. Environmental Protection Agency). n.d. NAAQS Table. Available: https://www.epa.gov/criteria-air-pollutants/naaqs-table%20. Accessed June 11, 2018.

USEPA (U.S. Environmental Protection Agency). *Background Report AP-42, Section 12.13: Steel Foundries*. Research Triangle Park, NC. Prepared by Pacific Environmental Services, Inc., Research Triangle Park, NC. Available: https://www3.epa.gov/ttnchie1/ap42/ch12/bgdocs/b12s13.pdf. Accessed March 29, 2018.

USEPA (U.S. Environmental Protection Agency). 1980. *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals*. EPA-45/2-81-078, December 1980.

USEPA (U.S. Environmental Protection Agency). 1988. *Control of Open Fugitive Dust Sources.* Final Report. EPA-450/3-88-008. Office of Air Quality Planning and Standards, Emission Standards Division, Research Triangle Park, NC. Prepared by Midwest Research Institute, Kansas City, MO. September 1988.

USEPA (U.S. Environmental Protection Agency). 1990. *New Source Review Workshop Manual: Prevention of Significant Deterioration and Nonattainment Area Permitting*. Available: https://www.epa.gov/sites/default/files/2015-07/documents/1990wman.pdf. Accessed April 2024.

USEPA (U.S. Environmental Protection Agency). 1993. *Air Quality Criteria for Oxides of Nitrogen (Final Report, 1993).* EPA/600/8-91/049aF-cF. Washington, D.C.

USEPA (U.S. Environmental Protection Agency). 2003a. Air Pollution Control Technology Fact Sheet. Fabric Filter—Pulse-Jet Cleaned Type (also referred to as Baghouses). EPA-452/F-03-025. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003b. Air Pollution Control Technology Fact Sheet. Fabric Filter—Reverse-Air Cleaned Type, Reverse-Air Cleaned Type with Sonic Horn Enhancement, and Reverse-Jet Cleaned Type (also referred to as Baghouses). EPA-452/F-03-026. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003c. Air Pollution Control Technology Fact Sheet. Dry Electrostatic Precipitator (ESP) Wire Pipe Type. EPA-452/F-03-027. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003d. Air Pollution Control Technology Fact Sheet. Dry Electrostatic Precipitator (ESP) - Wire Plate Type. EPA-452/F-03-028. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003e. Air Pollution Control Technology Fact Sheet. Wet Electrostatic Precipitator (ESP) - Wire Pipe Type. EPA-452/F-03-029. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003f. Air Pollution Control Technology Fact Sheet. Wet Electrostatic Precipitator (ESP) - Wire Plate Type. EPA-452/F-03-030. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003g. Air Pollution Control Technology Fact Sheet. Condensation Scrubber. EPA-452/F-03-010. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003h. Air Pollution Control Technology Fact Sheet. Fiber-Bed Scrubber EPA-452/F-03-011. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003i. Air Pollution Control Technology Fact Sheet. Orifice Scrubber EPA-452/F-03-014. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003j. Air Pollution Control Technology Fact Sheet. Packed-Bed/Packed-Tower Wet Scrubber. EPA-452/F-03-15. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003k. Air Pollution Control Technology Fact Sheet. Impingement-Plate/Tray-Tower Scrubber. EPA-452/F-03-012. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003l. Air Pollution Control Technology Fact Sheet. Mechanically-Aided Scrubber. EPA-452/F-03-013. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003m. Air Pollution Control Technology Fact Sheet. Venturi Scrubber. EPA-452/F-03-017. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2003n. Air Pollution Control Technology Fact Sheet. Cyclones. EPA-452/F-03-005. EPA-CICA Fact Sheet.

USEPA (U.S. Environmental Protection Agency). 2010. "Greenhouse Gas Permitting Guidance." Presentation. Office of Air and Radiation, Office of Air Quality Planning and Standards, fall 2010. Available: https://www.epa.gov/sites/default/files/2015-12/documents/ghgpermittingguidance_nov1819webinars.pdf. Accessed March 2024.

USEPA (U.S. Environmental Protection Agency). 2012. *Available and Emerging Technologies for Reducing Greenhouse Gas Emissions from the Iron and Steel Industry*. September 2012. Available: https://www.epa.gov/sites/production/files/2015-12/documents/ironsteel.pdf. Accessed March 29, 2018.

USEPA (U.S. Environmental Protection Agency). 2017. *Guideline to Air Quality Models*. May 2017. Available: https://www.epa.gov/sites/production/files/2020-09/documents/appw_17.pdf. Accessed April 2024.

USEPA (U.S. Environmental Protection Agency). 2017. *Revisions to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches To Address Ozone and Fine Particulate Matter*. EPA-HQ-OAR-2015-0310. Final rule, January 17, 2017 (82 Federal Register 5182).

USEPA (U.S. Environmental Protection Agency). 2018. *Integrated Science Assessment for Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter—Ecological Criteria.* EPA/600/R-18/097. Washington, D.C.

USEPA (U.S. Environmental Protection Agency). 2020a. EnviroAtlas Value of Health, Ecosystem, and Materials Damage Avoided due to Carbon Monoxide Removed by Tree Cover. Available: https://enviroatlas.epa.gov/enviroatlas/DataFactSheets/pdf/ESC/Valuehealthecosystemmaterialsdamageavoidedcarbonmonoxide.pdf. Accessed March 11, 2024.

USEPA (U.S. Environmental Protection Agency). 2020b. *Integrated Science Assessment for Ozone and Related Photochemical Oxidants.* EPA/600/R-20/012. Washington, D.C.

USEPA (U.S. Environmental Protection Agency). 2024a. *AP-42: Compilation of Air Emissions Factors from Stationary Sources.* January 2024. Available: https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors.

USEPA (U.S. Environmental Protection Agency). 2024b. Nonattainment Areas for Criteria Pollutants (Green Book). Available: https://www.epa.gov/green-book. Current as of March 31, 2024.

USEPA (U.S. Environmental Protection Agency). 2024c. Clean Air Technology Center Web Site. Available: https://www.epa.gov/catc. Last updated February 23, 2024.

USFS et al. (U.S. Forest Service, National Park Service, and U.S. Fish and Wildlife Service). 2010. *Federal Land Managers' Air Quality Related Values Workgroup (FLAG). Phase I Report—Revised (2010)*. Natural Resources Report NPS/NRPC/NRR-2010/232.

Appendix A
Eastern Kern Air Pollution Control District Forms

Forms submitted to Eastern Kern Air Pollution Control District on May 14, 2024, at their offices at: Public services building, 2700 M St #302, Bakersfield, CA 93301.

Appendix B
Project Figures

Path: U:\GIS\GIS\Projects\2020xxx\D202001141_Mojave_Micro_Mill\03_MXDs_Projects\Bio_Report.aprx, sgeissler 7/11/2022

SOURCE: ESRI World Topographic Map.

Mojave Micro Mill Project

ESA

Figure 2-1
Regional and Site Location

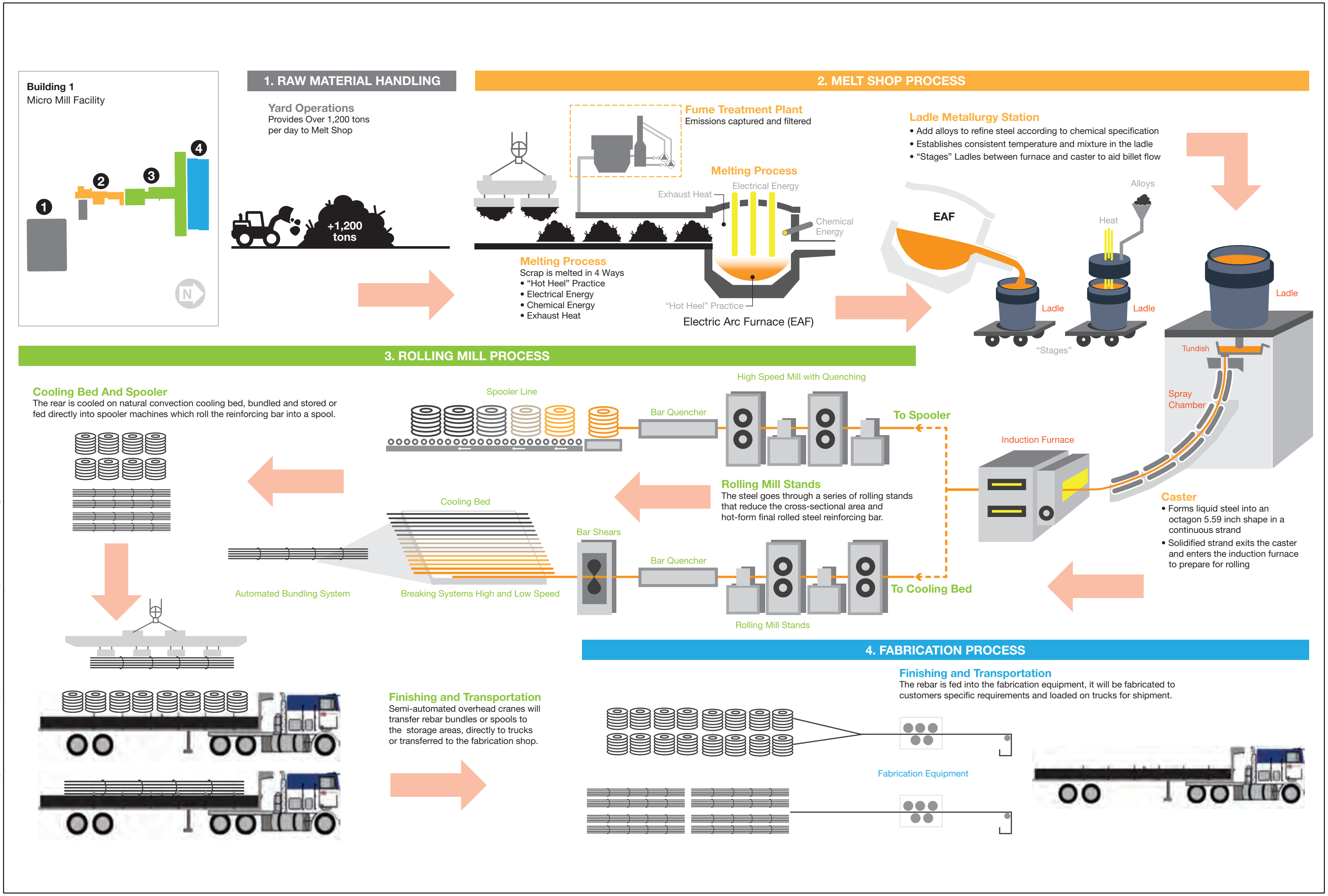
Path: U:\GIS\GIS\Projects\2020xxx\D202001141 Mojave Micro Mill\03 MXDs Projects\AQ\Fig2-2 Facility Loc.mxd, RTeitel 5/17/2024

SOURCE: ESA, 2023; ESRI Imagery

Mojave Micro Mill Project

Figure 2-2
Facility Location

ESA



SOURCE: ESA, 2024

Mojave Micro Mill Project

Figure 2-3
Process Flow Diagram

ESA

Appendix C
Preliminary Scrap Management Plan

PSG and PSGM3

Scrap Management Plan – March 2024

INTRODUCTION

Pacific Steel Group (PSG) intends to consistently provide the best ferrous raw materials to the PSGM3 steel rebar mill (PSGM3) for its electric arc furnace. In order to pay competitive prices and provide the best market for ferrous raw materials, it is imperative that the quality of raw materials purchased by PSG produces a clean, dense charge for our electric furnace. Dirty raw materials, loose bundles or loose coils, oversize raw materials, and contaminated raw materials reduce the ability of PSGM3 to produce quality finished steel products at competitive prices.

PSG and PSGM3 jointly created this Scrap Management Plan (hereafter referred to as "this plan") to inform scrap suppliers of the standards for acceptable scrap quality of each raw material commodity. In addition, a list of unacceptable quality scrap is provided. Suppliers' efforts in applying these standards to every load of raw materials are expected, required, and will continually be monitored. All PSG and PSGM3 personnel involved in the purchasing, receiving, grading, or unloading of raw materials resources are trained in applying the standards and policies set forth in this plan. The success of any policy or standard is dependent upon the good judgment and fair-mindedness of each person involved in its application. Our objective is to treat every supplier courteously and fairly.

The standards used in this plan are based on the specifications set forth by the Institute of Scrap Recycling Industries (ISRI) and may have been modified to meet the particular raw materials requirements of PSGM3.

This plan will be reviewed by December 31st of each year and updated as necessary. PSG will require each scrap supplier to provide documentation acknowledging the receipt of this plan as well as acknowledging the understanding and agreement of all requirements of this plan. The environmental aspects portion of this plan contains excerpts of the Air Permit Application for the PSGM3 project which mandates all provisions of this plan. Any questions or concerns regarding the contents of this plan should be directed to either the raw materials or environmental department.

GENERAL TERMS AND CONDITIONS

A. PURCHASING OF RAW MATERIALS is handled by the raw materials department of PSG. The raw materials department may be contacted at:

Phone: [to be provided]

B. PRICES are quoted by PSG for each raw material commodity, primarily at the beginning of each month, and may be applicable for (a) the entire month; (b) the remainder of that particular month; (c) for a given period of time to be specified; or, (d) for a specific quantity to be delivered by a specific date. A purchase contract with a corresponding purchase order number (P.O.) will be issued by PSG for specific grades and quantities to be completed within a specific period of time, generally for one calendar month. Balances on any P.O. not shipped by the specified completion date may be cancelled or extended at the sole discretion of the raw materials department. **(All prices are quoted in gross tons and all quantities expressed on a P.O. are in gross tons, except when otherwise noted).**

C. DELIVERY must be made in rear dump truckloads (at agreed upon minimum weights); quantities as specified at the time of purchase. Deviation from this requirement must be approved by the raw materials department.

APPENDIX I: DIRECTIONS to PSGM3

APPENDIX II: IN-PLANT ROAD MAP – PSGM3

D. SCALE HOUSE HOURS will be increased as PSGM3 increases production. These changes will be communicated. Suppliers may address any questions they may have about receiving times, by contacting the raw materials department.

E. RECEIVING AND GRADING – PSGM3's weights and grading will govern final settlement for all scrap purchases. A current P.O. must be on file for each shipment. No raw materials will be received at the scale unless:

1. A P.O. number has been issued to the supplier by an authorized raw materials department representative and must be referenced on all related correspondence and shipping documents.

2. In the case of truck delivery, the driver must provide the scale administrator with:

   a. P.O. number

   b. Yard of origin

   c. Grade being delivered

   d. Bill of lading number

3. The scale administrator on duty is responsible for inspecting the top of every scrap shipment and determining if it conforms to the supplier's statement as to what grade shipped, in addition to adherence to the established PSG and PSGM3 scrap quality guidelines. The scale administrator will note the grade (i.e. shredded, #2HMS, etc.) on the scale ticket.

4. The scale administrator will inform the raw materials department of any substandard raw materials shipment. The supplier will then be notified by the raw materials department which will decide, at its sole discretion and without incurring any liability whatsoever, whether to hold the raw materials for downgrading (with the supplier's

consent) or reject the shipment. In all cases, shipments held for disposition (downgrade/radiation) must be cleared within (24) hours except weekends or holidays, with any detention, demurrage, or other charges being the sole responsibility of the supplier.

5. After a shipment is weighed in, it will be the responsibility of the scrap inspector or their designee and the loader operator or crane operator on duty to inspect the remainder of the shipment and determine whether it meets the quality standards as set forth herein.

6. Disputes over substandard material, contracts, grading, unloading, etc., on raw materials delivered after normal business hours (6:00am to 6:00pm, Monday through Friday) will be handled during the next business day's normal business hours, before the shipment is unloaded. If unloading has begun, the unloading will not be completed until the appropriate personnel have been contacted and have had an opportunity to inspect the load during normal daylight hours and come to a decision regarding acceptability.

7. Rejected truckloads of scrap become the supplier's responsibility at the time of notification. The raw materials department will assist the supplier from the perspective of minimizing any negative effects of a problem shipment.

8. All freight charges or demurrage charges resulting from a rejected shipment shall be borne by the supplier. PSG will either invoice such charges to the supplier or deduct charges from a current or future payment.

F. WEIGHING PROCEDURES/WEIGHT DISCREPANCIES – Scale administrators will compare the net gross weights provided by the supplier with PSGM3's weights.

1. Trailers with differences in net weights of 1,000 lbs. or more will be verified to ensure that they have been weighed properly and that readings are correct. Differences in tare or net weights will alert the scale administrator to investigate and record contributing factors such as dirt, rocks, etc. on the scale ticket. (See GENERAL TERMS & CONDITIONS – Page 5, Paragraph E)

G. TRUCK UNLOADING will be accomplished as carefully as possible with respect to the driver's safety and care of their truck and trailer and surrounding people and property.

H. SAFETY is paramount at PSGM3. Only the driver will be allowed into the raw materials storage area. The driver must have and use approved head, eye, and feet protection (hard hat, safety glasses, safety boots) at all times while on PSGM3 property, within the PSGM3 scrap yard area. Shorts and open toed shoes are not permitted at PSGM3. The driver must not leave the immediate area surrounding his truck and must stay clear of the crane unloading their truck as well as other equipment operating in the area. The driver's strict attention to their surroundings is mandatory. All trailer axles must be on the ground during dumping and all personnel must be clear of the potential trailer tip radius. Trailer doors must be equipped with safety mechanisms to prevent injury to drivers.

I. PAYMENTS are made by check or ACH (EFT) and are issued within the payment terms that had been previously agreed to. During the end of month closing periods, there could be a slight delay in issuing checks.

GENERAL RAW MATERIALS SPECIFICATIONS

In order to better understand the terms used in this plan, the following definitions are provided:

CLEANLINESS: All grades shall be free of dirt, non-ferrous metals, excessive rust and corrosion, or foreign material of any kind. However, the terms "free of dirt, non- ferrous metals, excessive rust and corrosion, or foreign material of any kind" are not intended to preclude the accidental inclusion of negligible amounts where it can be shown that the amount is unavoidable in the customary preparation and handling of the particular grade involved. PSGM3 will not accept any non-metallic or steel by-products such as mill scale, slag, grinding dust, or swarf.

Swarf

RESIDUAL ALLOYS: Wherever the term "free of alloys" is used in the classifications given herein, it shall mean that any alloys contained in the steel are residual and have not been added for the purpose of making alloyed steel.

OFF-GRADE MATERIAL: The inclusion in a shipment of a particular grade of iron or steel raw materials of a negligible amount of metallic material which exceeds, to a minor degree, the applicable size limitations or which fails, to a minor extent, to meet the applicable requirements as to quality or kind of material, shall not change the classification of the shipment, provided it can be shown that the inclusion of such off-grade material is unavoidable in the customary preparation and handling of the grade involved. The final determination of these occurrences is at the sole discretion of appropriate PSG and PSGM3 personnel involved in the inspection, grading and unloading of raw materials.

DRUMS: Drums of any size are not accepted.

DEVIATIONS: Deviations from the general classifications of iron and steel scrap given herein may be allowed by mutual written agreement between PSG Raw Materials Department and the supplier.

PACIFIC STEEL GROUP

ENVIRONMENTAL ASPECTS

PSG and PSGM3 practices Guiding Principles which includes, caring about the needs of the community, beginning with the environment. Environmental aspects are managed at PSGM3 by on-site staff under the direction of the Environmental Manager. Any environmental concerns should be directed to the environmental department at [phone to be provided].

The terms used in this Scrap Management Plan shall have the same definitions as those enumerated in EPA's Final Area Source Rule found at 40 CFR Part 63 Subpart YYYYY. As outlined in the final rule, the term "mercury switch" denotes only mercury switches that are part of a convenience light switch mechanism installed in a vehicle.

Contaminants such as chlorinated plastics, free organic liquids, lead (except for leaded steel) and mercury are not appropriate or desired for the production of steel in EAF facilities. However, these contaminants are found in the scrap metal that is the basic feedstock for the production of new steel.

EPA has identified EAF facilities as potential sources of HAP emissions and, on December 28, 2007, promulgated final regulations (codified at 40 CFR Part YYYYY) intended to control or minimize such emissions.

The regulations require EAF facilities, among other things, to restrict the use of certain scrap or follow a Pollution Prevention Plan for scrap purchased as production feedstock to minimize the amount of specified contaminants in such scrap.

PSG and PSGM3 are committed to complying with the requirements of the EAF Area Source Rule and to the goal of removing at least 80% of mercury convenience-light switches from motor vehicle scrap. PSG and PSGM3 is also committed to minimizing to the extent practicable the presence of other contaminants in scrap that may result in the emission of hazardous air pollutants.

Accordingly, PSG and PSGM3 have adopted and will comply with the provisions of this plan as part of the Pollution Prevention Plan. The following restrictions apply to all scrap steel purchased by PSG and used by PSGM3 in its EAF steelmaking process.

Scrap materials must be depleted to the extent practicable of undrained used oil filters, chlorinated plastics, and free organic liquids at the time of charging to the furnace.

Lead-containing components of scrap, such as batteries, battery cables, and wheel weights, must be removed, to the extent practicable, prior to charging in the furnace unless the scrap is used to produce leaded steel.

Motor vehicle scrap must be purchased from providers that have minimized the presence of mercury in scrap through participation in the NVMSRP or another EPA-approved program.

PACIFIC STEEL GROUP

PLEASE PAY STRICT ATTENTION TO THIS ISSUE.

CLOSED CONTAINERS/SEALED UNITS

The safety of our employees comes first and foremost along with protecting our property/equipment. Closed containers and sealed units are a serious explosion hazard, which may result in the loss of life, limb, and/or property. Any supplier that fails to address this issue may result in the suspension or termination as an approved scrap supplier to PSG and PSGM3.

No acetylene cylinders of any kind (pressurized or depressurized) can be accepted by PSG and PSGM3 because they typically contain asbestos.

CLOSED CONTAINERS: Any scrap shipments found to contain one or more closed containers including but not limited to: freon canisters, auto/truck drive shafts, shock absorbers, struts, torque converters, gear boxes, conveyor rollers, compressed gas cylinders, fire extinguishers, hydraulic cylinders, munitions scrap, air compressor tanks, fuel tanks, air bag canisters, sheared pipe (has to be open on one end), oxygen/propane bottles, or any sealed units designed for containing pressurized gas, liquid or substances, which have NOT been emptied and cut-in-half lengthwise, will be subject to rejection, and/or a penalty will be assessed for sorting load, and closed container will be shipped back on the truck.

PLEASE PAY STRICT ATTENTION TO THIS ISSUE.

RADIOACTIVE RAW MATERIALS

PSGM3 protocol requires that any shipment of raw materials that alarms our radiation detection equipment will be rejected and any expenses incurred will be charged to the account of the supplier. This may result in the supplier being forbidden to ship raw materials to PSG and PSGM3 until the supplier demonstrates that efforts have been made to correct the problem. In addition, PSG will not purchase any “decontaminated” raw materials regardless if the supplier has a “certificate of decontamination” by the U.S. Government or a U.S. Government approved contractor.

Any material that initiates a radioactive alarm must be reported to the California Department of Public Health Radiation Safety and Environmental Management Division for their disposition and all related costs are the responsibility of the supplier. We encourage suppliers to install and properly maintain radiation detection equipment and establish a protocol to eliminate radioactive raw materials from being purchased at their facility. If you have any questions or need assistance with your procedures, please contact our environmental department at [phone number to be provided].

The California Department of Public Health Radiation Safety and Environmental Management Division will be notified prior to returning any load to the supplier pursuit to United States Department of Transportation, Pipeline and Hazardous Material Safety Administration rule DOT-SP 10656 (eleventh revision).

Potential Radiation Alarms

PSGM3 utilizes radiation detection equipment designed to detect any radiation activity, which may occur when incoming shipments of raw materials are delivered.

PSGM3 has a policy prohibiting off-loading any type of raw materials triggering the radiation detector.

Personnel that have recently undergone nuclear medicine procedures must notify PSGM3 at the gate and cannot be in proximity of radiation detection equipment.

OTHER UNACCEPTABLE MATERIAL

NO lead containing materials (i.e. battery cables, counterweights, wheel weights, etc.).

NO mill scale, slag, grinding dust or swarf.

NO asbestos - typically in brake shoes, pipe insulation, and hose insulation material.

NO tires (or tire pieces) of any type.

NO free-flowing oil (either on the surface of raw materials or containerized in the raw materials) - undrained used oil filters, chlorinated plastics, and free organic liquids.

NO units containing PCBs of any type (this includes capacitors, transformers, ballast, etc.).

NO batteries of any type. This also includes Nickel Cadmium, Mercury, Lithium, and other rechargeable batteries.

NO motor vehicle scrap (i.e. shredded) from providers that have not minimized the presence of mercury in scrap through participation in the NVMSRP or another EPA-approved program.

NO items containing freon (i.e. charged AC units or other type of CFC's).

NO other types of refrigerants (e.g. ammonia).

NO hazardous wastes and no material containing hazardous wastes or hazardous waste residues.

NO transformers.

NO offensive odors (mercaptan coated natural gas lines or propane lines/tanks).

NO flammable material (oil, grease, fuel, etc.).

NO liquids of any type.

NO foreign materials/non-metallics (i.e. wood, insulation, concrete, dirt, plastic, water, ice, etc.).

NO closed containers or sealed units, such as compressors, shock absorbers, etc. (See pg. 12 for detailed instructions).

NO electric motors.

NO concrete.

NO munitions or ordinance related items of any type.

NO drilling heads.

NO air bag canisters.

RAW MATERIALS SPECIFICATIONS

GRADE: Plate and Structural

GRADE CODE: 1503

DIMENSIONS: 36” x 18” maximum

¼” minimum thickness

4” maximum thickness

MINIMUM DENSITY: 55 (Lbs. per cubic ft.)

MAXIUM WEIGHT PER PIECE: 95” - 200 lbs. or less / 500 lbs maximum

DESCRIPTION: Very dense, clean, new, or obsolete steel plates (includes torch cut plate or skeleton plate), structural shapes or crop ends. Should be free of non-ferrous metals and other contaminants.

MAY INCLUDE: Welded structural steel tubing. Heavy wall pipe and if over 8” o.d. must be split in half. Please be sure to check all pipe for concrete.

RESTRICTIONS: No railcar sides.

No cast-iron or steel castings.

No rebar or light structural steel.

No torched heavy machinery.

No cut machine housings.

No cut truck frames.

PACIFIC STEEL GROUP

RAW MATERIALS SPECIFICATIONS

GRADE: Prepared Railroad

GRADE CODE: 1527

DIMENSIONS: 36” x 18”

MINIMUM DENSITY: 55 (Lbs. per cubic ft.)

MAXIUM WEIGHT PER PIECE: 95% - 200 lbs. or less / 500 LB maximum

DESCRIPTION: Cut allow-free railroad scrap to include track, spikes, tie plates, wheels, drawbars, knuckles, etc. Car sides are specifically excluded. Wheels must be pressed or cut off axles or axles cut flush with wheels.

MAY INCLUDE:	Springs	1% max
	Wheels, drawbars, knuckles	20% max
	Track, spikes, tie plates	20% max

RESTRICTIONS: No railcar sides.

RAW MATERIALS SPECIFICATIONS

GRADE: #1 Heavy Melt

GRADE CODE: 1501

DIMENSIONS: 36” x 18” maximum

¼” minimum thickness

4” maximum thickness

MINIMUM DENSITY: 50 (Lbs. per cubic ft.)

MAXIUM WEIGHT PER PIECE: 95% - 200 lbs. or less

500 lbs. maximum

DESCRIPTION: Very dense, clean, new or obsolete carbon steel scrap. MAY INCLUDE: Railroad raw materials (wheels must be cut in half). Machine housings must be cut open and not to exceed 500# per piece. Light structural steel (1/4” angles, small beams, channel). Heavy wall pipe (must be split if over 8” in diameter) and up to 20% of a load is acceptable. Heavy truck wheels/frames.

RESTRICTIONS: No rebar.

No cast.

No automobile scrap, except crankshafts.

No rail car sides under ¼”.

No sheet steel.

No brake drums.

No crimped or un-crimped car rims.

No highly alloyed steel.

RAW MATERIALS SPECIFICATIONS

GRADE: Mixed #1 / #2 Heavy Melt

GRADE CODE: 1505

DIMENSIONS: 36” x 18” maximum

1/8” minimum thickness

MINIMUM DENSITY: 40 (Lbs. per cubic ft.)

MAXIUM WEIGHT PER PIECE: N/A

DESCRIPTION: Clean, new or obsolete carbon steel scrap.

MAY INCLUDE: Must conform to requirements of #2 steel grade with sufficient #1 steel (minimum 40%) included for price adjustment. Also may include car rims.

RESTRICTIONS: No turnings.

No cast-iron.

No appliances.

No porcelain coated materials.

No alloyed steel.

No non-ferrous material (i.e. copper, aluminum, etc.)

No rebar.

No wire coils or bundles.

RAW MATERIALS SPECIFICATIONS

GRADE: #2 Heavy Melt

GRADE CODE: 1505

DIMENSIONS: 36” x 18” maximum

1/16” minimum thickness

MINIMUM DENSITY: 35 (Lbs. per cubic ft.)

MAXIUM WEIGHT PER PIECE: N/A

DESCRIPTION: Clean, new or obsolete carbon steel scrap.

MAY INCLUDE: All properly prepared automobile scrap and obsolete appliances (stripped of non-ferrous and non- metallics), pipes (less than 8” in diameter) or light structural steel, thin gauged steel sheeting and thin gauged material. Also may include car rims. Rebar must not exceed 20% of the load.

RESTRICTIONS: No turnings.

No cast-iron.

No porcelain coated material.

No alloyed steel.

No non-ferrous material (i.e. copper, aluminum, etc.)

No tangled rebar.

No wire coils or bundles.

RAW MATERIALS SPECIFICATIONS

GRADE: Busheling

GRADE CODE: 1524

DIMENSIONS: 12” x 12” maximum

¼” minimum thickness

MINIMUM DENSITY: 50 (Lbs. per cubic ft.)

MAXIUM WEIGHT PER PIECE: N/A

DESCRIPTION: Clean, new production steel scrap including sheet clippings, stamping, etc.

MAY INCLUDE: N/A

RESTRICTIONS: No Tin Plate material.

NOTE: May not include old auto body or fender stock. Free of metal coated, vitreous enameled and electrical sheet containing over 0.5% Silicon. Must be alloy-free.

PACIFIC STEEL GROUP

RAW MATERIALS SPECIFICATIONS

GRADE: Shredded Scrap

GRADE CODE: 1507

DIMENSIONS: N/A

MINIMUM DENSITY: 70 (Lbs. per cubic ft.)

MAXIUM WEIGHT PER PIECE: N/A

DESCRIPTION: Extremely dense, clean, homogenous iron and steel scrap, magnetically separated originating from automobiles, unprepared #1 and #2 steel and miscellaneous baling and sheet scrap, essentially free of non-metallic and non-ferrous material. Automotive scrap used to produce shredded scrap must be purchased ONLY from suppliers that are active members of an EPA approved mercury switch removal program such as National Vehicle Switch Removal Program (NVMSRP).

MAY INCLUDE: N/A

RESTRICTIONS: No municipal scrap.

No tin cans.

No turnings or cast borings.

No fluff.

No mercury contaminated scrap.

No air bag canisters.

All automotive shredded scrap must be shredded at a facility participating in the National Mercury Switch Removal Program (NVMSRP) and currently registered and active in the End of Life Vehicle Solutions program (ELVS). Periodic audits on shredded scrap suppliers will be done in order to encourage and corroborate active participation in the NVMSRP and ELVS programs.

RAW MATERIALS SPECIFICATIONS

GRADE: Mixed Turnings

GRADE CODE: 1508

DIMENSIONS: N/A

MINIMUM DENSITY: 50 (Lbs. per cubic ft.)

MAXIUM WEIGHT PER PIECE: N/A

DESCRIPTION: Clean, dense steel turnings from fresh production. May not be springy, bushy, tangled or matted. No long, stringy pieces. Turnings that are not easily handled by a magnet will be rejected.

MAY INCLUDE: N/A

RESTRICTIONS: No CAST-IRON BORINGS.

No non-ferrous metals, mill scale, slag, grindings, swarf, or dirt.

No oxidized or oily turnings.

No leaded or high sulfur turnings.

NOTE: Please do not ship turnings that will cling together in long clumps because when the material is magged up, it will become an issue when trying to load the ECS (Conveyor).

RAW MATERIALS QUALITY/INSPECTION POLICY AND PROCEDURES

Raw material quality is key to the success of PSG and PSGM3, and therefore, maintaining strict control standards is a priority. We clearly understand that a raw material by its nature, is a unique commodity, and will work with all our suppliers to ensure our standards are fair and equitable.

1. A strict inspection procedure. Every truck which enters our facility will be passed through radiation detection, be visually inspected by trained personnel at the scales, and further inspections will take place by trained crane operators and front end loader operators at the time of unloading and processing.
2. Any loads failing to meet our standards, as outlined, will be rejected. If the load is acceptable scrap but does not match the intended purchased grade, it will be at the discretion of PSG and PSGM3 whether to accept the load as a downgrade or to reject the load. If PSG or PSGM3 chooses to downgrade the load, then the supplier must determine whether to return the load or accept the downgraded price.
3. Ongoing rejections and downgrades are costly and inefficient for all involved parties – suppliers, PSG, and PSGM3. Recommendation to disqualify a supplier will be based on serious or repeated rejections and the results of audits and/or poor order completion. The number of warnings and rejections that will result in disqualification of a vendor depends on the amount of raw materials supplied and the seriousness of the incident(s).

The following is considered serious and requires all suppliers' attention:

1. Top dressing and mill scale additions, "salting the load", are deliberate misrepresentations of the material being supplied.
2. Sealed units/closed containers represent an explosion hazard.
3. A significant amount of non-ferrous can result in off-grade chemistry of the steel.
4. Radioactive material has critical safety implications.

To be returned to approved supplier status, the Raw Materials Supplier must meet/discuss with the Raw Materials Buyer, and/or the Operations Management of PSGM3 with an outline (either verbal or written) for corrective action including:

- Internal control standards necessary to meet PSG and PSGM3's Scrap Management Plan and corrective action steps.
- A record of this communication, whether verbal or written, will be entered into a supplier's activity record.

SCRAP MANAGEMENT PLAN, SAFETY AND ENVIRONMENTAL COMPLIANCE AND AGREEMENT

The undersigned Seller has read PSG and PSGM3's Scrap Management Plan. This includes General Terms and Conditions, Environmental Aspects, Closed Containers/Sealed Units, Radioactive Raw Materials, Other Unacceptable Material, and Raw Materials Specifications.

Seller acknowledges that PSG and PSGM3 may not accept any shipment in whole or in part that does not meet the conditions and specifications described in the specification document. Seller also acknowledges that vendors found to violate this Agreement may be disqualified from supplying scrap materials to PSG and PSGM3.

Although PSG and PSGM3 will exercise reasonable effort to inspect scrap shipments, materials supplied can contain constituents not readily detected during normal inspection, which exposes the company to hazards associated with use. Such constituents may include, for example, sealed containers, radioactive sources, hazardous volatiles, etc. In all cases, PSG and PSGM3's acceptance of any shipment shall not constitute any waiver of its rights to pursue a claim of damages if subsequent use results in damage or injury to people or property. Seller shall indemnify and defend Buyer from and against all costs, claims, losses, liabilities, and any other expenses (including court costs, and reasonable attorney's fees) resulting from damages caused to Buyer or any third party due to the defective Materials, except to the extent that such damages are caused by misuse of the Materials or negligence of Buyer.

I, the undersigned Seller, or authorized representative of Seller, do hereby acknowledge receipt and understanding of the aforementioned specifications and conditions.

PLEASE COMPLETE AND RETURN Original signed document to:

PSG
C/O Scrap Purchasing Agent
860 Sopp Road, Mojave, CA 93501

Seller's Name:____

Company Name:____

Address:____

City/State/Zip:____

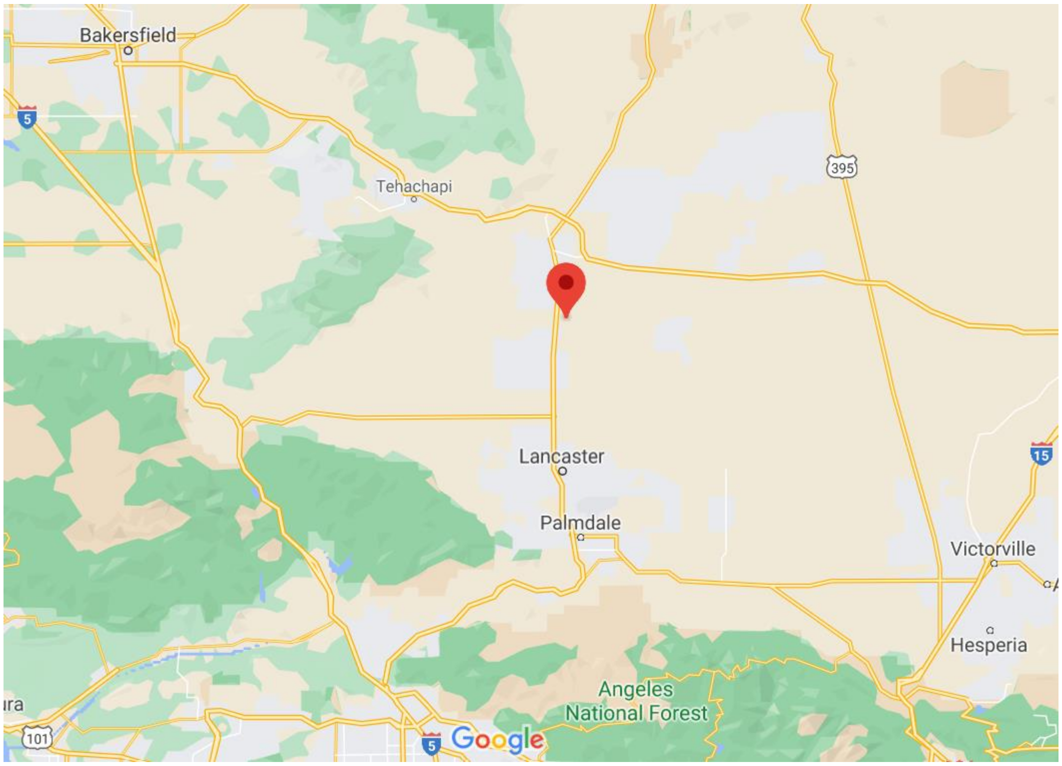
Phone:_____________________________ **Fax:**_____________________

E-Mail:_____________________________

Signature:__________________________

Title:_______________________________

APPENDIX I: DIRECTIONS TO PSGM3



Take Exit 61 from CA-14. Turn right on Sierra Highway to 860 Sopp Road.

APPENDIX II: IN-PLANT ROAD MAP – PSGM3

[to be provided]

Appendix D
Emissions Calculations

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Project Emissions Summary

Pollutant	Preliminary Estimated Project Emissions	Federal PSD Threshold	Federal Significance Emission Rate Threshold	Federal NNSR Threshold	EKCAPCD NNSR Threshold
	tpy	tpy	tpy	tpy	tpy
NOx	22.79	100	40	25	25
CO	418.99	100	100	-	-
PM	17.70	100	25	-	-
PM10	12.84	100	15	100	15
PM2.5	10.95	100	10	-	-
SO2	23.12	100	40	-	27
VOC	22.70	100	40	25	25
H2SO4 Mist	0.00	-	-	-	-
Lead	0.05	-	-	-	-
Fluorides	0.00	-	-	-	-
H2S	-	-	-	-	-
TRS	-	-	-	-	-
Mercury	0.04	-	-	-	-
CO2e	100092.33	-	-	-	-
Total HAPs	1.30	-	-	-	-

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Detailed Emissions Summary

Area	Source Description	Updated Emission Point ID (EID)	Total PM			PM_{10}			$PM_{2.5}$		
			max lb/hr	annual lb/hr	tpy	max lb/hr	annual lb/hr	tpy	max lb/hr	annual lb/hr	tpy
Scrap	Scrap Material Storage and Handling-Indoor	EID-01	0.00	0.00	0.01	1.17E-03	1.17E-03	0.01	1.77E-04	1.77E-04	7.74E-04
	Scrap Material Storage and Handling-Outdoor	EID-02	0.05	0.05	0.23	0.02	0.02	0.11	0.00	0.00	0.02
	Scrap Pile Wind Erosion	EID-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Raw Material - Alloy	Alloy Material Storage and Handling-Outdoor	EID-04	0.01	0.01	0.03	0.00	0.00	0.01	4.37E-04	4.37E-04	0.00
	Alloy Pile Wind Erosion	EID-05	0.02	0.02	0.07	0.01	0.01	0.04	0.00	0.00	0.01
Meltshop Baghouse	Meltshop Baghouse	EID-06	2.43	2.43	10.65	2.43	2.43	10.65	2.43	2.43	10.65
	Electric Arc Furnace (EAF)	EID-06_01	-	-	-	-	-	-	-	-	-
	EAF Fugitives	EID-06_02	-	-	-	-	-	-	-	-	-
	Ladle Metallurgical Furnace (LMF)	EID-06_03	-	-	-	-	-	-	-	-	-
	Casting Operation (fugitives)	EID-06_04	-	-	-	-	-	-	-	-	-
	Slag dump	EID-06_05	-	-	-	-	-	-	-	-	-
	Ladle and tundish refractory repairs	EID-06_06	-	-	-	-	-	-	-	-	-
	Ladle and tundish dumping	EID-06_07	-	-	-	-	-	-	-	-	-
Meltshop BH Dust Handling	MS BH Dust Silo Bin Vent	EID-06_08	-	-	-	-	-	-	-	-	-
	MS BH Dust Loadout	EID-06_09	-	-	-	-	-	-	-	-	-
Silos (Duct to Meltshop)	Activated Carbon Injection Bin Vent	EID-06_10	-	-	-	-	-	-	-	-	-
	Carbon Silo Bin and Hopper Vent	EID-06_11	-	-	-	-	-	-	-	-	-
	Flux Silo 1 Bin and Hopper Vent - Lime	EID-06_12	-	-	-	-	-	-	-	-	-
	Flux Silo 2 Bin and Hopper Vent - Dolomite	EID-06_13	-	-	-	-	-	-	-	-	-
Indoor Cutting	Scrap Cutting Torches	EID-06_14	-	-	-	-	-	-	-	-	-
Caster	Caster Spray Stack	EID-07	0.67	0.67	2.95	0.11	0.11	0.47	0.01	0.01	0.06
Rolling Mill	Roll mill vent	EID-08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Slag	Slag Material Storage and Handling Outdoor	EID-09	0.07	0.02	0.10	0.02	0.01	0.03	3.10E-03	1.03E-03	4.53E-03
	Slag Pile Wind Erosion	EID-10	0.21	0.21	0.90	0.10	0.10	0.43	0.01	0.01	0.09
	Slag Screening and Crushing	EID-11	7.23E-04	2.41E-04	1.06E-03	2.98E-04	9.92E-05	4.34E-04	6.25E-05	2.08E-05	9.12E-05
Aux - Cooling Towers	Cooling Tower 1	EID-12	0.16	0.16	0.70	0.09	0.09	0.39	0.00	0.00	0.00
	Cooling Tower 2	EID-13	0.04	0.04	0.16	0.02	0.02	0.09	0.00	0.00	0.00
	Cooling Tower 3	EID-14	0.06	0.06	0.25	0.03	0.03	0.14	0.00	0.00	0.00
	Cooling Tower 4	EID-15	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00
Aux - Engines	Emergency Fire Water Pump	EID-16	0.14	0.00	0.01	0.14	0.00	0.01	0.14	0.00	0.01
	Emergency Cooling Water Pump	EID-17	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00
	Emergency Generator	EID-18	0.62	0.01	0.06	0.62	0.01	0.06	0.62	0.01	0.06
Aux - Diesel and Gasoline Tanks	Diesel Tank - 8000 Gallons Capacity	EID-19	-	-	-	-	-	-	-	-	-
	Diesel Tank - 2000 Gallons Capacity	EID-20	-	-	-	-	-	-	-	-	-
	Gasoline Tank - 500 Gallons Capacity	EID-21	-	-	-	-	-	-	-	-	-
	Gasoline Tank - 250 Gallons Capacity	EID-22	-	-	-	-	-	-	-	-	-
Roads	Paved Facility Roads	EID-23	0.10	0.10	0.42	0.02	0.02	0.08	0.00	0.00	0.02
	Unpaved Facility Roads	EID-24	0.26	0.26	1.12	0.07	0.07	0.29	0.01	0.01	0.03

	Total PM			PM_{10}			$PM_{2.5}$		
	max lb/hr	annual lb/hr	tpy	max lb/hr	annual lb/hr	tpy	max lb/hr	annual lb/hr	tpy
	4.88	4.04	17.70	3.73	2.93	12.84	3.29	2.50	10.95
Federal PSD Trigger			100			100			100
Federal PSD Triggered (Yes/No)			No			No			No
Federal SER Trigger			25			15			10
Federal SER Triggered (Yes/No)			No			No			Yes
Federal NNSR Trigger			-			-			-
Federal NNSR Triggered (Yes/No)						-			-
EKCAPCD NNSR Trigger						100			
EKAPCD NNSR Triggered (Yes/No)						No			
EKAPCD Offset Trigger						15			
EKAPCD Offset Triggered (Yes/No)						No			

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Detailed Emissions Summary

Area	Source Description	Updated Emission Point ID (EID)	NOx			CO			VOC		
			max lb/hr	annual lb/hr	tpy	max lb/hr	annual lb/hr	tpy	max lb/hr	annual lb/hr	tpy
Scrap	Scrap Material Storage and Handling-Indoor	EID-01	-	-	-	-	-	-	-	-	-
	Scrap Material Storage and Handling-Outdoor	EID-02	-	-	-	-	-	-	-	-	-
	Scrap Pile Wind Erosion	EID-03	-	-	-	-	-	-	-	-	-
Raw Material - Alloy	Alloy Material Storage and Handling-Outdoor	EID-04	-	-	-	-	-	-	-	-	-
	Alloy Pile Wind Erosion	EID-05	-	-	-	-	-	-	-	-	-
Meltshop Baghouse	Meltshop Baghouse	EID-06	4.68	4.68	20.52	94.68	94.68	414.72	3.90	3.90	17.10
	Electric Arc Furnace (EAF)	EID-06_01	-	-	-	-	-	-	-	-	-
	EAF Fugitives	EID-06_02	-	-	-	-	-	-	-	-	-
	Ladle Metallurgical Furnace (LMF)	EID-06_03	-	-	-	-	-	-	-	-	-
	Casting Operation (fugitives)	EID-06_04	-	-	-	-	-	-	-	-	-
	Slag dump	EID-06_05	-	-	-	-	-	-	-	-	-
	Ladle and tundish refractory repairs	EID-06_06	-	-	-	-	-	-	-	-	-
	Ladle and tundish dumping	EID-06_07	-	-	-	-	-	-	-	-	-
Meltshop BH Dust Handling	MS BH Dust Silo Bin Vent	EID-06_08	-	-	-	-	-	-	-	-	-
	MS BH Dust Loadout	EID-06_09	-	-	-	-	-	-	-	-	-
Silos (Duct to Meltshop)	Activated Carbon Injection Bin Vent	EID-06_10	-	-	-	-	-	-	-	-	-
	Carbon Silo Bin and Hopper Vent	EID-06_11	-	-	-	-	-	-	-	-	-
	Flux Silo 1 Bin and Hopper Vent - Lime	EID-06_12	-	-	-	-	-	-	-	-	-
	Flux Silo 2 Bin and Hopper Vent - Dolomite	EID-06_13	-	-	-	-	-	-	-	-	-
Indoor Cutting	Scrap Cutting Torches	EID-06_14	-	-	-	-	-	-	-	-	-
Caster	Caster Spray Stack	EID-07	0.01	0.01	0.03	0.50	0.50	2.19	0.02	0.02	0.09
Rolling Mill	Roll mill vent	EID-08	-	-	-	-	-	-	0.83	0.83	3.65
Slag	Slag Material Storage and Handling Outdoor	EID-09	0.00	-	-	0.00	-	-	0.00	-	-
	Slag Pile Wind Erosion	EID-10	0.00	-	-	0.00	-	-	0.00	-	-
	Slag Screening and Crushing	EID-11	0.00	-	-	0.00	-	-	0.00	-	-
Aux - Cooling Towers	Cooling Tower 1	EID-12	-	-	-	-	-	-	-	-	-
	Cooling Tower 2	EID-13	-	-	-	-	-	-	-	-	-
	Cooling Tower 3	EID-14	-	-	-	-	-	-	-	-	-
	Cooling Tower 4	EID-15	-	-	-	-	-	-	-	-	-
Aux - Engines	Emergency Fire Water Pump	EID-16	3.87	0.09	0.39	3.59	0.08	0.36	2.31	0.05	0.23
	Emergency Cooling Water Pump	EID-17	1.29	0.03	0.13	1.20	0.03	0.12	0.77	0.02	0.08
	Emergency Generator	EID-18	17.29	0.39	1.73	16.05	0.37	1.60	10.32	0.24	1.03
Aux - Diesel and Gasoline Tanks	Diesel Tank - 8000 Gallons Capacity	EID-19	-	-	-	-	-	-	7.43E-04	7.43E-04	3.25E-03
	Diesel Tank - 2000 Gallons Capacity	EID-20	-	-	-	-	-	-	1.91E-04	1.91E-04	8.34E-04
	Gasoline Tank - 500 Gallons Capacity	EID-21	-	-	-	-	-	-	0.07	0.07	0.31
	Gasoline Tank - 250 Gallons Capacity	EID-22	-	-	-	-	-	-	0.05	0.05	0.21
Roads	Paved Facility Roads	EID-23	-	-	-	-	-	-	-	-	-
	Unpaved Facility Roads	EID-24	-	-	-	-	-	-	-	-	-

	NOx			CO			VOC		
	max lb/hr	annual lb/hr	tpy	max lb/hr	annual lb/hr	tpy	max lb/hr	annual lb/hr	tpy
	27.14	5.20	22.79	116.02	95.66	418.99	18.28	5.18	22.70
Federal PSD Trigger			100			100			100
Federal PSD Triggered (Yes/No)			No			Yes			No
Federal SER Trigger			40			100			40
Federal SER Triggered (Yes/No)			No			Yes			No
Federal NNSR Trigger			25			-			25
Federal NNSR Triggered (Yes/No)			No			-			No
EKCAPCD NNSR Trigger									
EKAPCD NNSR Triggered (Yes/No)									
EKAPCD Offset Trigger			25						25
EKAPCD Offset Triggered (Yes/No)			No						No

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Detailed Emissions Summary

Area	Source Description	Updated Emission Point ID (EID)	SO_2			CO_2e	
			max lb/hr	annual lb/hr	tpy	lb/hr	tpy
Scrap	Scrap Material Storage and Handling-Indoor	EID-01	-	-	-	-	-
	Scrap Material Storage and Handling-Outdoor	EID-02	-	-	-	-	-
	Scrap Pile Wind Erosion	EID-03	-	-	-	-	-
Raw Material - Alloy	Alloy Material Storage and Handling-Outdoor	EID-04	-	-	-	-	-
	Alloy Pile Wind Erosion	EID-05	-	-	-	-	-
Meltshop Baghouse	Meltshop Baghouse	EID-06	5.26	5.26	23.03	22800	99864
	Electric Arc Furnace (EAF)	EID-06_01	-	-	-	-	-
	EAF Fugitives	EID-06_02	-	-	-	-	-
	Ladle Metallurgical Furnace (LMF)	EID-06_03	-	-	-	-	-
	Casting Operation (fugitives)	EID-06_04	-	-	-	-	-
	Slag dump	EID-06_05	-	-	-	-	-
	Ladle and tundish refractory repairs	EID-06_06	-	-	-	-	-
	Ladle and tundish dumping	EID-06_07	-	-	-	-	-
Meltshop BH Dust Handling	MS BH Dust Silo Bin Vent	EID-06_08	-	-	-	-	-
	MS BH Dust Loadout	EID-06_09	-	-	-	-	-
Silos (Duct to Meltshop)	Activated Carbon Injection Bin Vent	EID-06_10	-	-	-	-	-
	Carbon Silo Bin and Hopper Vent	EID-06_11	-	-	-	-	-
	Flux Silo 1 Bin and Hopper Vent - Lime	EID-06_12	-	-	-	-	-
	Flux Silo 2 Bin and Hopper Vent - Dolomite	EID-06_13	-	-	-	-	-
Indoor Cutting	Scrap Cutting Torches	EID-06_14	-	-	-	-	-
Caster	Caster Spray Stack	EID-07	0.02	0.02	0.08	-	-
Rolling Mill	Roll mill vent	EID-08	-	-	-	-	-
Slag	Slag Material Storage and Handling Outdoor	EID-09	0.00	-	-	-	-
	Slag Pile Wind Erosion	EID-10	0.00	-	-	-	-
	Slag Screening and Crushing	EID-11	0.00	-	-	-	-
Aux - Cooling Towers	Cooling Tower 1	EID-12	-	-	-	-	-
	Cooling Tower 2	EID-13	-	-	-	-	-
	Cooling Tower 3	EID-14	-	-	-	-	-
	Cooling Tower 4	EID-15	-	-	-	-	-
Aux - Engines	Emergency Fire Water Pump	EID-16	0.01	0.00	0.00	353	35
	Emergency Cooling Water Pump	EID-17	0.00	0.00	0.00	118	35
	Emergency Generator	EID-18	0.04	0.00	0.00	1578	158
Aux - Diesel and Gasoline Tanks	Diesel Tank - 8000 Gallons Capacity	EID-19	-	-	-	-	-
	Diesel Tank - 2000 Gallons Capacity	EID-20	-	-	-	-	-
	Gasoline Tank - 500 Gallons Capacity	EID-21	-	-	-	-	-
	Gasoline Tank - 250 Gallons Capacity	EID-22	-	-	-	-	-
Roads	Paved Facility Roads	EID-23	-	-	-	-	-
	Unpaved Facility Roads	EID-24	-	-	-	-	-

	SO_2			CO_2e	
	max lb/hr	annual lb/hr	tpy	lb/hr	tpy
	5.33	5.28	23.12	24848	100092
Federal PSD Trigger			100		
Federal PSD Triggered (Yes/No)			No		
Federal SER Trigger			40		75000
Federal SER Triggered (Yes/No)			No		Yes
Federal NNSR Trigger			-		-
Federal NNSR Triggered (Yes/No)			-		
EKCAPCD NNSR Trigger					
EKAPCD NNSR Triggered (Yes/No)					
EKAPCD Offset Trigger			27		
EKAPCD Offset Triggered (Yes/No)			No		

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Detailed Emissions Summary

Area	Source Description	Updated Emission Point ID (EID)	Fluoride		Lead		H_2SO_4 Mist		Mercury		Total HAPs	
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Scrap	Scrap Material Storage and Handling-Indoor	EID-01	-	-	-	-	-	-	-	-	-	-
	Scrap Material Storage and Handling-Outdoor	EID-02	-	-	-	-	-	-	-	-	-	-
	Scrap Pile Wind Erosion	EID-03	-	-	-	-	-	-	-	-	-	-
Raw Material - Alloy	Alloy Material Storage and Handling-Outdoor	EID-04	-	-	-	-	-	-	-	-	-	-
	Alloy Pile Wind Erosion	EID-05	-	-	-	-	-	-	-	-	-	-
Meltshop Baghouse	Meltshop Baghouse	EID-06	-	-	0.01	0.05	-	-	0.01	0.04	0.07	0.32
	Electric Arc Furnace (EAF)	EID-06_01	-	-	-	-	-	-	-	-	-	-
	EAF Fugitives	EID-06_02	-	-	-	-	-	-	-	-	-	-
	Ladle Metallurgical Furnace (LMF)	EID-06_03	-	-	-	-	-	-	-	-	-	-
	Casting Operation (fugitives)	EID-06_04	-	-	-	-	-	-	-	-	-	-
	Slag dump	EID-06_05	-	-	-	-	-	-	-	-	-	-
	Ladle and tundish refractory repairs	EID-06_06	-	-	-	-	-	-	-	-	-	-
	Ladle and tundish dumping	EID-06_07	-	-	-	-	-	-	-	-	-	-
Meltshop BH Dust Handling	MS BH Dust Silo Bin Vent	EID-06_08	-	-	-	-	-	-	-	-	-	-
	MS BH Dust Loadout	EID-06_09	-	-	-	-	-	-	-	-	-	-
Silos (Duct to Meltshop)	Activated Carbon Injection Bin Vent	EID-06_10	-	-	-	-	-	-	-	-	-	-
	Carbon Silo Bin and Hopper Vent	EID-06_11	-	-	-	-	-	-	-	-	-	-
	Flux Silo 1 Bin and Hopper Vent - Lime	EID-06_12	-	-	-	-	-	-	-	-	-	-
	Flux Silo 2 Bin and Hopper Vent - Dolomite	EID-06_13	-	-	-	-	-	-	-	-	-	-
Indoor Cutting	Scrap Cutting Torches	EID-06_14	-	-	-	-	-	-	-	-	-	-
Caster	Caster Spray Stack	EID-07	-	-	-	-	-	-	-	-	-	-
Rolling Mill	Roll mill vent	EID-08	-	-	-	-	-	-	-	-	0.20	0.87
Slag	Slag Material Storage and Handling Outdoor	EID-09	-	-	-	-	-	-	-	-	-	-
	Slag Pile Wind Erosion	EID-10	-	-	-	-	-	-	-	-	-	-
	Slag Screening and Crushing	EID-11	-	-	-	-	-	-	-	-	-	-
Aux - Cooling Towers	Cooling Tower 1	EID-12	-	-	-	-	-	-	-	-	-	-
	Cooling Tower 2	EID-13	-	-	-	-	-	-	-	-	-	-
	Cooling Tower 3	EID-14	-	-	-	-	-	-	-	-	-	-
	Cooling Tower 4	EID-15	-	-	-	-	-	-	-	-	-	-
Aux - Engines	Emergency Fire Water Pump	EID-16	-	-	-	-	-	-	-	-	0.18	0.02
	Emergency Cooling Water Pump	EID-17	-	-	-	-	-	-	-	-	0.06	0.01
	Emergency Generator	EID-18	-	-	-	-	-	-	-	-	0.82	0.08
Aux - Diesel and Gasoline Tanks	Diesel Tank - 8000 Gallons Capacity	EID-19	-	-	-	-	-	-	-	-	-	-
	Diesel Tank - 2000 Gallons Capacity	EID-20	-	-	-	-	-	-	-	-	-	-
	Gasoline Tank - 500 Gallons Capacity	EID-21	-	-	-	-	-	-	-	-	-	-
	Gasoline Tank - 250 Gallons Capacity	EID-22	-	-	-	-	-	-	-	-	-	-
Roads	Paved Facility Roads	EID-23	-	-	-	-	-	-	-	-	-	-
	Unpaved Facility Roads	EID-24	-	-	-	-	-	-	-	-	-	-

	Fluoride		Lead		H_2SO_4 Mist		Mercury		Total HAPs	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
	0.00	0.00	0.01	0.05	0.00	0.00	0.01	0.04	1.34	1.30
Federal PSD Trigger										
Federal PSD Triggered (Yes/No)										
Federal SER Trigger										
Federal SER Triggered (Yes/No)										
Federal NNSR Trigger										
Federal NNSR Triggered (Yes/No)										
EKCAPCD NNSR Trigger										
EKAPCD NNSR Triggered (Yes/No)										
EKAPCD Offset Trigger										
EKAPCD Offset Triggered (Yes/No)										

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Hazardous Air Pollutant (HAP) Emissions Summary

	Emissions (tpy)					
HAP	Melt shop EID06	Rolling Mill EID08	Emergency Fire Pump EID16	Emergency Cooling Water Pump EID17	Emergency Generator EID18	Total
1,1,2,2-Tetrachloroethane	-	-	1.02E-05	3.39E-06	4.55E-05	5.91E-05
1,1,2-Trichloroethane	-	-	8.09E-06	2.70E-06	3.62E-05	4.70E-05
1,3-Butadiene	-	2.31E-03	-	-	-	2.31E-03
1,3-Butadiene	-	-	6.80E-05	2.27E-05	3.04E-04	3.94E-04
1,3-Dichloropropene	-	-	6.72E-06	2.24E-06	3.00E-05	3.90E-05
1,4-Dioxane	-	3.12E-03	-	-	-	3.12E-03
2,2,4-Trimethylpentane	-	-	6.36E-05	2.12E-05	2.84E-04	3.69E-04
2-Methylnaphthalene	-	-	8.45E-06	2.82E-06	3.78E-05	4.90E-05
Acenaphthene	-	-	3.18E-07	1.06E-07	1.42E-06	1.85E-06
Acenaphthylene	-	-	1.41E-06	4.69E-07	6.29E-06	8.17E-06
Acetaldehyde	-	1.43E-01	-	-	-	1.43E-01
Acetaldehyde	-	-	2.13E-03	7.09E-04	9.51E-03	1.23E-02
Acetonitrile	-	9.19E-03	-	-	-	9.19E-03
Acrolein	-	5.94E-02	-	-	-	5.94E-02
Acrolein	-	-	1.31E-03	4.36E-04	5.85E-03	7.59E-03
Benzene	-	9.17E-03	-	-	-	9.17E-03
Benzene	-	-	1.12E-04	3.73E-05	5.01E-04	6.50E-04
Benzo(b)fluoranthene	-	-	4.22E-08	1.41E-08	1.89E-07	2.45E-07
Benzo(e)pyrene	-	-	1.06E-07	3.52E-08	4.72E-07	6.13E-07
Benzo(g,h,i)perylene	-	-	1.05E-07	3.51E-08	4.71E-07	6.11E-07
Biphenyl	-	-	5.40E-05	1.80E-05	2.41E-04	3.13E-04
Bromoform	-	1.10E-02	-	-	-	1.10E-02
Carbon Disulfide	-	7.34E-02	-	-	-	7.34E-02
Carbon Tetrachloride	-	5.84E-03	-	-	-	5.84E-03
Carbon Tetrachloride	-	-	9.34E-06	3.11E-06	4.18E-05	5.42E-05
Chlorobenzene	-	-	7.74E-06	2.58E-06	3.46E-05	4.49E-05
Chloroethane	-	3.31E-03	-	-	-	3.31E-03
Chloroform	-	7.99E-03	-	-	-	7.99E-03
Chloroform	-	-	7.25E-06	2.42E-06	3.24E-05	4.21E-05
Chloromethane	-	1.03E-02	-	-	-	1.03E-02
Chrysene	-	-	1.76E-07	5.88E-08	7.88E-07	1.02E-06
Dioxins/Furans	1.11083E-06	-	-	-	-	1.11E-06
Ethyl Benzene	-	5.38E-03	-	-	-	5.38E-03
Ethylbenzene	-	-	1.01E-05	3.37E-06	4.52E-05	5.86E-05
Ethylene Dibromide	-	-	1.13E-05	3.76E-06	5.04E-05	6.54E-05
Fluoranthene	-	-	2.82E-07	9.42E-08	1.26E-06	1.64E-06
Fluorene	-	-	1.44E-06	4.81E-07	6.45E-06	8.37E-06
Formaldehyde	-	-	1.34E-02	4.48E-03	6.01E-02	7.80E-02
Hexane	-	1.72E-01	-	-	-	1.72E-01
m-/p-Xylenes	-	1.40E-02	-	-	-	1.40E-02
Methanol	-	8.11E-02	-	-	-	8.11E-02
Methanol	-	-	6.36E-04	2.12E-04	2.84E-03	3.69E-03
Methyl Ethyl Ketone	-	9.77E-02	-	-	-	9.77E-02
Methyl Isobutyl Ketone	-	5.24E-03	-	-	-	5.24E-03
Methylene Chloride	-	1.13E-01	-	-	-	1.13E-01
Methylene Chloride	-	-	5.09E-06	1.70E-06	2.28E-05	2.95E-05
Naphthalene	-	5.30E-03	-	-	-	5.30E-03
Naphthalene	-	-	1.89E-05	6.31E-06	8.46E-05	1.10E-04
n-Hexane	-	-	2.82E-04	9.42E-05	1.26E-03	1.64E-03
o-Xylenes	-	6.25E-03	-	-	-	6.25E-03
PAH	-	-	6.85E-06	2.28E-06	3.06E-05	3.97E-05
Phenanthrene	-	-	2.65E-06	8.82E-07	1.18E-05	1.54E-05
Phenol	-	-	6.11E-06	2.04E-06	2.73E-05	3.54E-05
Pyrene	-	-	3.46E-07	1.15E-07	1.55E-06	2.01E-06
Styrene	-	3.96E-03	-	-	-	3.96E-03
Styrene	-	-	6.01E-06	2.00E-06	2.68E-05	3.49E-05
Tetrachloroethane	-	-	6.31E-07	2.10E-07	2.82E-06	3.66E-06
Toluene	-	2.78E-02	-	-	-	2.78E-02
Toluene	-	-	1.04E-04	3.46E-05	4.64E-04	6.03E-04
Trichloroethene	-	4.99E-03	-	-	-	4.99E-03
Vinyl Chloride	-	-	3.79E-06	1.26E-06	1.70E-05	2.20E-05
Xylene	-	-	4.68E-05	1.56E-05	2.09E-04	2.72E-04
Antimony	8.87E-03	-	-	-	-	8.87E-03
Arsenic	6.61E-04	-	-	-	-	6.61E-04
Cadmium	2.69E-03	-	-	-	-	2.69E-03
Chromium	1.85E-02	-	-	-	-	1.85E-02
Cobalt	9.76E-03	-	-	-	-	9.76E-03

HAP	Emissions (tpy) Melt shop EID06	Rolling Mill EID08	Emergency Fire Pump EID16	Emergency Cooling Water Pump EID17	Emergency Generator EID18	Total
Lead	4.97E-02	-	-	-	-	4.97E-02
Manganese	1.80E-01	-	-	-	-	1.80E-01
Mercury	3.81E-02	-	-	-	-	3.81E-02
Nickel	9.05E-03	-	-	-	-	9.05E-03
Selenium	1.11E-03	-	-	-	-	1.11E-03

Total HAP (TPY)	1.30

Highest individual HAP	TPY
Manganese	1.80E-01

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Facility Input

A. Throughputs/Usage

Input Parameter	Data/Value	Units
Total Scrap Handled per Year	500780	tpy
Total Scrap Direct to Bay Piles	50	wt %
Scrap Sizing: Percent w/ Potential to be Airborne	20	wt %
Total Steel Produced per Year	456000	tpy
Annual Scrap Cutting	18000	tpy
Total Slag Produced per Year	59280	tpy
Slag crushing and screening	1200	tpy
Total Alloy Used per Year	11902	tpy
Total Lime Used per Year	9550	tpy
Total Dolomite Used per Year	9550	tpy
Total Carbon Used per Year	9550	tpy
Total Lube Oil Used in Rolling Mill per Year	21000	gal/yr
	78.75	tpy
Total Acetylene Usage per Year (scrap cutting torches)	32000	cft/yr
Total Diesel Usage Per Year	52000	gal/yr
Total Gasoline Usage Per Year	3500	gal/yr

B. Equipment Data

Equipment	Data/Value	Units
Emergency Generator No. 1 Engine Rating	2682	HP
Firewater Pump 1 Engine Rating	600	HP
Cooling Water Pump 2 Engine Rating	200	HP
Diesel Tank No. 1 Volume	8000	gal
Diesel Tank No. 1 Fill Rate	1200	gph
Diesel Tank No. 2 Volume	2000	gal
Diesel Tank No. 2 Fill Rate	800	gph
Gasoline Tank No. 1 Volume	500	gal
Gasoline Tank No. 1 Fill Rate	100	gph
Gasoline Tank No. 2 Volume	250	gal
Gasoline Tank No. 2 Fill Rate	100	gph
Cooling Tower 1 water recirculation rate	3643	m^3/hr
Cooling Tower 2 water recirculation rate	850	m^3/hr
Cooling Tower 3 water recirculation rate	1300	m^3/hr
Cooling Tower 4 water recirculation rate	110	m^3/hr
Cooling Tower 1/2/3/4 - TDS	4000	ppmw
Meltshop Bag-Filter Flowrate-Avg TtT	677,000	scfm
Meltshop Bag-Filter Flowrate-Avg TtT	910,837	acfm

C. Operating Hours

Input Parameter	Data/Value	Units
EAF	8760	Hrs/yr
Meltshop Baghouse	8760	Hrs/yr
Slag Crushing and Screening MRP	2920	Hrs/yr
Emergency Generator Engine	200	Hrs/yr
Emergency Fire Pump Engines	200	Hrs/yr
Diesel Tanks	8760	Hrs/yr
Gasoline Tank	8760	Hrs/yr
Outdoor Storage Piles	8760	Hrs/yr
MRP slag handling operating hours	8760	Hrs/yr
Roads	8760	Hrs/yr

D. Road Emission Calculation Input Data

Input Parameter	Data/Value	Units
Mean Vehicle Weight - Scrap	40	tons
Mean Vehicle Weight - Steel Product	40	tons
Mean Vehicle Weight - Carbon	40	tons
Mean Vehicle Weight - Lime/Dolomite	40	tons
Mean Vehicle Weight - Alloy	40	tons
Mean Vehicle Weight - Diesel	40	tons
Mean Vehicle Weight - Gasoline	40	tons
VMT on Unpaved Roads	1077	VMT/yr
VMT on Paved Roads	16050	VMT/yr
Steel Average Miles Traveled per trip	0.303	miles
Diesel Average Miles Traveled per trip	0.967	miles
Gasoline Average Miles Traveled per trip	0.967	miles
Alloy Average Miles Traveled per trip	0.967	miles
Carbon Average Miles Traveled per trip	0.967	miles
Lime Average Miles Traveled per trip	0.967	miles
Dolomite Average Miles Traveled per trip	0.967	miles
Scrap Average Miles Traveled per trip	0.684	miles
Slag Product Average Miles Traveled per trip	0.967	miles
Slag Product Average Miles Traveled per trip	0.242	miles

E. Physical Properties of Materials

Input Parameter	Data/Value	Units
Slag Moisture Content	3	%
Unprocessed Slag Pile Duration	3	days
Processed Slag Pile Duration	3	days
Scrap Moisture Content [M]	2	%
Alloy Moisture Content	5.4	%
Mill Scale Moisture Content [M]	2	%
Scrap silt content	2	%
Alloy Silt Content	9.5	%
Slag Silt Content	5.3	%
Density of Lube Oil Used in Rolling Mill	7.5	lb/gal
Natural Gas HHV	1020	MMBtu/MMscf
Acetylene HHV	900	btu/scf

F. Meteorological Parameters

Input Parameter	Data/Value	Units
Mean Wind Speed	14	mph
Solar Insulation		
Scrap Material Storage Pile Indoor Wind Speed	2	mph
Scrap Material Storage Pile Outdoor Wind Speed	14	mph
Fastest Mile, U10	22	m/s
Percent of time the unobstructed (outdoor) wind speed exceeds 12 mph at the pile height	19	%
Days per year with at least 0.01 inch precipitation (days)	50	days/year
Scrap Pile 1 Area	278.7	m^2
Scrap Pile 2 Area	243.86	m^2
Scrap Outdoor Pile Area (Acres)	3.9	Acres
Alloy Pile (Outdoor) Length	50	ft
Alloy Pile (Outdoor) Width	20	ft
Alloy Pile (Outdoor) Area	1000	ft^2
Alloy Pile Outdoor Area	92.90	m^2
Dry days per year	205	days/year

PSG MMM Project
List of Emission ID (EIDs)

Area	Source Description	Emission Point ID (EID)
Scrap	Scrap Material Storage and Handling-Indoor	EID-01
	Scrap Material Storage and Handling-Outdoor	EID-02
	Scrap Pile (Wind Erosion)	EID-03
Raw Material - Alloy	Alloy Material Storage and Handling-Outdoor	EID-04
	Alloy Pile (Wind Erosion)	EID-05
Meltshop Baghouse	Meltshop Baghouse (MS BH)	EID-06
	Electric Arc Furnace (EAF) DEC	EID-06_01
	EAF Fugitives	EID-06_02
	Ladle Metallurgical Furnace (LMF) DEC	EID-06_03
	Casting Operation (fugitives)	EID-06_04
	Slag dump	EID-06_05
	Ladle and Tundish refractory repairs	EID-06_06
	Ladle and Tundish dumping	EID-06_07
	MS BH Dust Silo Bin Vent	EID-06_08
	MS BH Dust Loadout	EID-06_09
	Activated Carbon Injection Bin Vent	EID-06_10
	Carbon Silo Bin and Hopper Vent	EID-06_11
	Flux Silo 1 Bin and Hopper Vent - Lime	EID-06_12
	Flux Silo 2 Bin and Hopper Vent - Dolomite	EID-06_13
	Scrap Cutting Torches	EID-06_14
Caster	Caster Spray Stack	EID-07
Rolling Mill	Roll mill vent	EID-08
Slag	Slag Material Storage and Handling Outdoor	EID-09
	Slag Pile Wind Erosion	EID-10
	Slag Screening and Crushing	EID-11
Cooling Towers	Cooling Tower 1	EID-12
	Cooling Tower 2	EID-13
	Cooling Tower 3	EID-14
	Cooling Tower 4	EID-15
Engines	Emergency Fire Water Pump	EID-16
	Emergency Cooling Water Pump	EID-17
	Emergency Generator	EID-18
Diesel and Gasoline Tanks	Diesel Tank - 8000 Gallons Capacity	EID-19
	Diesel Tank - 2000 Gallons Capacity	EID-20
	Gasoline Tank - 500 Gallons Capacity	EID-21
	Gasoline Tank - 250 Gallons Capacity	EID-22
Roads	Paved Facility Roads	EID-23
	Unpaved Facility Roads	EID-24

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Scrap Handling Indoor

EID-01-Scrap Material Storage and Handling- Indoor
Drop Points

Input Data

Description	Value	Units	Reference
Operating Hours	8760	hrs/yr	
Annual Feedrate	500780	tpy	HARSCO
Scrap Sizing: Percent w/ Potential to be Airborne	20	wt %	
Hourly FeedRate	57.2		
Moisture Content [M]	2	%	Site Specific
Outdoor Control Efficiency	0	%	
Indoor Control Efficiency	85	%	-
Indoor wind speed	2	mph	

Emission Factor for Drop Points (Equation 1)

Description	Value	Units	Reference
PM Particle size multiplier [k]	0.74	-	AP-42, Section
PM10 Particle size multiplier [k]	0.35	-	AP-42, Section 13.2.4
PM2.5 Particle size multiplier [k]	0.053	-	AP-42, Section
PM Emission Factor	7.20E-04	lb/ton	
PM10 Emission Factor	3.40E-04	lb/ton	
PM2.5 Emission Factor	5.15E-05	lb/ton	

Emission Summary

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy
EID-01_1	Scrap Material Storage and Handling Indoor - Drop Point Bay	0.00	0.00	0.01	0.00	5.84E-04	0.00	0.00	8.84E-05	3.87E-04	-	-	-
EID-01_2	Scrap Material Storage and Handling Indoor - Drop Point Conveyor	0.00	0.00	0.01	0.00	5.84E-04	0.00	0.00	8.84E-05	3.87E-04	-	-	-
EID-01	Scrap Material Storage and Handling Indoor - Total	0.00	0.00	0.01	0.00	1.17E-03	0.01	0.00	1.77E-04	7.74E-04	-	-	-

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	lb/hr	tpy
EID-01_1	Scrap Material Storage and Handling Indoor - Drop Point Bay	-	-	-	-	-	-	-	-	-	-	-
EID-01_2	Scrap Material Storage and Handling Indoor - Drop Point Conveyor	-	-	-	-	-	-	-	-	-	-	-
EID-01	Scrap Material Storage and Handling Indoor - Total	-	-	-	-	-	-	-	-	-	-	-

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EID-01_1	Scrap Material Storage and Handling Indoor - Drop Point Bay	-	-	-	-	-	-	-	-	-	-
EID-01_2	Scrap Material Storage and Handling Indoor - Drop Point Conveyor	-	-	-	-	-	-	-	-	-	-
EID-01	Scrap Material Storage and Handling Indoor - Total	-	-	-	-	-	-	-	-	-	-

Notes:
1.Calculated Per AP-42, Section 13.2.4: Aggregate Handling and Storage Piles, Equation 1
2. No wind Erosion for Indoor Scrap Storage Pile
3. Two drop points are assumed: from truck to bay and from bay to conveyor via crane

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Scrap Handling Outdoor

EID-02: Scrap Pile Storage and Handling- Outdoor

Input Data:

Input Parameters	Values	Units	References
Scrap Moisture Content (M)	2	wt.%	MultiServ
mean wind speed (U)	14	mph	Site data
	6.26	m/s	
PM Particle size multiplier [k]	0.74	-	AP-24, Section 13.2.4
PM10 Particle size multiplier [k]	0.35	-	AP-24, Section 13.2.4
PM2.5 Particle size multiplier [k]	0.053	-	AP-24, Section 13.2.4
Total Scrap Quantity	500780	tpy	Revised Scrap handling Data from PSG
Scrap to Storage Pile Overflow	50	%	conservative assumption, remaining scrap straight to bay
Scrap Sizing: Percent w/ Potential to be Airborn	20	wt %	PSG, conservative based on Scrap Management Pl
Hours of Operation	8760	hrs/yr	

Emission Factor (lbs/ton) Calculations:

PM	PM10	PM2.5
0.009029987	0.00427094	0.000646742

Emissions Calculations:

DESCRIPTION	Notes	TSP EF lbs/ton	PM10 EF lbs/ton	PM2.5 EF lbs/ton	PROD. TNS/YR	Airborne TNS/YR	MAX Emissions TSP TNS/YR	PM10 TNS/YR	PM2.5 TNS/YR	TSP lb/hr	PM10 lb/hr	PM2.5 lb/hr
UNPROCESSED/PROCESSED STOCKPILES Scrap Pile Unloading to Pile		0.00903	0.004	6.47E-04	250390	50078	0.226	0.107	0.016	0.052	0.024	0.004
Emission Totals							**0.23**	**0.11**	**0.02**	**0.05**	**0.02**	**0.00**

Emission Summary

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy
EID-02	Scrap Material Storage and Handling-Outdoor	0.05	0.05	0.23	0.02	0.02	0.11	0.00	3.70E-03	1.62E-02	-	-	-

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	lb/hr	tpy
EID-02	Scrap Material Storage and Handling-Outdoor	-	-	-	-	-	-	-	-	-	-	-

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EID-02	Scrap Material Storage and Handling-Outdoor	-	-	-	-	-	-	-	-	-	-

Notes:
1.Calculated Per AP-42, Section 13.2.4: Aggregate Handling and Storage Piles, Equation 1
2. Emission Calculations (Pulled from AP42):
3. One drop point is assumed: from truck to overflow scrap yard. Transfers to indoor scrap bay and conveyor are captured under EID01

$$E = k(0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (pound [lb]/ton)}$$

where:

E = emission factor
k = particle size multiplier (dimensionless)
U = mean wind speed, meters per second (m/s) (miles per hour [mph])
M = material moisture content (%)

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Scrap Pile Wind Erosion

EID-03: Scrap Pile Wind Erosion

Input Data:

Input Parameters	Values	Units	References
Scrap Outdoor Pile Area (Acres)	3.9	Acres	calculated from site drawing
Scrap Outdoor Pile Area (m^2)	15782.72	m^2	calculated from site drawing
Threshold Friction Velocity, U_t*	1.33	m/s	Table 13.2.5-2 (Scoria)
Fastest Mile, U10	22	m/s	Bakersfield Airport, CA
PM Particle size multiplier [k]	1	-	AP-42, Section 13.2.5
PM10 Particle size multiplier [k]	0.5	-	AP-42, Section 13.2.5
PM2.5 Particle size multiplier [k]	0.075	-	AP-42, Section 13.2.5
surface disturbance count per year	365	-	Daily assumed

Calculated Values

Friction Velocity, U*	1.166	m/s	Table 13.2.5-2 (Equation 4)
P	-2.540032	g/m^2	calculated

Note: *Because U*<U_t, P<0, and all emissions are negligible. the calculations are still shown below*

Emissions Calculations	g/yr	lb/yr	tpy	lb/hr
PM	-14632339.4	-32259.0	-16.1	-3.7
PM10	-7316169.7	-16129.5	-8.1	-1.8
PM2.5	-1097425.5	-2419.4	-1.2	-0.3

Emission Summary

U* is less than U_t*

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy
EID-03	Scrap Pile Wind Erosion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	lb/hr	tpy
EID-03	Scrap Pile Wind Erosion	-	-	-	-	-	-	-	-	-	-	-

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EID-03	Scrap Pile Wind Erosion	-	-	-	-	-	-	-	-	-	-

Notes:
1. due to a lack of facility data, an estimated peak windspeed was used constantly for all disturbances
2. it is assumed that the pile experiences a disturbance daily. The pile remains relatively flat (height/base ratio < 0.2) and uniform in area at all times
3. It can be assumed that there is only one frequency of disturbance for the entire source area
4. a conservative approach was used for determining wind erosion emissions from the piles. To calculate the overall emission from a pile, it was assumed once the wind speed criteria for erosion was met for one part of the pile, it was assumed to have been met for the entirety of the pile.
5. Scrap is not a granular material, therefore a higher threshold velocity (Scoria) was used
Calculations:
Emissions (g/yr): (particle size multiplier)*(P[g/m^2])*(Pile area [m^2])*(Number of annual disturbances)
6. If negative emissions are calculated for PM/PM10/PM2.5 due to friction velocity lower than threshold friction velocity, then the emissions are considered as 0 (no emissions).

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Alloy Handling Calculations

EID-04: Alloy Material Storage and Handling-Outdoor
Drop Points
Input Data:

Input Parameters	Values	Units	References
Alloy moisture content (M)	5.4	%	NUCOR Florida
mean wind speed (U)	14	mph	
PM Particle size multiplier [k]	0.74	-	AP-24, Section
PM10 Particle size multiplier [k]	0.35	-	AP-24, Section
PM2.5 Particle size multiplier [k]	0.053	-	13.2.4
Total Alloy Quantity	11902	tpy	HARSCO data
Hours of Operation	8760	hrs/yr	

Emission Factor Calculations:

PM	PM10	PM2.5
2.25E-03	1.06E-03	1.61E-04

Emissions Calculations:

DESCRIPTION	Notes	TSP EF lbs/ton	PM10 EF lbs/ton	PM2.5 EF lbs/ton	PROD. TNS/YR	MAX Emissions TSP TNS/YR	MAX Emissions PM10 TNS/YR	MAX Emissions PM2.5 TNS/YR	MAX Emissions TSP lb/hr	MAX Emissions PM10 lb/hr	MAX Emissions PM2.5 lb/hr
UNPROCESSED/PROCESSED STOCKPILES											
Alloy Unloading to pile		0.00225	0.001	1.61E-04	11902	0.013	0.006	0.001	0.003	0.001	0.000
Alloy Loading from Pile		0.00225	0.001	1.61E-04	11902	0.013	0.006	0.001	0.003	0.001	0.000
Emission Totals						**0.03**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**

Emission Summary

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy
EID-04	Alloy Material Storage and Handling-Outdoor	0.01	0.01	0.03	0.00	0.00	0.01	0.00	4.37E-04	0.00	-	-	-

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	lb/hr	tpy
EID-04	Alloy Material Storage and Handling-Outdoor	-	-	-	-	-	-	-	-	-	-	-

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EID-04	Alloy Material Storage and Handling-Outdoor	-	-	-	-	-	-	-	-	-	-

Notes:
1.Calculated Per AP-42, Section 13.2.4: Aggregate Handling and Storage Piles, Equation 1

Emission Calculations (Pulled from AP42):

$$E = k(0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (pound [lb]/ton)}$$

where:

E = emission factor
k = particle size multiplier (dimensionless)
U = mean wind speed, meters per second (m/s) (miles per hour [mph])
M = material moisture content (%)

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Alloy Pile Wind Erosion Calculations

EID-05: Alloy Pile Wind Erosion

Input Data:

Input Parameters	Values	Units	References
Pile 1 Area	140	m^2	AERMOD View Dimensions
Threshold Friction Velocity, U_t*	1.12	m/s	Pile)
Fastest Mile, U10	22	m/s	Bakersfield Airport, CA
PM Particle size multiplier [k]	1	-	AP-24, Section 13.2.5
PM10 Particle size multiplier [k]	0.5	-	AP-24, Section 13.2.5
PM2.5 Particle size multiplier [k]	0.075	-	AP-24, Section 13.2.5
surface disturbance count per year? Daily?	365	-	

Calculated Values

Friction Velocity, U*	1.166	m/s	Table 13.2.5-2
P	1.272728	g/m^2	calculated

Emissions Calculations	g/yr	lb/yr	tpy	lb/hr
PM	65036.40	143.38	0.07	0.02
PM10	32518.20	71.69	0.04	0.01
PM2.5	4877.73	10.75	0.01	0.00

Emission Summary

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy
EID-05	Alloy Pile Wind Erosion	0.02	0.02	0.07	0.01	0.01	0.04	0.00	1.23E-03	0.0054	-	-	-

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	lb/hr	tpy
EID-05	Alloy Pile Wind Erosion	-	-	-	-	-	-	-	-	-	-	-

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EID-05	Alloy Pile Wind Erosion	-	-	-	-	-	-	-	-	-	-

Notes:
1. due to a lack of facility data, an estimated peak windspeed was used constantly for all disturbances
2. it is assumed that the pile experiences one disturbance daily. The pile remains relatively flat (height/base ratio < 0.2) and uniform in area at all times
3. It can be assumed that there is only one frequency of disturbance for the entire source area
4. a conservative approach was used for determining wind erosion emissions from the piles. To calculate the overall emission from a pile, it was assumed once the wind speed criteria for erosion was met for one part of the pile, it was assumed to have been met for the entirety of the pile.
5. Alloy material threshold friction velocity considered same as uncrusted coal pile as a conservative assumption.
Calculations:
Emissions (g/yr): (particle size multiplier)*(P[g/m^2])*(Pile area [m^2])*(Number of annual disturbances)
6. If negative emissions are calculated for PM/PM10/PM2.5 due to friction velocity lower than threshold friction velocity, then the emissions are considered as 0 (no emissions).

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Meltshop Baghouse

EID-06: Meltshop Baghouse
Emission from the following activities are included in the Meltshop Baghouse Emissions

EID	Source Description
EID-06_01	Electric Arc Furnace-ECS Tech
EID-06_02	Electric Arc Furnace (Fugitives)
EID-06_03	Ladle Metallurgical Furnace
EID-06_04	Casting Operatives (Fugitives)
EID-06_05	Slag Dump
EID-06_06	Ladle and Tundish Factory Repairs
EID-06_07	Ladle and Tundish Dumping
EID-06_08	Dust Silo Bin Vent
EID-06_09	Baghouse Dust Loadout
EID-06_10	Activated Carbon Injection Bin Vent
EID-06_11	Carbon Silo Bin and Hopper Vent
EID-06_12	Flux Silo 1 Bin and Hopper Vent - Lime
EID-06_13	Flux Silo 2 Bin and Hopper Vent - Dolomite
EID-06_14	Scrap Cutting Torches

Input Data:

Parameter	Value	Units
Steel Production - Annual	456,000	tpy
Annual Operating Hours	8760	hrs/yr
Steel Production - Hourly	52.05	tph
Emission flowrate	677000	scfm
Nanograms to pounds	2.2046E-12	lb/ng
Cubic meters to cubic feet	35	cf/m^3

Emission Factors:

Pollutant	Value	Units	Reference
PM	0.0467	lb/sht_{LS}	*Vendor Data (PSG Emission - REV05 received 5/6/24)*
PM10	0.0467	lb/sht_{LS}	*Vendor Data (PSG Emission - REV05 received 5/6/24)*
PM2.5	0.0467	lb/sht_{LS}	*Vendor Data (PSG Emission - REV05 received 5/6/24)*
NOx	0.0900	lb/sht_{LS}	*Vendor Data (PSG Emission - REV05 received 5/6/24)*
SOx	0.1010	lb/sht_{LS}	*Vendor Data (PSG Emission - REV05 received 5/6/24)*
CO	1.8189	lb/sht_{LS}	*Vendor Data (PSG Emission - REV05 received 5/6/24)*
VOC	0.0750	lb/sht_{LS}	*Vendor Data (PSG Emission - REV05 received 5/6/24)*
CO2e	438	lb/sht_{LS}	*NUCOR Florida EAF*

EID-06: Meltshop Baghouse

Calculations:

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/h	annual - lbs/	tpy	max - lbs/h	annual - lbs/	tpy	max - lbs/h	annual - lbs/	tpy
EID-06	Meltshop Baghouse	2.43	2.43	10.65	2.43	2.43	10.65	2.43	2.43	10.65	4.68	4.68	20.52

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/h	annual - lbs/	tpy	max - lbs/h	annual - lbs/	tpy	lb/hr	tpy
EID-06	Meltshop Baghouse	94.68	94.68	414.72	3.90	3.90	17.10	5.26	5.26	23.03	22,800	99,864

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EID-06	Meltshop Baghouse	-	-	0.01	0.05	-	-	0.01	0.04	0.07	0.32

HAP Metal Emissions from EAF

Metal	lb/sht_{LS}	lb/hr	tpy	Source
Antimony	3.89E-05	2.02E-03	8.87E-03	Controlled emission rate, Nucor SC Baghouse dust analysis (2009-2013)
Arsenic	2.90E-06	1.51E-04	6.61E-04	
Cadmium	1.18E-05	6.14E-04	2.69E-03	
Chromium	8.11E-05	4.22E-03	1.85E-02	
Cobalt	4.28E-05	2.23E-03	9.76E-03	
Lead	2.18E-04	1.13E-02	4.97E-02	
Manganese	7.88E-04	4.10E-02	1.80E-01	
Mercury	1.67E-04	8.69E-03	3.81E-02	
Nickel	3.97E-05	2.07E-03	9.05E-03	
Selenium	4.89E-06	2.55E-04	1.11E-03	
Total HAP		7.26E-02	3.18E-01	

Notes:
HAP metal emission factors from EAF baghouse dust analysis from Nucor Berkeley, SC
From the Nucor, Florida PSD permit application

Dioxin/Furan Emissions from EAF

Pollutant	ng TEQ/NM^3	lb/scf conversion	lb/hr	tpy	Source
Dioxins/Furans	0.1	6.2436E-15	2.5361E-07	1.1108E-06	Vendor

Notes:
1. PM/PM10/PM2.5, NOx, SOx, CO, and VOC emission factors from vendor.
2. "ng TEQ/NM^3" = nanograms of Toxic Equivalent Quantity of dioxins and dioxin-like compounds per standard cubic meter

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Caster Spray Stack Calculations

EID-07: Caster Spray Stack

Caster Spray Vent Stack Input Data

Input Parameters	Values	Units	References
Hours of Operation	8760	Hrs/yr	
Steel Throughput	456000	tpy	
Exhaust Flow Rate	26486	scfm	same as NUCOR Florida
Spray Chamber Capture Efficiency	98	%	Design Basis of Spray Chamber and Vent
Percent of Filterable PM that is PM10	16	%	Reisman and Frisbie PM Factors on Spray Vents
Percent of Filterable PM that is PM2.5	2	%	Reisman and Frisbie PM Factors on Spray Vents

Pollutant	Em. Factor	References
	lb/ton	
NOx	1.20E-04	Nucor Crawfordsville, IN, stack test
CO	9.60E-03	Nucor Crawfordsville, IN, stack test
SO2	3.59E-04	Nucor Crawfordsville, IN, stack test
VOC	3.78E-04	Nucor Crawfordsville, IN, stack test

Pollutant	Emission Factor	Emission Rate	Annual Emission Rate	Emissions Captured Spray Stack		Emissions to meltshop (no spray vent)		Source
	gr/dscf	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
PM	3.03E-03	0.69	3.01	0.67	2.95	0.01	0.06	Emission Factor Pulled from Nucor SC Stack Test 11/29/2012
PM10	4.85E-04	0.11	0.48	0.11	0.47	0.00	0.01	
PM2.5	6.06E-05	0.01	0.06	0.01	0.06	0.00	0.00	

Emission Summary

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy
EID-07	Caster Vent Spray Stack	0.67	0.67	2.95	0.11	0.11	0.47	0.01	0.01	0.06	0.01	0.01	0.03

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	lb/hr	tpy
EID-07	Caster Vent Spray Stack	0.50	0.50	2.19	0.02	0.02	0.09	0.02	0.02	0.08	-	-

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EID-07	Caster Vent Spray Stack	-	-	-	-	-	-	-	-	-	-

Notes:
1. The Emission Factors reported in Permit Application for NUCOR Florida were based on a stack test for Nucor Crawfordsville, IN and Nucor SC facility for particulate emission factors.

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Rolling Mill Vent Calculations

EID-08: Rolling Mill Vent

Input Data

Input Parameters	Values	Units	References
Operating Hours	8760	Hrs/yr	
Throughput	456000	tpy	PSG
Total Lube Oil Used in Rolling Mill per Year	21000	gal/yr	PSG/MJ
	78.75	tpy	
Density of Lube Oil	7.5	lb/gal	

Pollutant	Emission Factor		Hourly Emission Rate	Annual Emission Rate	Notes
	lb/ton	Wt % of Oil and Grease	lbs/hr	tpy	
Total PM	0	-	0	0	de minimis
PM10	0	-	0	0	de minimis
PM2.5	0	-	0.00	0.00	de minimis
VOC	-	4.63	0.83244863	3.646125	USEPA: "Volatized Lubricant Emissions from Steel Rolling Operations"

Emission Summary

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy
EP-08	Rolling Mill Vent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	lb/hr	tpy
EP-08	Rolling Mill Vent	-	-	-	0.83	0.83	3.65	-	-	-	-	-

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EP-08	Rolling Mill Vent	-	-	-	-	-	-	-	-	0.20	0.87

HAP Emissions from Rolling Mill Vent

Pollutant	Nucor FL Annual Emission Rate (tpy)	Scaled Annual Emission Rate (tpy)	Scaled Hourly Emission Rate (lb/hr)	Notes
Chloromethane	1.04E-02	1.03E-02	2.36E-03	Scaled from analysis in Nucor, FL PSD permit application of monovent testing for VOC and speciated HAP/TAP and that facility's oil and grease total of 79.30 tpy, and the USEPA paper "Volatized Lubricant Emissions from Steel Rolling Operations" by Mackus and Joshi, 1980.
Acrolein	5.98E-02	5.94E-02	1.36E-02	
Carbon Disulfide	7.39E-02	7.34E-02	1.68E-02	
Acetonitrile	9.25E-03	9.19E-03	2.10E-03	
Methylene Chloride	1.14E-01	1.13E-01	2.58E-02	
Hexane	1.73E-01	1.72E-01	3.92E-02	
Benzene	9.23E-03	9.17E-03	2.09E-03	
Methyl Isobutyl Ketone	5.28E-03	5.24E-03	1.20E-03	
Toluene	2.80E-02	2.78E-02	6.35E-03	
Ethyl Benzene	5.42E-03	5.38E-03	1.23E-03	
m-/p-Xylenes	1.41E-02	1.40E-02	3.20E-03	
o-Xylenes	6.29E-03	6.25E-03	1.43E-03	
Styrene	3.99E-03	3.96E-03	9.05E-04	
Acetaldehyde	1.44E-01	1.43E-01	3.26E-02	
Methanol	8.17E-02	8.11E-02	1.85E-02	
1,3-Butadiene	2.33E-03	2.31E-03	5.28E-04	
Chloroethane	3.33E-03	3.31E-03	7.55E-04	
Chloroform	8.05E-03	7.99E-03	1.83E-03	
Trichloroethene	5.02E-03	4.99E-03	1.14E-03	
Carbon Tetrachloride	5.88E-03	5.84E-03	1.33E-03	
1,4-Dioxane	3.14E-03	3.12E-03	7.12E-04	
Bromoform	1.11E-02	1.10E-02	2.52E-03	
Naphthalene	5.34E-03	5.30E-03	1.21E-03	
Methyl Ethyl Ketone	9.84E-02	9.77E-02	2.23E-02	
Total HAP	8.80E-01	8.75E-01	2.00E-01	

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Slag Handling Emission Calculations

EID-09: Slag Material Storage and Handling- Outdoor - MRP

To Emission Summary

Input Data

Emission Point: EP06			
Description	Values	Units	References
Throughput	59280	tpy	Revised 12.28.23
Operation	2920	hrs/yr	HARSCO

								PERMITTED EMISSIONS			Max PERMITTED EMISSIONS			Annualized PERMITTED EMISSIONS			
ID	DESCRIPTION	Note	Total PM EF lbs/ton	PM10 EF lbs/ton	PM2.5 EF lbs/ton	FEED %	TPY by permit	Total PM tons/yr	PM10 tons/yr	PM2.5 tons/yr	Total PM lb/hr	PM10 lb/hr	PM2.5 lb/hr	Total PM lb/hr	PM10 lb/hr	PM2.5 lb/hr	Reference
1	LOADER TO FEED STATION	1	1.4E-04	4.60E-05	1.30E-05	100	59,280	4.15E-03	1.36E-03	3.85E-04	2.84E-03	9.34E-04	2.64E-04	9.47E-04	3.11E-04	8.80E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
2	STATION TO OVERSIZE	1	1.4E-04	4.60E-05	1.30E-05	negl.	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
3	STATION TO CONV	1	1.4E-04	4.60E-05	1.30E-05	100	59,280	4.15E-03	1.36E-03	3.85E-04	2.84E-03	9.34E-04	2.64E-04	9.47E-04	3.11E-04	8.80E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
4.00	CONV TO CONV	1.00	0.00	0.00	0.00	100.00	59280.00	4.15E-03	1.36E-03	3.85E-04	2.84E-03	9.34E-04	2.64E-04	9.47E-04	3.11E-04	8.80E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
5	CONV TO Magnet	1	1.4E-04	4.60E-05	1.30E-05	100	59,280	4.15E-03	1.36E-03	3.85E-04	2.84E-03	9.34E-04	2.64E-04	9.47E-04	3.11E-04	8.80E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
6	magnet to conv	1	1.4E-04	4.60E-05	1.30E-05	20	11,856	8.30E-04	2.73E-04	7.71E-05	5.68E-04	1.87E-04	5.28E-05	1.89E-04	6.23E-05	1.76E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
7	conv to screen	1	1.4E-04	4.60E-05	1.30E-05	20	11,856	8.30E-04	2.73E-04	7.71E-05	5.68E-04	1.87E-04	5.28E-05	1.89E-04	6.23E-05	1.76E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
8	screen	1	2.2E-03	7.40E-04	5.00E-05	20	11,856	1.30E-02	4.39E-03	2.96E-04	8.93E-03	3.00E-03	2.03E-04	2.98E-03	1.00E-03	6.77E-05	AP-42 1/95, Table 11.19.2-2, Screening (moisture content ranges from 0.55% to 2.88%).
9	screen to stockpile	1	1.4E-04	4.60E-05	1.30E-05	5	2,964	2.07E-04	6.82E-05	1.93E-05	1.42E-04	4.67E-05	1.32E-05	4.74E-05	1.56E-05	4.40E-06	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
10	screen to stockpile	1	1.4E-04	4.60E-05	1.30E-05	5	2,964	2.07E-04	6.82E-05	1.93E-05	1.42E-04	4.67E-05	1.32E-05	4.74E-05	1.56E-05	4.40E-06	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
11	screen to conv	1	1.4E-04	4.60E-05	1.30E-05	10	5,928	4.15E-04	1.36E-04	3.85E-05	2.84E-04	9.34E-05	2.64E-05	9.47E-05	3.11E-05	8.80E-06	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
12	conv to stock	1	1.4E-04	4.60E-05	1.30E-05	10	5,928	4.15E-04	1.36E-04	3.85E-05	2.84E-04	9.34E-05	2.64E-05	9.47E-05	3.11E-05	8.80E-06	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
13	magnet to conv	1	1.4E-04	4.60E-05	1.30E-05	80	47,424	3.32E-03	1.09E-03	3.08E-04	2.27E-03	7.47E-04	2.11E-04	7.58E-04	2.49E-04	7.04E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
14	conv to screen	1	1.4E-04	4.60E-05	1.30E-05	80	47,424	3.32E-03	1.09E-03	3.08E-04	2.27E-03	7.47E-04	2.11E-04	7.58E-04	2.49E-04	7.04E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
15	screen	1	2.2E-03	7.40E-04	5.00E-05	80	47,424	5.22E-02	1.75E-02	1.19E-03	3.57E-02	1.20E-02	8.12E-04	1.19E-02	4.01E-03	2.71E-04	AP-42 1/95, Table 11.19.2-2, Screening (moisture content ranges from 0.55% to 2.88%).
16	screen to conv	1	1.4E-04	4.60E-05	1.30E-05	40	23,712	1.66E-03	5.45E-04	1.54E-04	1.14E-03	3.74E-04	1.06E-04	3.79E-04	1.25E-04	3.52E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
17	conv to stock	1	1.4E-04	4.60E-05	1.30E-05	40	23,712	1.66E-03	5.45E-04	1.54E-04	1.14E-03	3.74E-04	1.06E-04	3.79E-04	1.25E-04	3.52E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
18	screen to conv	1	1.4E-04	4.60E-05	1.30E-05	20	11,856	8.30E-04	2.73E-04	7.71E-05	5.68E-04	1.87E-04	5.28E-05	1.89E-04	6.23E-05	1.76E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
19	conv to stock	1	1.4E-04	4.60E-05	1.30E-05	20	11,856	8.30E-04	2.73E-04	7.71E-05	5.68E-04	1.87E-04	5.28E-05	1.89E-04	6.23E-05	1.76E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
20	screen to conv	1	1.4E-04	4.60E-05	1.30E-05	20	11,856	8.30E-04	2.73E-04	7.71E-05	5.68E-04	1.87E-04	5.28E-05	1.89E-04	6.23E-05	1.76E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
21	conv to stock	1	1.4E-04	4.60E-05	1.30E-05	20	11,856	8.30E-04	2.73E-04	7.71E-05	5.68E-04	1.87E-04	5.28E-05	1.89E-04	6.23E-05	1.76E-05	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
							Emission Totals	0.0980	0.0327	0.0045	0.0671	0.0224	0.0031	0.0224	0.0075	0.0010	

Notes:

1 AP-42 1/95, Table 11.19.2-2, Fines Crushing (moisture content ranges from 0.55% to 2.88%).

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Slag Pile Wind Erosion Calculations

EID-10: Slag Pile

To Emission Summary

EID10_01: Slag Pile Drop Points

Input Data:

Input Parameters	Values	Units	References
slag moisture content (M)	3	wt.%	MultiServ
mean wind speed (U)	14	mph	Wind & weather statistics Mojave - Windfinder
PM Particle size multiplier [k]	0.74	-	AP-24, Section 13.2.4
PM10 Particle size multiplier [k]	0.35	-	AP-24, Section 13.2.4
PM2.5 Particle size multiplier [k]	0.053	-	AP-24, Section 13.2.4
Total Slag Quantity	59280	tpy	HARSCO data
Hours of Operation	8760	hrs/yr	

Emission Factor Calculations:

PM	PM10	PM2.5
0.005118696	0.002421005	0.000366609

Emissions Calculations:

DESCRIPTION	Notes	TSP (PM) EF lbs/ton	PM10 EF lbs/ton	PM2.5 EF lbs/ton	PROD. TNS/YR	Annualized Emissions TSP (PM) TNS/YR	Annualized Emissions PM10 TNS/YR	Annualized Emissions PM2.5 TNS/YR	Annualized/Max Emissions TSP (PM) lb/hr	Annualized/Max Emissions PM10 lb/hr	Annualized/Max Emissions PM2.5 lb/hr
UNPROCESSED/PROCESSED STOCKPILES											
Loading unprocessed slag into piles	HARSCO EF	0.00512	0.002	3.67E-04	59280	0.152	0.072	0.011	0.035	0.016	0.002
Loading unprocessed slag into plant	HARSCO EF	0.00512	0.002	3.67E-04	59280	0.152	0.072	0.011	0.035	0.016	0.002
Loading processed slag into piles	HARSCO EF	0.00512	0.002	3.67E-04	59280	0.152	0.072	0.011	0.035	0.016	0.002
Loading processed slag into trucks for shipment	HARSCO EF	0.00512	0.002	3.67E-04	59280	0.152	0.072	0.011	0.035	0.016	0.002
Emission Totals						**0.61**	**0.29**	**0.04**	**0.14**	**0.07**	**0.01**

EID10_02: Slag Pile Wind Erosion

Input Data:

Input Parameters	Values	Units	References
Raw Slag Fines Pile	278.7	m^2	calculated from site drawing
Processed Fines Slag Pile	243.86	m^2	calculated from site drawing
Processed Intermediate Slag Fines Pile	55	m^2	calculated from site drawing
Threshold Friction Velocity, U_t*	1.12	m/s	Table 13.2.5-2 (Uncrusted Coal)
Fastest Mile, U10	22	m/s	To be checked
PM Particle size multiplier [k]	1	-	AP-24, Section 13.2.5
PM10 Particle size multiplier [k]	0.5	-	AP-24, Section 13.2.5
PM2.5 Particle size multiplier [k]	0.075	-	AP-24, Section 13.2.5
surface disturbance count per year? Daily?	365	-	

Calculated Values

Friction Velocity, U*	1.166	m/s	Table 13.2.5-2 (Equation 4)
P	1.272728	g/m^2	calculated

EID-10: Slag Pile

Emissions Calculations

Pollutant	Pile 1	Pile 2	Pile 3	Pile 1	Pile 2	Pile 3	Pile 1	Pile 2	Pile 3	Pile 1	Pile 2	Pile 3
	g/yr	g/yr	g/yr	lb/yr	lb/yr	lb/yr	tpy	tpy	tpy	lb/hr	lb/hr	lb/hr
PM	129468.89	113284.12	25550.01	285.43	249.75	56.33	0.14	0.12	0.03	0.03	0.03	0.01
PM10	64734.45	56642.06	12775.01	142.72	124.88	28.16	0.07	0.06	0.01	0.02	0.01	0.00
PM2.5	9710.17	8496.31	1916.25	21.41	18.73	4.22	0.01	0.01	0.00	0.00	0.00	0.00

Total PM Emissions for Slag Pile (drop+wind):

PM		PM10		PM2.5	
lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
0.21	0.90	0.10	0.43	0.01	0.09

Notes:

1. due to a lack of facility data, an estimated peak windspeed was used constantly for all disturbances
2. it is assumed that the pile experiences daily disturbances from routine operation. The pile remains relatively flat (height/base ratio < 0.2) and uniform in area at all times
3. It can be assumed that there is only one frequency of disturbance for the entire source area
4. a conservative approach was used for determining wind erosion emissions from the piles. To calculate the overall emission from a pile, it was assumed once the wind speed criteria for erosion was met for one part of the pile, it was assumed to have been met for the entirety of the pile.

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Slag Crusher Calculations

EID-11- Slag Screening and Crushing

To Emission Summary

Input Data:

Emission Point: EP08			
Input Parameters	Values	Units	References
Throughput	1200	tpy	Revised 12 28 2023
Hours of Operation	2920	hours	

Calculations:

								PERMITTED EMISSIONS			Max PERMITTED EMISSIONS			Annualized PERMITTED EMISSION			
			TSP EF	PM10 EF	PM2.5 EF	FEED	TPY	TSP	PM10	PM2.5	Total PM	PM10	PM2.5	Total PM	PM10	PM2.5	References
ID	DESCRIPTION	Note	lbs/ton	lbs/ton	lbs/ton	%	by permit	tons/yr	tons/yr	tons/yr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	
1	LOADER TO FEED STATION	1	1.4E-04	4.60E-05	1.30E-05	100	1,200	8.40E-05	2.76E-05	7.80E-06	5.75E-05	1.89E-05	5.34E-06	1.92E-05	6.30E-06	1.78E-06	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
2	STATION TO crusher	1	1.4E-04	4.60E-05	1.30E-05	100	1,200	8.40E-05	2.76E-05	7.80E-06	5.75E-05	1.89E-05	5.34E-06	1.92E-05	6.30E-06	1.78E-06	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
3	crusher	2	1.2E-03	5.40E-04	1.00E-04	100	1,200	7.20E-04	3.24E-04	6.00E-05	4.93E-04	2.22E-04	4.11E-05	1.64E-04	7.40E-05	1.37E-05	AP-42 1/95, Table 11.19.2-1, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
4	crusher to conv	1	1.4E-04	4.60E-05	1.30E-05	100	1,200	8.40E-05	2.76E-05	7.80E-06	5.75E-05	1.89E-05	5.34E-06	1.92E-05	6.30E-06	1.78E-06	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
5	conv to stockpile	1	1.4E-04	4.60E-05	1.30E-05	100	1,200	8.40E-05	2.76E-05	7.80E-06	5.75E-05	1.89E-05	5.34E-06	1.92E-05	6.30E-06	1.78E-06	AP-42 1/95, Table 11.19.2-2, Conveyor Transfer Point (moisture content ranges from 0.55% to 2.88%).
							Emission Totals	1.06E-03	4.34E-04	9.12E-05	7.23E-04	2.98E-04	6.25E-05	2.41E-04	9.92E-05	2.08E-05	

Notes:

1 Emission Factor from AP-42 Chapter 11.19.2 Table 11.19.2-2 (controlled)
2 Emission Factor from AP-42 Chapter 11.19.2 Table 11.19.2-1 (controlled)

PSG Mini Mill
Emissions Calculations
December 2023
Slag w negligible emiss. Emissions Data

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Slag Points with Negligible Emissions

To Emission Summary

Area	Source Description	Existing Reference Drawing	Reason for negligible emissions	Source
Slag Handling	Processed A-Scrap	The following emission points can be located in *Figure 3- Slag Handling Areas with Negligible Emissions Map*	This pile for scrap recovered from slag. It is of larger size and not airborne.	Vendor Specifications
	Processed B-scrap		This pile for scrap recovered from slag. It is of larger size and not airborne.	Vendor Specifications
	Processed C-scrap		This pile for scrap recovered from slag. It is of larger size and not airborne.	Vendor Specifications
	C-Scrap (±500ton)		No emissions from this scrap. it is large size and not airborne	Vendor Specifications
	Fines Non-Magnetic ±350 ton		No emissions from this scrap. it is large size and not airborne	Vendor Specifications
	Medium non-Magnetics ± 350 ton		No emissions from this scrap. it is large size and not airborne	Vendor Specifications
	Portable Crushing Unit		Used Infrequently	Vendor Specifications
	Finished Oversize Product Stockpile (2000 ton capacity)		large-size products. No PM emission	Vendor Specifications
	Finished Medium Product Stockpile (2000 ton capacity)		large-size products. No PM emission	Vendor Specifications
	Mill Scale Area (stockpile, product, fines, oversize)		Wet dust- no PM emission	Vendor Specifications

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Cooling Tower Calculations

EID-12- Cooling Tower 1
EID-13- Cooling Tower 2
EID-14- Cooling Tower 3
EID-15- Cooling Tower 4

To Emission Summary

Conversions	
1 m^3	264.172 gal
Density of Water	8.345 lbs/gal
% of PM containing PM10	55.84%
% of PM containing PM2.5	0.21%

Input Data:

Description	Other Descriptors	# of cells	Annual Operating Hours	Total Water Flow Rate (m^3/hr)	Total Water Flow Rate (gpm)	Drift rate %	Drifted Water (gpm)	Drifted Water (lb/min)	TDS (ppmw)	Total PM (lbs/min)
Cooling Tower 1	A01WCT	4	8760	3643	16039.65	0.0005	0.08	0.67	4000.00	0.0027
Cooling Tower 2	C01WCT	2	8760	850	3742.44	0.0005	0.02	0.16	4000.00	0.0006
Cooling Tower 3	B01WCT (new)	2	8760	1300	5723.73	0.0005	0.03	0.24	4000.00	0.0010
Cooling Tower 4	B01WCT (new)	1	8760	110	484.32	0.0005	0.00	0.02	4000.00	0.0001

Calculations:

Cooling Tower	Total PM Emissions (lb/min)	PM10			PM2.5		
		lb/min	lbs/hr	tpy	lbs/min	lbs/hr	tpy
Cooling Tower 1	0.00268	0.001	0.09	0.39	0.000	0.00	0.00
Cooling Tower 2	0.00062	0.000	0.02	0.09	0.000	0.00	0.00
Cooling Tower 3	0.00096	0.001	0.03	0.14	0.000	0.00	0.00
Cooling Tower 4	0.00008	0.000	0.00	0.01	0.000	0.00	0.00

Emission Summary

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy
EID-12	Cooling Tower 1	0.16	0.16	0.70	0.09	0.09	0.39	0.00	0.0003	0.0015	-	-	-
EID-13	Cooling Tower 2	0.04	0.04	0.16	0.02	0.02	0.09	0.00	0.0001	0.0003	-	-	-
EID-14	Cooling Tower 3	0.06	0.06	0.25	0.03	0.03	0.14	0.00	0.0001	0.0005	-	-	-
EID-15	Cooling Tower 4	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.0000	0.0000	-	-	-

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	lb/hr	tpy
EID-12	Cooling Tower 1	-	-	-	-	-	-	-	-	-	-	-
EID-13	Cooling Tower 2	-	-	-	-	-	-	-	-	-	-	-
EID-14	Cooling Tower 3	-	-	-	-	-	-	-	-	-	-	-
EID-15	Cooling Tower 4	-	-	-	-	-	-	-	-	-	-	-

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EID-12	Cooling Tower 1	-	-	-	-	-	-	-	-	-	-
EID-13	Cooling Tower 2	-	-	-	-	-	-	-	-	-	-
EID-14	Cooling Tower 3	-	-	-	-	-	-	-	-	-	-
EID-15	Cooling Tower 4	-	-	-	-	-	-	-	-	-	-

EID-12- Cooling Tower 1
EID-13- Cooling Tower 2
EID-14- Cooling Tower 3
EID-15- Cooling Tower 4

Notes:

1. D44rift rate is based on BACT.
2. PM10 and PM2.5 fractions of PM are based on Reisman and Frisby Method shown below.

Reisman and Frisbie Method - Cooling Tower PM Speciation

Reisman & Frisbie Method (Calculating Realistic PM10 Emissions from Cooling Towers)

EPRI Droplet Diameter (µm)	Droplet Volume (µm³) [2]	Droplet Mass (µg) [3]	Particle Mass (Solids) (µg) [4]	Solid Particle Volume (µm)	Solid Particle Diameter (µm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	1.31E-06	0.59	1.044	0
20	4,189	4.19E-03	1.05E-05	4.76	2.087	0.196
30	14,137	1.41E-02	3.53E-05	16.06	3.131	0.226
40	33,510	3.35E-02	8.38E-05	38.08	4.174	0.514
50	65,450	6.54E-02	1.64E-04	74.37	5.218	1.816
60	113,097	1.13E-01	2.83E-04	128.52	6.261	5.702
70	179,594	1.80E-01	4.49E-04	204.08	7.305	21.348
90	381,704	3.82E-01	9.54E-04	433.75	9.392	49.812
110	696,910	6.97E-01	1.74E-03	791.94	11.479	70.509
130	1,150,347	1.15E+00	2.88E-03	1,307.21	13.566	82.023
150	1,767,146	1.77E+00	4.42E-03	2,008.12	15.653	88.012
180	3,053,628	3.05E+00	7.63E-03	3,470.03	18.784	91.032
210	4,849,048	4.85E+00	1.21E-02	5,510.28	21.914	92.468
240	7,238,229	7.24E+00	1.81E-02	8,225.26	25.045	94.091
270	10,305,995	1.03E+01	2.58E-02	11,711.36	28.175	94.689
300	14,137,167	1.41E+01	3.53E-02	16,064.96	31.306	96.288
350	22,449,298	2.24E+01	5.61E-02	25,510.57	36.524	97.011
400	33,510,322	3.35E+01	8.38E-02	38,079.91	41.741	98.34
450	47,712,938	4.77E+01	1.19E-01	54,219.25	46.959	99.071
500	65,449,847	6.54E+01	1.64E-01	74,374.83	52.177	99.071
600	113,097,336	1.13E+02	2.83E-01	128,519.70	62.612	100

PM10

y2 = ((x2-x1)*(y3-y1))/(x3-x1) + y1

x1	9.392
y1	49.812
x2	10
y2	55.644
x3	11.479
y3	70.509

PM Scalers

Solid Particle Diameter (µm)	EPRI % Mass Smaller
2.087	0.20
3.131	0.23
2.5	0.21
9.392	49.81
11.479	70.51
10	55.84

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Fire Pump Engine Calculations

EID-16- Emergency Fire Water Pump

To Emission Summary

Conversions

Description	Value	Units
Mechanical Conversion	2545	btu/hp
Kilograms to pounds	2.2046	lb/kg

Input Data:

Description	Value Emergency Firewater Pump	Units
Rating	600	hp
Efficiency	60%	
	2.55	MMBtu/hr
Quantity	1	1
Fuel	Propane	
Annual Hours	200	hrs/yr

CARB Standard-Specific Data

Description	Value	Units
NOx	139	lbs/1000 gallon fuel
VOC	83.00	lbs/1000 gallon fuel
CO	129	lbs/1000 gallon fuel
SO2	0.35	lbs/1000 gallon fuel
PM	5	lbs/1000 gallon fuel
PM10	5	lbs/1000 gallon fuel
PM2.5	5	lbs/1000 gallon fuel
Propane HHV	91452	Btu/gallon
	0.091452	MMBtu/gal

40 CFR 98 Mandatory Greenhouse Gas Reporting Data

Description	Value	Units
CO2	62.87	kg/MMBtu
N2O	1.00E-04	kg/MMBtu
Propane HHV	0.091452	MMBtu/gal

Emissions Calculations

Description	Emergency Firewater Pump				Max Hourly	
Total Annual MMBtu	509	MMBtu/yr				
Total Gallons of Propane per year	0.635	Gal/hr	5565.761	Gal/year	27.829	Gal/hr
Emissions NOx	0.088	lb/hr	0.387	tpy	3.868	lb/hr
Emissions VOC	0.053	lb/hr	0.231	tpy	2.310	lb/hr
CO (90-105% load)	0.082	lb/hr	0.359	tpy	3.590	lb/hr
SO2	0.000	lb/hr	0.001	tpy	0.010	lb/hr
PM	0.003	lb/hr	0.014	tpy	0.139	lb/hr
PM 10	0.003	lb/hr	0.014	tpy	0.139	lb/hr
PM 2.5	0.003	lb/hr	0.014	tpy	0.139	lb/hr
CO2	8.054	lb/hr	35.275	tpy	352.745	lb/hr
N2O	0.000	lb/hr	0.000	tpy	0.001	lb/hr
CO2e	8.057	lb/hr	35.291	tpy	352.912	lb/hr

EID-16- Emergency Fire Water Pump

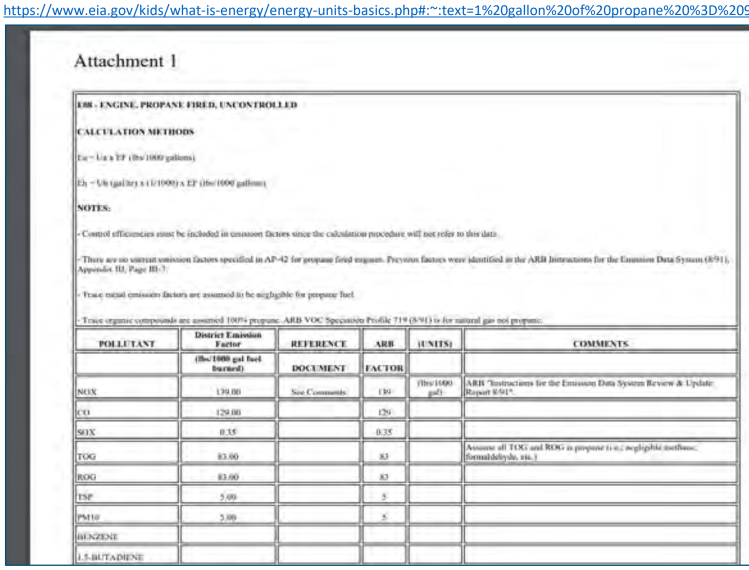
HAP Emissions for Natural Gas 4-stroke Lean-burn engines

Pollutant	Emission Factor	Units	lb/hr	tpy
1,1,2,2-Tetrachloroethane	4.00E-05	lb/MMBtu	1.02E-04	1.02E-05
1,1,2-Trichloroethane	3.18E-05	lb/MMBtu	8.09E-05	8.09E-06
1,3-Butadiene	2.67E-04	lb/MMBtu	6.80E-04	6.80E-05
1,3-Dichloropropene	2.64E-05	lb/MMBtu	6.72E-05	6.72E-06
2-Methylnaphthalene	3.32E-05	lb/MMBtu	8.45E-05	8.45E-06
2,2,4-Trimethylpentane	2.50E-04	lb/MMBtu	6.36E-04	6.36E-05
Acenaphthene	1.25E-06	lb/MMBtu	3.18E-06	3.18E-07
Acenaphthylene	5.53E-06	lb/MMBtu	1.41E-05	1.41E-06
Acetaldehyde	8.36E-03	lb/MMBtu	2.13E-02	2.13E-03
Acrolein	5.14E-03	lb/MMBtu	1.31E-02	1.31E-03
Benzene	4.40E-04	lb/MMBtu	1.12E-03	1.12E-04
Benzo(b)fluoranthene	1.66E-07	lb/MMBtu	4.22E-07	4.22E-08
Benzo(e)pyrene	4.15E-07	lb/MMBtu	1.06E-06	1.06E-07
Benzo(g,h,i)perylene	4.14E-07	lb/MMBtu	1.05E-06	1.05E-07
Biphenyl	2.12E-04	lb/MMBtu	5.40E-04	5.40E-05
Carbon Tetrachloride	3.67E-05	lb/MMBtu	9.34E-05	9.34E-06
Chlorobenzene	3.04E-05	lb/MMBtu	7.74E-05	7.74E-06
Chloroform	2.85E-05	lb/MMBtu	7.25E-05	7.25E-06
Chrysene	6.93E-07	lb/MMBtu	1.76E-06	1.76E-07
Ethylbenzene	3.97E-05	lb/MMBtu	1.01E-04	1.01E-05
Ethylene Dibromide	4.43E-05	lb/MMBtu	1.13E-04	1.13E-05
Fluoranthene	1.11E-06	lb/MMBtu	2.82E-06	2.82E-07
Fluorene	5.67E-06	lb/MMBtu	1.44E-05	1.44E-06
Formaldehyde	5.28E-02	lb/MMBtu	1.34E-01	1.34E-02
Methanol	2.50E-03	lb/MMBtu	6.36E-03	6.36E-04
Methylene Chloride	2.00E-05	lb/MMBtu	5.09E-05	5.09E-06
n-Hexane	1.11E-03	lb/MMBtu	2.82E-03	2.82E-04
Naphthalene	7.44E-05	lb/MMBtu	1.89E-04	1.89E-05
PAH	2.69E-05	lb/MMBtu	6.85E-05	6.85E-06
Phenanthrene	1.04E-05	lb/MMBtu	2.65E-05	2.65E-06
Phenol	2.40E-05	lb/MMBtu	6.11E-05	6.11E-06
Pyrene	1.36E-06	lb/MMBtu	3.46E-06	3.46E-07
Styrene	2.36E-05	lb/MMBtu	6.01E-05	6.01E-06
Tetrachloroethane	2.48E-06	lb/MMBtu	6.31E-06	6.31E-07
Toluene	4.08E-04	lb/MMBtu	1.04E-03	1.04E-04
Vinyl Chloride	1.49E-05	lb/MMBtu	3.79E-05	3.79E-06
Xylene	1.84E-04	lb/MMBtu	4.68E-04	4.68E-05
Total HAP			**1.84E-01**	**1.84E-02**

Notes:

1. NOX, CO, SO2, PM, and VOC were estimated using California Air Resource Board Emission Factors for propane engines as shown below.
2. CO2e = CO2 + N2O * GWP, where N2O GWP = 298 (40 CFR 98, Table A-1). No CH4 in propane.
3. The emission factors for HAPs were based on AP42 3.2-2, "Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines".

APCD-Engine-Propane-Fired-Uncontrolled (sdapcd.org)
https://www.eia.gov/kids/what-is-energy/energy-units-basics.php#:~:text=1%20gallon%20of%20propane%20%3D%2091%2C452%20Btu



Attachment 1

E88 - ENGINE, PROPANE FIRED, UNCONTROLLED

CALCULATION METHODS

Ea = Ua x EF (lbs/1000 gallons)

Eh = Uh (gal/hr) x (1/1000) x EF (lbs/1000 gallons)

NOTES:

- Control efficiencies must be included in emission factors since the calculation procedure will not refer to this data.

- There are no current emission factors specified in AP-42 for propane fired engines. Previous factors were identified in the ARB Instructions for the Emission Data System (8/91), Appendix III, Page III-7.

- Trace metal emission factors are assumed to be negligible for propane fuel.

- Trace organic compounds are assumed 100% propane. ARB VOC Speciation Profile 719 (8/91) is for natural gas not propane.

POLLUTANT	District Emission Factor	REFERENCE	ARB	(UNITS)	COMMENTS
	(lbs/1000 gal fuel burned)	DOCUMENT	FACTOR		
NOX	139.00	See Comments	139	(lbs/1000 gal)	ARB "Instructions for the Emission Data System Review & Update Report 8/91".
CO	129.00		129		
SOX	0.35		0.35		
TOG	83.00		83		Assume all TOG and ROG is propane (i.e.; negligible methane, formaldehyde, etc.)
ROG	83.00		83		
TSP	5.00		5		
PM10	5.00		5		
BENZENE					
1,3-BUTADIENE					

Above: CARB Emission Factors for Propane Engines

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Fire Pump Engine Calculations

EID-17- Emergency Fire Water Pump

To Emission Summary

Conversions

Description	Value	Units
Mechanical Conversion	2545	btu/hp
Kilograms to pounds	2.2046	lb/kg

Input Data:

Description	Value	Units
	Cooling Water Pump	
Rating	200	hp
Efficiency	60%	
	0.85	MMBtu/hr
Quantity		1
Fuel	Propane	
Annual Hours	200	hrs/yr

CARB Standard-Specific Data

Description	Value	Units
NOx	139	lbs/1000 gallon fuel
VOC	83.00	lbs/1000 gallon fuel
CO	129	lbs/1000 gallon fuel
SO2	0.35	lbs/1000 gallon fuel
PM	5	lbs/1000 gallon fuel
PM10	5	lbs/1000 gallon fuel
PM2.5	5	lbs/1000 gallon fuel
Propane HHV	91452	Btu/gallon
	0.091452	MMBtu/gal

40 CFR 98 Mandatory Greenhouse Gas Reporting Data

Description	Value	Units
CO2	62.87	kg/MMBtu
N2O	1.00E-04	kg/MMBtu
Propane HHV	0.091452	MMBtu/gal

Emissions Calculations

Description	Cooling Water Pump				Max Hourly	
Total Annual MMBtu	169.6666667	MMBtu				
Total Gallons of Propane per year	0.212	Gal/hr	1855.254	Gal/year	9.276	Gal/hr
Emissions NOx	0.029	lb/hr	0.129	tpy	1.289	lb/hr
Emissions VOC	0.018	lb/hr	0.077	tpy	0.770	lb/hr
CO (90-105% load)	0.027	lb/hr	0.120	tpy	1.197	lb/hr
SO2	0.000	lb/hr	0.000	tpy	0.003	lb/hr
PM	0.001	lb/hr	0.005	tpy	0.046	lb/hr
PM 10	0.001	lb/hr	0.005	tpy	0.046	lb/hr
PM 2.5	0.001	lb/hr	0.005	tpy	0.046	lb/hr
CO2	2.685	lb/hr	11.758	tpy	117.582	lb/hr
N2O	0.000	lb/hr	0.000	tpy	0.000	lb/hr
CO2e	2.686	lb/hr	11.764	tpy	117.637	lb/hr

EID-17- Emergency Fire Water Pump

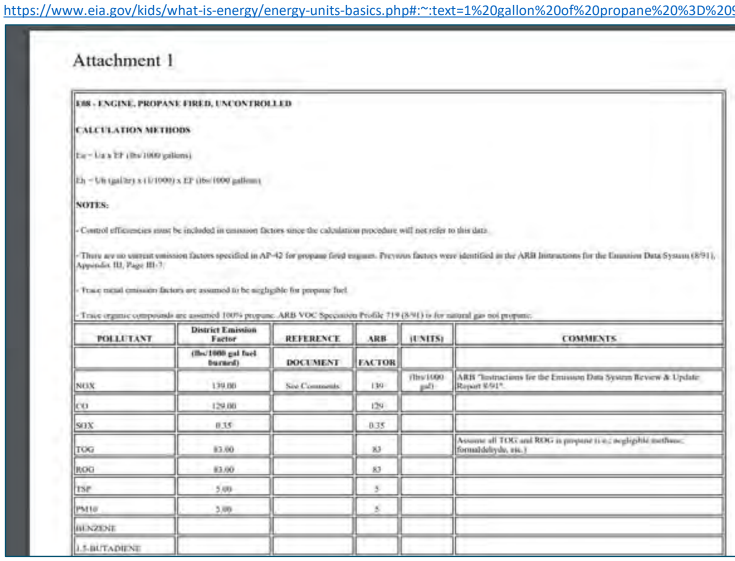
HAP Emissions for Natural Gas 4-stroke Lean-burn engines

Pollutant	Emission Factor	Units	lb/hr	tpy
1,1,2,2-Tetrachloroethane	4.00E-05	lb/MMBtu	3.39E-05	3.39E-06
1,1,2-Trichloroethane	3.18E-05	lb/MMBtu	2.70E-05	2.70E-06
1,3-Butadiene	2.67E-04	lb/MMBtu	2.27E-04	2.27E-05
1,3-Dichloropropene	2.64E-05	lb/MMBtu	2.24E-05	2.24E-06
2-Methylnaphthalene	3.32E-05	lb/MMBtu	2.82E-05	2.82E-06
2,2,4-Trimethylpentane	2.50E-04	lb/MMBtu	2.12E-04	2.12E-05
Acenaphthene	1.25E-06	lb/MMBtu	1.06E-06	1.06E-07
Acenaphthylene	5.53E-06	lb/MMBtu	4.69E-06	4.69E-07
Acetaldehyde	8.36E-03	lb/MMBtu	7.09E-03	7.09E-04
Acrolein	5.14E-03	lb/MMBtu	4.36E-03	4.36E-04
Benzene	4.40E-04	lb/MMBtu	3.73E-04	3.73E-05
Benzo(b)fluoranthene	1.66E-07	lb/MMBtu	1.41E-07	1.41E-08
Benzo(e)pyrene	4.15E-07	lb/MMBtu	3.52E-07	3.52E-08
Benzo(g,h,i)perylene	4.14E-07	lb/MMBtu	3.51E-07	3.51E-08
Biphenyl	2.12E-04	lb/MMBtu	1.80E-04	1.80E-05
Carbon Tetrachloride	3.67E-05	lb/MMBtu	3.11E-05	3.11E-06
Chlorobenzene	3.04E-05	lb/MMBtu	2.58E-05	2.58E-06
Chloroform	2.85E-05	lb/MMBtu	2.42E-05	2.42E-06
Chrysene	6.93E-07	lb/MMBtu	5.88E-07	5.88E-08
Ethylbenzene	3.97E-05	lb/MMBtu	3.37E-05	3.37E-06
Ethylene Dibromide	4.43E-05	lb/MMBtu	3.76E-05	3.76E-06
Fluoranthene	1.11E-06	lb/MMBtu	9.42E-07	9.42E-08
Fluorene	5.67E-06	lb/MMBtu	4.81E-06	4.81E-07
Formaldehyde	5.28E-02	lb/MMBtu	4.48E-02	4.48E-03
Methanol	2.50E-03	lb/MMBtu	2.12E-03	2.12E-04
Methylene Chloride	2.00E-05	lb/MMBtu	1.70E-05	1.70E-06
n-Hexane	1.11E-03	lb/MMBtu	9.42E-04	9.42E-05
Naphthalene	7.44E-05	lb/MMBtu	6.31E-05	6.31E-06
PAH	2.69E-05	lb/MMBtu	2.28E-05	2.28E-06
Phenanthrene	1.04E-05	lb/MMBtu	8.82E-06	8.82E-07
Phenol	2.40E-05	lb/MMBtu	2.04E-05	2.04E-06
Pyrene	1.36E-06	lb/MMBtu	1.15E-06	1.15E-07
Styrene	2.36E-05	lb/MMBtu	2.00E-05	2.00E-06
Tetrachloroethane	2.48E-06	lb/MMBtu	2.10E-06	2.10E-07
Toluene	4.08E-04	lb/MMBtu	3.46E-04	3.46E-05
Vinyl Chloride	1.49E-05	lb/MMBtu	1.26E-05	1.26E-06
Xylene	1.84E-04	lb/MMBtu	1.56E-04	1.56E-05
Total HAP			**6.12E-02**	**6.12E-03**

Notes:

1. NOX, CO, SO2, PM, and VOC were estimated using California Air Resource Board Emission Factors for propane engines as shown below.
2. CO2e = CO2 + N2O * GWP, where N2O GWP = 298 (40 CFR 98, Table A-1). No CH4 in propane.
3. The emission factors for HAPs were based on AP42 3.2-2, "Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines".

APCD-Engine-Propane-Fired-Uncontrolled (sdapcd.org)
https://www.eia.gov/kids/what-is-energy/energy-units-basics.php#:~:text=1%20gallon%20of%20propane%20%3D%2091%2C452%20Btu



Attachment 1

E88 - ENGINE, PROPANE FIRED, UNCONTROLLED

CALCULATION METHODS

Ea = Ua x EF (lbs/1000 gallons)

Eh = Uh (gal/hr) x (1/1000) x EF (lbs/1000 gallons)

NOTES:

- Control efficiencies must be included in emission factors since the calculation procedure will not refer to this data.

- There are no current emission factors specified in AP-42 for propane fired engines. Previous factors were identified in the ARB Instructions for the Emission Data System (8/91), Appendix III, Page III-7.

- Trace metal emission factors are assumed to be negligible for propane fuel.

- Trace organic compounds are assumed 100% propane. ARB VOC Speciation Profile 719 (8/91) is for natural gas not propane.

POLLUTANT	District Emission Factor	REFERENCE	ARB	(UNITS)	COMMENTS
	(lbs/1000 gal fuel burned)	DOCUMENT	FACTOR		
NOX	139.00	See Comments	139	(lbs/1000 gal)	ARB "Instructions for the Emission Data System Review & Update Report 8/91".
CO	129.00		129		
SOX	0.35		0.35		
TOG	83.00		83		Assume all TOG and ROG is propane (i.e.; negligible methane, formaldehyde, etc.)
ROG	83.00		83		
TSP	5.00		5		
PM10	5.00		5		
BENZENE					
1,3-BUTADIENE					

Above: CARB Emission Factors for Propane Engines

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Emergency Engine Calculations

EID-18- Emergency Generator

To Emission Summary

Conversions

Description	Value	Units
Mechanical Conversion	2545	btu/hp
Kilograms to pounds	2.2046	lb/kg

Input Data:

Description	Value	Units
Rating	2682	hp
Efficiency	60%	
	11.38	MMBtu/hr
Quantity	1	
Fuel	propane	
Annual Hours	200	hrs/yr

CARB Standard-Specific Data

Description	Value	Units
NOx	139	lbs/1000 gallon fuel
VOC	83.00	lbs/1000 gallon fuel
CO	129	lbs/1000 gallon fuel
SO2	0.35	lbs/1000 gallon fuel
PM	5	lbs/1000 gallon fuel
PM10	5	lbs/1000 gallon fuel
PM2.5	5	lbs/1000 gallon fuel
Propane HHV	91452	Btu/gallon
	0.091	MMBtu/gal

40 CFR 98 Mandatory Greenhouse Gas Reporting Data

Description	Value	Units
CO2	62.87	kg/MMBtu
N2O	1.00E-04	kg/MMBtu
Propane HHV	0.091	MMBtu/gal

Emission Calculations

Description	Value	Units	Conversion	Units	Max Hourly	
Total Annual MMBtu	2275.23	MMBTU/yr	-	-		
Total Gallons of Propane per year	2.840	Gal/hr	24878.95	gallons per year	124.395	Gal/hr
Emissions NOx	0.395	lbs/hr	1.729	tpy	17.291	lb/hr
Emissions VOC	0.236	lbs/hr	1.032	tpy	10.325	lb/hr
CO (90-105% load)	0.366	lbs/hr	1.605	tpy	16.047	lb/hr
SO2	0.001	lbs/hr	0.004	tpy	0.044	lb/hr
PM	0.014	lbs/hr	0.062	tpy	0.622	lb/hr
PM 10	0.014	lbs/hr	0.062	tpy	0.622	lb/hr
PM 2.5	0.014	lbs/hr	0.062	tpy	0.622	lb/hr
CO2	35.999	lb/hr	157.677	tpy	1576.771	lb/hr
N2O	0.000	lb/hr	0.000	tpy	0.003	lb/hr
CO2e	36.016	lb/hr	157.752	tpy	1577.518	lb/hr

EID-18- Emergency Generator

HAP Emissions for Natural Gas 4-stroke Lean-burn engines

Pollutant	Emission Factor	Units	lb/hr	tpy
1,1,2,2-Tetrachloroethane	4.00E-05	lb/MMBtu	4.55E-04	4.55E-05
1,1,2-Trichloroethane	3.18E-05	lb/MMBtu	3.62E-04	3.62E-05
1,3-Butadiene	2.67E-04	lb/MMBtu	3.04E-03	3.04E-04
1,3-Dichloropropene	2.64E-05	lb/MMBtu	3.00E-04	3.00E-05
2-Methylnaphthalene	3.32E-05	lb/MMBtu	3.78E-04	3.78E-05
2,2,4-Trimethylpentane	2.50E-04	lb/MMBtu	2.84E-03	2.84E-04
Acenaphthene	1.25E-06	lb/MMBtu	1.42E-05	1.42E-06
Acenaphthylene	5.53E-06	lb/MMBtu	6.29E-05	6.29E-06
Acetaldehyde	8.36E-03	lb/MMBtu	9.51E-02	9.51E-03
Acrolein	5.14E-03	lb/MMBtu	5.85E-02	5.85E-03
Benzene	4.40E-04	lb/MMBtu	5.01E-03	5.01E-04
Benzo(b)fluoranthene	1.66E-07	lb/MMBtu	1.89E-06	1.89E-07
Benzo(e)pyrene	4.15E-07	lb/MMBtu	4.72E-06	4.72E-07
Benzo(g,h,i)perylene	4.14E-07	lb/MMBtu	4.71E-06	4.71E-07
Biphenyl	2.12E-04	lb/MMBtu	2.41E-03	2.41E-04
Carbon Tetrachloride	3.67E-05	lb/MMBtu	4.18E-04	4.18E-05
Chlorobenzene	3.04E-05	lb/MMBtu	3.46E-04	3.46E-05
Chloroform	2.85E-05	lb/MMBtu	3.24E-04	3.24E-05
Chrysene	6.93E-07	lb/MMBtu	7.88E-06	7.88E-07
Ethylbenzene	3.97E-05	lb/MMBtu	4.52E-04	4.52E-05
Ethylene Dibromide	4.43E-05	lb/MMBtu	5.04E-04	5.04E-05
Fluoranthene	1.11E-06	lb/MMBtu	1.26E-05	1.26E-06
Fluorene	5.67E-06	lb/MMBtu	6.45E-05	6.45E-06
Formaldehyde	5.28E-02	lb/MMBtu	6.01E-01	6.01E-02
Methanol	2.50E-03	lb/MMBtu	2.84E-02	2.84E-03
Methylene Chloride	2.00E-05	lb/MMBtu	2.28E-04	2.28E-05
n-Hexane	1.11E-03	lb/MMBtu	1.26E-02	1.26E-03
Naphthalene	7.44E-05	lb/MMBtu	8.46E-04	8.46E-05
PAH	2.69E-05	lb/MMBtu	3.06E-04	3.06E-05
Phenanthrene	1.04E-05	lb/MMBtu	1.18E-04	1.18E-05
Phenol	2.40E-05	lb/MMBtu	2.73E-04	2.73E-05
Pyrene	1.36E-06	lb/MMBtu	1.55E-05	1.55E-06
Styrene	2.36E-05	lb/MMBtu	2.68E-04	2.68E-05
Tetrachloroethane	2.48E-06	lb/MMBtu	2.82E-05	2.82E-06
Toluene	4.08E-04	lb/MMBtu	4.64E-03	4.64E-04
Vinyl Chloride	1.49E-05	lb/MMBtu	1.70E-04	1.70E-05
Xylene	1.84E-04	lb/MMBtu	2.09E-03	2.09E-04
Total HAP			**8.21E-01**	**8.21E-02**

Notes:

1. NOX, CO, SO2, PM, and VOC were estimated using California Air Resource Board Emission Factors for propane engines as shown below.
2. CO2e = CO2 + N2O * GWP, where N2O GWP = 298 (40 CFR 98, Table A-1). No CH4 in propane.
3. The emission factors for HAPs were based on AP42 3.2-2, "Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines".

APCD-Engine-Propane-Fired-Uncontrolled (sdapcd.org)

Attachment 1

E88 - ENGINE, PROPANE FIRED, UNCONTROLLED

CALCULATION METHODS

Ea = Ua x EF (lbs/1000 gallons)

Eh = Uh (gal/hr) x (1/1000) x EF (lbs/1000 gallons)

NOTES:

- Control efficiencies must be included in emission factors since the calculation procedure will not refer to this data.

- There are no current emission factors specified in AP-42 for propane fired engines. Previous factors were identified in the ARB Instructions for the Emission Data System (8/91), Appendix III, Page III-7.

- Trace metal emission factors are assumed to be negligible for propane fuel.

- Trace organic compounds are assumed 100% propane. ARB VOC Speciation Profile 719 (8/91) is for natural gas not propane.

POLLUTANT	District Emission Factor	REFERENCE	ARB	(UNITS)	COMMENTS
	(lbs/1000 gal fuel burned)	DOCUMENT	FACTOR		
NOX	139.00	See Comments	139	(lbs/1000 gal)	ARB "Instructions for the Emission Data System Review & Update Report 8/91".
CO	129.00		129		
SOX	0.35		0.35		
TOG	83.00		83		Assume all TOG and ROG is propane (i.e.; negligible methane, formaldehyde, etc.)
ROG	83.00		83		
TSP	5.00		5		
PM10	5.00		5		
BENZENE					
1,3-BUTADIENE					

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Diesel and Gasoline Storage Tank Calculations

EID-19 & EID-20 - - Diesel Storage Tanks
EID-21 & EID-22 - - Diesel and Gasoline Storage Tanks

To Emission Summary

	Inputs	
	Assumed values	
1 gal	7.480519	ft^3

Input Data:

Parameter	Variable	Units	EID-19	EID-20	EID-21	EID-22	Information Source
			Vertical	Vertical	Horizontal	Horizontal	
			Diesel	Diesel	Gasoline	Gasoline	
ANNUAL STANDING STORAGE LOSS, L_S							
Standing Storage Losses	**L_S**	**lbs/yr**	**0.62**	**0.20**	**507.25**	**364.43**	AP-42 Section 7.1, Eqn. (1-2) (Jun 2020): $L_S = 365\ V_V\ W_V\ K_E\ K_S$
Vapor Space Volume	V_V	ft^3	114.37	36.41	680.83	453.89	Calculated below - AP-42 Section 7.1 Eqn. (1-3) (Jun 2020): $V_V = (\pi/4 \times D^2)\ H_{VO}$
Stock Vapor Density	W_V	lbs/ft^3	2.20E-04	2.20E-04	0.07	0.07	Calculated below - AP-42 Section 7.1 Eqn. (1-22) (Jun 2020): $W_v = (M_v\ P_{VA})/(R\ T_V)$
Vapor Space Expansion Factor	K_E	day^{-1}	0.07	0.07	0.07	0.07	Calculated below - AP-42 Section 7.1 Eqn. (1-12) (Jun 2020): $K_E = 0.0018\Delta T_V$
Vented Vapor Saturation Factor	K_S	Dimensionless	1.00	1.00	0.43	0.46	Calculated below - AP-42 Section 7.1 Eqn. (1-21) (Jun 2020): $K_s = 1/(1+0.053 P_{VA} H_{VO})$
TANK VAPOR SPACE VOLUME, V_V							
Vapor Space Volume	**V_V**	**ft^3**	**114.37**	**36.41**	**680.83**	**453.89**	AP-42 Section 7.1, Eqn. (1-3) (Jun 2020): $V_V = (\pi/4 \times D^2)\ H_{VO}$
Tank Radius	R_S	ft	5	3	5	5	
Vapor Space Outage	H_{VO}	ft	1.55	1.06	4.12	3.60	AP-42 Section 7.1, Eqn. (1-16) (Jun 2020): $H_{VO} = H_S - H_L + H_{RO}$
Shell Height (Vertical) or Shell Length (Horizontal)	Hs or L	ft	15	10	16	14	
Average Liquid Height	H_L	ft	13.07	8.93	12.59	11.00	TK-1, TK-2: 90% of shell height TK-3A to TK-SW1: 80% of shell height
Roof Outage	H_{RO}	ft	0.10	0.07	0.11	0.10	AP-42 Section 7.1, Eqn. (1-17) (Jun 2020): $H_{RO} = 1/3\ H_R$ (for a cone roof)
Tank Roof Height	H_R	ft	0.30	0.21	0.33	0.29	AP-42 Section 7.1, Eqn. (1-18) (Jun 2020): $H_R = S_R R_S$, used standard value of 0.0625 ft/ft for S_R, and R_S is the

EID-19 & EID-20 - - Diesel Storage Tanks
EID-21 & EID-22 - - Diesel and Gasoline Storage Tanks

Parameter	Variable	Units	EID-19	EID-20	EID-21	EID-22	Information Source
			Vertical	Vertical	Horizontal	Horizontal	
			Diesel	Diesel	Gasoline	Gasoline	
STOCK VAPOR DENSITY, W_V							
Stock Vapor Density	**W_V**	**lb/ft^3**	**2.20E-04**	**2.20E-04**	**0.07**	**0.07**	AP-42 Section 7.1, Eqn. (1-22) (Jun 2020): $W_V = (M_V P_{VA})/(R T_V)$
Vapor Molecular Weight	M_V	lb/lb-mole	130	130	67.00	67.00	Diesel: AP-42 Section 7.1, Table 7.1-2 (Jun 2020), No. 2 Fuel Oil (Diesel).
Average Daily Liquid Surface Temperature	$T_{LA,avg}$	°R	532.32	532.32	532.32	532.32	AP-42 Section 7.1, Eqn. (1-28) (Jun 2020): $T_{LA,avg} = 0.4T_{AA} + 0.6T_{B,avg} + 0.005\alpha I_{avg}$
Maximum Daily Liquid Surface Temperature	$T_{LA,max}$	°R	543.09	543.09	543.09	543.09	AP-42 Section 7.1, Eqn. (1-28) (Jun 2020): $T_{LA,max} = 0.4T_{AA} + 0.6T_{B,max} + 0.005\alpha I_{max}$
Vapor Pressure Equation Constant - A	A	Dimensionless	12.101	12.101	--	--	Diesel: AP-42 Section 7.1, Table 7.1-2 (Jun 2020), No. 2 Fuel Oil (Diesel).
Vapor Pressure Equation Constant - B	B	°R	8,907.0	8,907.0	--	--	Diesel: AP-42 Section 7.1, Table 7.1-2 (Jun 2020), No. 2 Fuel Oil (Diesel).
Vapor Pressure - Average	$P_{VA,avg}$	psia	9.74E-03	9.74E-03	6.067	6.067	Diesel: AP-42 Section 7.1, Eqn. (1-25) (Jun 2020): $P_{VA,avg} = \exp[A - (B/T_{LA,avg})]$; where $T_{LA,avg}$ is in °R.
Vapor Pressure - Maximum	$P_{VA,max}$	psia	0.014	0.014	6.712	6.712	Diesel: AP-42 Section 7.1, Eqn. (1-25) (Jun 2020): $P_{VA,max} = \exp[A - (B/T_{LA,max})]$; where $T_{LA,max}$ is in °R.
Ideal Gas Constant	R	psia ft^3 / lb-mole R	10.731	10.731	10.731	10.731	
Average Daily Ambient Temperature	T_{AA}	°R	525.07	525.07	525.07	525.07	AP-42 Section 7.1, Eqn. (1-30) (Jun 2020): $T_{AA} = (T_{AX} + T_{AN}) / 2$
Tank Paint Solar Absorptance	α_S	Dimensionless	0.64	0.64	0.64	0.64	AP-42 Section 7.1 Table 7.1-6 (Jun 2020), average diffuse aluminum tank.
Daily Total Solar Insolation - Average	I_{avg}	BTU/ft^2-day	1,666	1,666	1,666	1,666	AP-42 Section 7.1, Table 7.1-7 (Jun 2020), annual value for Bakersfield, CA
Daily Total Solar Insolation - Maximum	I_{max}	BTU/ft^2-day	2,570	2,570	2,570	2,570	AP-42 Section 7.1, Table 7.1-7 (Jun 2020), maximum (May) value for Bakersfield, CA
Liquid Bulk Temperature - Average	$T_{B,avg}$	°R	528.27	528.27	528.27	528.27	AP-42 Section 7.1, Eqn. (1-31) (Jun 2020): $T_{B,avg} = T_{AA} + 0.003\alpha_S I_{avg}$
Liquid Bulk Temperature - Maximum	$T_{B,max}$	°R	541.40	541.40	541.40	541.40	AP-42 Section 7.1, Eqn. (1-31) (Jun 2020): $T_{B,max} = T_{AX} + 0.003\alpha_S I_{max}$
Average Vapor Temperature	$T_{V,avg}$	°R	535.63	535.63	535.63	535.63	AP-42 Section 7.1, Eqn. (1-33) (Jun 2020): $T_{V,avg} = 0.7T_{AA} + 0.3T_{B,avg} + 0.009\alpha I_{avg}$

EID-19 & EID-20 - - Diesel Storage Tanks
EID-21 & EID-22 - - Diesel and Gasoline Storage Tanks

Parameter	Variable	Units	EID-19	EID-20	EID-21	EID-22	Information Source
			Vertical	Vertical	Horizontal	Horizontal	
			Diesel	Diesel	Gasoline	Gasoline	
VAPOR SPACE EXPANSION FACTOR, K_E							
Vapor Space Expansion Factor	**K_E**	day^{-1}	**0.07**	**0.07**	**0.07**	**0.07**	AP-42 Section 7.1, Eqn. (1-12) (Jun 2020): $K_E = 0.0018 \Delta T_V = 0.0018 [0.7 (T_{AX} – T_{AN}) + 0.02\alpha I]$
Average Daily Vapor Temperature Range	ΔT_V	°R	37.28	37.28	37.28	37.28	AP-42 Section 7.1, Eqn. (1-7) for uninsulated tanks (Jun 2020): $\Delta T_V = 0.7 \Delta T_A + 0.02\alpha I$
Average Daily Ambient Temperature Range	ΔT_A	°R	22.80	22.80	22.80	22.80	AP-42 Section 7.1, Eqn. (1-11) (Jun 2020): $\Delta T_A = T_{AX} - T_{AN}$
Average Daily Maximum Ambient Temperature	T_{AX}	°R	536.47	536.47	536.47	536.47	Based on 76.8 °F; AP-42 Section 7.1 (Jun 2020), Table 7.1-7, annual value for Bakersfield, CA, converted to °R by adding 459.67.
Average Daily Minimum Ambient Temperature	T_{AN}	°R	513.67	513.67	513.67	513.67	Based on 54 °F; AP-42 Section 7.1 (Jun 2020), Table 7.1-7, annual value for Bakersfield, CA, converted to °R by adding 459.67.
Tank Paint Solar Absorptance	α	Dimensionless	0.64	0.64	0.64	0.64	AP-42 Section 7.1 Table 7.1-6 (Jun 2020), average diffuse aluminum tank.
Daily Total Solar Insolation - Average	I_{avg}	BTU/ft^2-day	1,666	1,666	1,666	1,666	AP-42 Section 7.1, Table 7.1-7 (Jun 2020), annual value for Bakersfield, CA
VENTED VAPOR SATURATION FACTOR, Ks							
Vented Vapor Saturation Factor	**K_s**	**Dimensionless**	**1.00**	**1.00**	**0.43**	**0.46**	AP-42 Section 7.1, Eqn. (1-21) (Jun 2020): $K_s = 1/(1+0.053 P_{VA} H_{VO})$
Vapor Pressure	P_{VA}	psia	9.74E-03	9.74E-03	6.067	6.067	Diesel: AP-42 Section 7.1, Eqn. (1-25) (Jun 2020): $P_{VA,avg} = \exp [A - (B/T_{LA,avg})]$; where $T_{LA,avg}$ is in °R.
Vapor Space Outage	H_{VO}	ft	1.55	1.06	4.12	3.60	Calculated above - AP-42 Section 7.1, Eqn. (1-16) (Jun 2020): $H_{VO} = H_S - H_L + H_{RO}$
ANNUAL WORKING LOSS, L_W							
Working Losses	**L_W**	**lbs/yr**	**5.89**	**1.47**	**118.16**	**59.08**	AP-42 Section 7.1, Eqn. (1-35) (Jun 2020): $L_W = V_Q K_N K_P W_V K_B$
Net Throughput	Q	bbl/yr-tank	4,761.90	1,190.48	297.62	148.81	
Net Working Loss Throughput	V_Q	ft^3/yr	26,733	6,683	1,671	835	AP-42 Section 7.1, Eqn. (1-39) (Jun 2020): $V_Q = 5.614 Q$
Working Loss Turnover Factor	K_N	Dimensionless	1	1	1	1	AP-42 Section 7.1, Eqn. (1-35) (Jun 2020): for turnovers > 36, $K_N = (180 + N)/6N$;
Working Loss Product Factor	K_P	Dimensionless	1	1	1	1	Variable definition in AP-42 Section 7.1, Eqn. (1-35) (Jun 2020), $K_P = 1$ for organic liquids not crude oils.
Stock Vapor Density	W_V	lb/ft^3	2.20E-04	2.20E-04	0.07	0.07	Calculated above - AP-42 Section 7.1, Eqn. (1-22) (Jun 2020): $W_V = (M_V P_{VA})/(R T_V)$
Vent Setting Correction Factor	K_B	Dimensionless	1.00	1.00	1.00	1.00	AP-42 Section 7.1, Eqn. (1-35) (Jun 2020), default vent settings
Number of Turnovers per Year	N	turnovers / year-tank	28.99	24.59	1.23	0.92	AP-42 Section 7.1, Eqn. (1-36) (Jun 2020): $N = \sum H_{QI} / (H_{LX} - H_{LN})$
Annual Sum of the Increases in Liquid Level	$\sum H_{QI}$	ft/yr	363.06	194.69	10.11	6.63	AP-42 Section 7.1, Eqn. (1-37) (Jun 2020): $\sum H_{QI} = (5.614 Q) / ((\pi/4) D^2)$
Turnover Rate	-	Dimensionless	25.00	25.00	25.00	25.00	
Tank Capacity	-	bbl	190.48	47.62	11.90	5.95	
Tank Diameter	D	ft	10	7	10	9	
Max Liquid Height	H_{LX}	ft	13.52	8.92	8.24	7.20	AP-42 Section 7.1, Eqn. (1-37) (Jun 2020) note: if unknown, use 1 ft less than the height for vertical tanks
Min Liquid Height	H_{LN}	ft	1.00	1.00	0.00	0.00	AP-42 Section 7.1, Eqn. (1-37) (Jun 2020) note: assume 1 for vertical tanks and 0 for horizontal tanks if minimum

EID-19 & EID-20 - - Diesel Storage Tanks
EID-21 & EID-22 - - Diesel and Gasoline Storage Tanks

Parameter	Variable	Units	EID-19	EID-20	EID-21	EID-22	Information Source
			Vertical	Vertical	Horizontal	Horizontal	
			Diesel	Diesel	Gasoline	Gasoline	
HOURLY WORKING LOSS							
Maximum Hourly Working Loss	L_{MAX}	**lbs/hr-tank**	**0.05**	**0.03**	**1.01**	**1.01**	TCEQ APDG 6250v3 Estimating Short Term Emission Rates from Fixed Roof Tanks (Feb 2020):
Vapor Molecular Weight	M_V	lb/lb-mole	130	130	67.00	67.00	Diesel: AP-42 Section 7.1, Table 7.1-2 (Jun 2020), No. 2 Fuel Oil (Diesel).
Vapor Pressure	P_{VA}	psia	0.014	0.014	6.712	6.712	Calculated above - AP-42 Section 7.1, Eqn. (1-25) (Jun 2020): $P_{VA,max}$ = exp [A - (B/$T_{LA,max}$)]; where $T_{LA,max}$ is in °R.
Ideal Gas Constant	R	(psia-gal) / (lb-mol-°R)	80.273	80.273	80.273	80.273	
Maximum Temperature	T_{max}	°R	554.67	554.67	554.67	554.67	Maximum of 95°F and $T_{LA,max}$ (calculated, above)
Maximum Fill Rate	FR_M	gal/hour	1,200	800	100	100	
TOTAL LOSS							
Total Losses	L_T	**lbs/yr-tank**	**6.51**	**1.67**	**625.41**	**423.51**	AP-42 Section 7.1, Eqn. (1-1) (Jun 2020): $L_T = L_S + L_W$
		tpy/tank	**3.25E-03**	**8.34E-04**	**0.31**	**0.21**	
Standing Losses	L_S	**lbs/yr-tank**	**0.62**	**0.20**	**507.25**	**364.43**	AP-42 Section 7.1, Eqn. (1-2) (Jun 2020): $L_S = 365\ V_V\ W_V\ K_E\ K_S$
Working Losses	L_W	**lbs/yr-tank**	**5.89**	**1.47**	**118.16**	**59.08**	AP-42 Section 7.1, Eqn. (1-35) (Jun 2020): $L_W = V_Q\ K_N\ K_P\ W_V\ K_B$
Hourly Losses	L_{max}	**lbs/hr-tank**	**0.05**	**0.03**	**1.01**	**1.01**	TCEQ APDG 6250v3 Estimating Short Term Emission Rates from Fixed Roof Tanks (Feb 2020):
VOC Losses							
VOC Content	**VOC Wt %**	**%**	**100%**	**100%**	**100%**	**100%**	
Total VOC Losses	L_T	**lbs/yr-tank**	**6.51**	**1.67**	**625.41**	**423.51**	Total Losses x VOC Wt %
		tpy/tank	**3.25E-03**	**8.34E-04**	**0.31**	**0.21**	
Standing VOC Losses	L_S	**lbs/yr-tank**	**0.62**	**0.20**	**507.25**	**364.43**	Standing Losses x VOC Wt %
Working VOC Losses	L_W	**lbs/yr-tank**	**5.89**	**1.47**	**118.16**	**59.08**	Working Losses x VOC Wt %
Hourly VOC Losses	L_{max}	**lbs/hr-tank**	**0.05**	**0.03**	**1.01**	**1.01**	Hourly Losses x VOC Wt %

EID-19 & EID-20 - - Diesel Storage Tanks
EID-21 & EID-22 - - Diesel and Gasoline Storage Tanks

Emission Summary

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy
EID-19	Diesel Tank - 8000 Gallons Capacity	-	-	-	-	-	-	-	-	-	-	-	-
EID-20	Diesel Tank - 2000 Gallons Capacity	-	-	-	-	-	-	-	-	-	-	-	-
EID-21	Gasoline Tank - 500 Gallons Capacity	-	-	-	-	-	-	-	-	-	-	-	-
EID-22	Gasoline Tank - 250 Gallons Capacity	-	-	-	-	-	-	-	-	-	-	-	-

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	lb/hr	tpy
EID-19	Diesel Tank - 8000 Gallons Capacity	-	-	-	7.43E-04	7.43E-04	3.25E-03	-	-	-	-	-
EID-20	Diesel Tank - 2000 Gallons Capacity	-	-	-	1.91E-04	1.91E-04	8.34E-04	-	-	-	-	-
EID-21	Gasoline Tank - 500 Gallons Capacity	-	-	-	7.14E-02	7.14E-02	3.13E-01	-	-	-	-	-
EID-22	Gasoline Tank - 250 Gallons Capacity	-	-	-	4.83E-02	4.83E-02	2.12E-01	-	-	-	-	-

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EID-19	Diesel Tank - 8000 Gallons Capacity	-	-	-	-	-	-	-	-	-	-
EID-20	Diesel Tank - 2000 Gallons Capacity	-	-	-	-	-	-	-	-	-	-
EID-21	Gasoline Tank - 500 Gallons Capacity	-	-	-	-	-	-	-	-	-	-
EID-22	Gasoline Tank - 250 Gallons Capacity	-	-	-	-	-	-	-	-	-	-

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Paved Facility Road Calculations

EID-23- Paved Facility Roads

To Emission Summary

Input Data

Description	Value	Units	References
Gasoline Conversion	0.00284	tons/gal	coolconversion.com
Diesel Conversion	28.555828	gal/ton	convertunits.com
Mean vehicle weight (W)	40.02	tons	Pertinent to PSG site.

Emission Factor Equation Variable Input

Constant	PM2.5	PM10	TSP	Reference
k (lb/VMT)	0.00054	0.0022	0.011	Table AP-42 13.2.1-1
sL (g/m^2)	3.34	3.34	3.34	CMC Mesa: 2008 TSD of MCAQD Permit V07-001 contained in Appendix E

Vehicle Miles Traveled (VMT) Calculation

Material Handling	Throughput	Units	dditional Conversions (if necessar		Truck Capacity (tons)	Mean Vehicle Weight (tons)	Vehicles per Year		Average Miles Traveled (round trip onsite)		VMT	TSP EF lbs/VMT	PM10 EF lbs/VMT	PM2.5 EF lbs/VMT
Steel	456000	tpy			40	40	11400		0.303	miles	3454.0	1.37	0.27	0.07
Diesel	52000	gal/yr	1821.0	tpy	40	40	46		0.967	miles	44.0	1.37	0.27	0.07
Gasoline	3500	gal/yr	9.94	tpy	40	40	0		0.967	miles	0.2	1.37	0.27	0.07
Alloy	11902	tpy			40	40	298		0.967	miles	287.8	1.37	0.27	0.07
Carbon	9550	tpy			40	40	239		0.967	miles	230.9	1.37	0.27	0.07
Lime	9550	tpy			40	40	239		0.967	miles	230.9	1.37	0.27	0.07
Dolomite	9550	tpy			40	40	239		0.967	miles	230.9	1.37	0.27	0.07
Scrap	500780	tpy			40	40	12520		0.684	miles	8568.9	1.37	0.27	0.07
Slag to Customers	54600	tpy			22	30	2482		0.967	miles	2400.6	1.02	0.20	0.05
Slag to Customers, onsite slag yard	54600	tpy			22	30	2482		0.242	miles	601.4	1.02	0.20	0.05
										Total VMT	**16049.8**			

Emission Calculations

DESCRIPTION	Note	TSP EF lbs/VMT	PM10 EF lbs/VMT	PM2.5 EF lbs/VMT	Control %	VMT/yr	TSP TNS/YR	PM10 TNS/YR	PM2.5 TNS/YR	TSP lb/hr	PM10 lb/hr	PM2.5 lb/hr
Steel - Paved Roads	1		*see above*		96.00	16049.81	0.09	0.02	0.00	0.02	0.00	0.00
Scrap - Paved Roads	1		*see above*		96.00		0.24	0.05	0.01	0.05	0.01	0.00
Other Materials - Paved Roads	1		*see above*		96.00		0.03	0.01	0.00	0.01	0.00	0.00
Slag to Customers - Paved Roads	1		*see above*		96.00		0.05	0.01	0.00	0.01	0.00	0.00
Slag to Customers, onsite slag yard - Paved Roads	1		*see above*		96.00		0.01	0.00	0.00	0.00	0.00	0.00
						Emission Totals	**0.42**	**0.08**	**0.02**	**0.10**	**0.02**	**0.00**

Emission Summary

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy
EID-23	Paved Facility Roads	0.10	0.10	0.42	0.02	0.02	0.08	0.00	0.00	0.02	-	-	-

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	lb/hr	tpy
EID-23	Paved Facility Roads	-	-	-	-	-	-	-	-	-	-	-

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EID-23	Paved Facility Roads	-	-	-	-	-	-	-	-	-	-

Notes:

1. The emission calculation are based on AP-42 Chapter 13.2.1. See equations below.
2. impact on annual emission for number of days or precipitation above 0.01 inch (Variable P in Eqn 2 of AP 42 Chapter 13.2.2; 50 days for Mojave Area) has not been considered as a conservative approach.
3. Sweeping and watering per facility's Dust management Plan are considered for dust control efficiency of 96%.

PSG Mojave Mini Mill
Emissions Calculations
May 2024
Unpaved Roads Calculations

EID-24- Unpaved Facility Roads

To Emission Summary

Input Data

Description	Value	Units	References
Surface material silt content (s)	4.8	%	AP-42 Table 13.2.2-1
Control EF - watering 2x day	55	%	CalEEMod
Control EF - speed <25 mph	44	%	CalEEMod
Mean vehicle weight (W)	40.02	tons	Pertinent to PSG site.
Total Slag Quantity Handled	59,280	tpy	
Slag Quantity to Customers	54,600	tpy	

Roads

DESCRIPTION	Note	TSP EF lbs/VMT	PM10 EF lbs/VMT	PM2.5 EF lbs/VMT	Control %	VMT/yr	TSP[1] TNS/YR	PM10[1] TNS/YR	PM2.5[1] TNS/YR	TSP lb/hr	PM10 lb/hr	PM2.5 lb/hr
ROADWAY EMISSIONS - Unpaved Roads	[2]	8.28	2.11	0.21	74.80	1077.05	1.12	0.29	0.03	0.26	0.07	0.01
					Emission Totals	**1077**	**1.12**	**0.29**	**0.03**	**0.26**	**0.07**	**0.01**

Emission Factor Equation Variable Input

Constant	PM2.5	PM10	TSP	Reference
k	0.15	1.5	4.9	Table AP-42 13.2.2
a	0.9	0.9	0.7	
b	0.45	0.45	0.45	

Vehicle Miles Traveled (VMT) Calculation (HARSCO)

Description	VMT/Yr	%	Vehicle Wt, W (tons)	Avg Vehicle Wt. (tons)
Slag to Harsco (R-35 Euclids or similar)	423	39%	51.81	20.37
Slag to Customers (Tri-axles)	620	58%	30.00	17.28
Plant back to PSG	33	3%	76.5	2.37
Total	1077	100%		40.02

Emission Summary

Existing Emission Point ID	Source Description	Total PM			PM10			PM2.5			NOx		
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy
EID-24	Unpaved Roads	0.26	0.26	1.12	0.07	0.07	0.29	0.01	0.01	0.03	-	-	-

Existing Emission Point ID	Source Description	CO			VOC			SO2			CO2e	
		max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	max - lbs/hr	annual - lbs/hr	tpy	lb/hr	tpy
EID-24	Unpaved Roads	-	-	-	-	-	-	-	-	-	-	-

Existing Emission Point ID	Source Description	Fluoride		Lead		H2SO4 Mist		Mercury		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EID-24	Unpaved Roads	-	-	-	-	-	-	-	-	-	-

Notes:
1. The emission calculation are based on AP-42 Chapter 13.2.2. See equations below.
2. impact on annual emission for number of days or precipitation above 0.01 inch (Variable P in Eqn 2 of AP 42 Chapter 13.2.2; 40 days for Mojave Area) has not been considered as a conservative approach.
3. Watering per facility's Dust management Plan are considered for dust control effici8ency of 50%.

Appendix E
RBLC Tables

PSGM3 Project
Appendix E - RBLC Data Search Results

Search Period: 01/01/2014 to 04/01/2024
Process: EAF/Meltshop Baghouse — Facilities Comparable to PSGM3 (highlighted)
Pollutant: Carbon Moxide (CO)

Facility	Process	RBLC ID	Permit ID	BACT Limit	Control	Notes
GERDAU MACSTEEL, INC., MI	FG-MELTSHOP (Melt Shop)	MI-0417	10/27/2014	2 Lbs/ton of Steel	Direct Evacuation Control (DEC) and Co Reaction Chamber	130 Tons per hr of Steel
CMC STEEL, Durant, OK	Electric Arc Furnace	OK-0173	1/19/2016	4 Lbs/ton of Steel	Pre-cleaned scrap.	650,000 Tons per year of Steel
NUCOR STEEL DECATUR, LLC, AL	TWO (2) ELECTRIC ARC FURNACES WITH TWO (2) MELTSHOP BAGHOUSES	AL-0309	3/2/2016	2.3 Lbs/ton of Steel	Direct Evacualtion Control (DEC)	NA
NUCOR STEEL DIVISION, NE	ELECTRIC ARC FURNACE	NE-0063	11/7/2017	3.1 Lbs/ton of Steel	Baghouse	1,350,000 Tons per year of Steel
NUCOR STEEL TUSCALOOSA, INC., AL	Electric Arc Furnace	AL-0319	3/9/2017	2.2 Lbs/ton of Steel	NA	NA
GERDAU MACSTEEL MONROE, MI	EUEAF (Electric arc furnace)	MI-0438	10/29/2018	2 Lbs/ton of Steel	Direct-Shell Evacuation Control and CO reaction chamber	130 Tons per hr of Steel
NUCOR, Sedalia, MO	Electric Arc Furnace	2018-03-048	9/12/2018	3.5 Lbs/ton of Steel	DEC	450,000 Tons per year of Steel
CMC, Mesa, AZ	Electric Arc Furnace and Ladle Metallurgy Furnace	V-07001	6/14/2018	4 Lbs/ton of Steel	DEC, Baghouse	635,000 Tons per year of Steel
STEEL MILL, TX	Electric Arc Furnace and Ladle Metallurgy Furnace	TX-0848	9/14/2018	2 Lbs/ton of Steel	Good Combustion	NA
NORTHSTAR BLUESCOPE STEEL, LLC, OH	Electric Arc Furnace #2 (P905)	OH-0381	9/27/2019	500 LB/H	DEC systems with air gap	250 Tons per hour of Steel
NUCOR CORPORATION - DARLINGTON PLANT, SC	Meltshop (Furnace and Canopy Baghouses)	SC-0196	4/29/2019	3.13 Lbs/Billet ton of Steel	NA	1,314,000 Tons per year of Steel (Billets)
NUCOR CORPORATION - DARLINGTON PLANT, SC	Melt Shop Equipment (Furnace and Canopy Baghouses)	SC-0197	12/17/2019	3.13 Lbs/Billet ton of Steel	NA	1,314,000 Tons per year of Steel (Billets)
NUCOR STEEL, AR	SN-01 EAF	AR-0171	2/14/2019	3 Lbs/ton of Steel	Direct Shell Evacuation	585 Tons per hour of Steel
NUCOR STEEL DECATUR, LLC, AL	Electric Arc Furnaces	AL-0327	8/14/2019	2.3 Lbs/ton of Steel	Direct evacuation control	NA
NUCOR STEEL, Frostproof, FL	Meltshop Baghouse & Fugitives	FL-0368/FL-446	2/14/2019	3.5 Lbs/ton of Steel	DEC system, use of a scrap management plan & good combustion practices	450,000 Tons per year of Steel
STEEL MILL, TX	ELECTRIC ARC FURNACE	TX-0880	12/20/2019	2 Lbs/ton of Steel	Good Combustion Practices	1,500,000 Tons per year of Steel
Gerdau McSteel, Charlotte, NC	Meltshop Baghouse	19-01-V-567	5/1/2019	4.4 Lbs/ton of Steel	DEC system ; Baghouse	575,000 Tons per Year of Steel
NUCOR STEEL BRANDENBURG, KY	Melt Shop (EU 01) & Melt Shop Combustion Sources (EU 02)	KY-0110	7/23/2020	1.98 Lbs/ton of Steel	The facility is equipped with Continuous Emission Monitors (CEMS) to enable real-time monitoring of CO emissions, allowing adjustments to the process as needed to reduce emissions. Additionally, All EPs are required to have with a Good Work Practices (GWP) Plan or a Good Combustion and Operating Practices (GCOP) Plan.	1,750,000 Tons per year of Steel
SDSW STEEL MILL, TX	Electric Arc Furnaces (EAF)	TX-0882	1/17/2020	2.02 Lbs/ton of Steel	Good Combustion Practices, Clean Fuel	NA
STEEL MANUFACTURING FACILITY, TX	ELECTRIC ARC FURNACE	TX-0867	1/2/2020	3.275 Lbs/ton of Steel	Good Combustion Practices	NA
NUCOR STEEL, AR	SN-01 EAF	AR-0172	9/1/2021	3 Lbs/ton of Steel	Direct Shell Evacuation	585 Tons per hour of Steel
NUCOR STEEL GALLATIN, LLC, KY	Melt Shop #1 (EU 01 Baghouse #1 & #2 Stack)	KY-0115	4/19/2021	2 Lbs/ton of Steel	Combustion processes must develop a Good Combustion and Operating Practices (GCOP) Plan.	2,000,000 Tons per year of Steel
NUCOR STEEL GALLATIN, LLC, KY	Melt Shop #2 (EU 20 Baghouse #3 Stack)	KY-0115	4/19/2021	2 Lbs/ton of Steel	Good Combustion Practice	2,000,000 Tons per Yyear of Steel
BIG RIVER STEEL LLC, AR	EAFs and LMFs	AR-0173	1/31/2022	2.02 Lbs/ton of Steel	Scrap management plan and good operating practices	250 Tons per hours of Steel
NUCOR, Kingman, AZ	EAF	95370	10/5/2022	3.5 Lbs/ton of Steel	Good Combustion Practice	650,000 Tons per year of Steel
STEEL MILL, TX	Electric Arc Furnace (EAF)	*TX-0959	06/28/2023	4 Lbs/ton of Steel	Good combustion practices and use of pipeline quality natural gas. Additionally, a fume treatment plant (FTP) will be used to capture emissions, and a canopy hood will be used to collect emissions not captured by the FTP system.	
CHARTER STEEL-SAUKVILLE, WI	Electric Arc Furnace	*WI-0316	05/11/2023	3.5 Lbs/ton of Steel Tapped	Use a Direct Evacuation Control system on the Electric Arc Furnace with a second hole to introduce air for secondary combustion	

NA = Not Available from RBLC Database

PSGM3 Project
Appendix E - RBLC Data Search Results

Search Period	**01/01/2014 to 04/01/2024**
Process:	**EAF/Meltshop Baghouse**
Pollutant:	**PM/PM10/PM2.5**

Facility	Process	RBLC ID	Permit Date	PM Type	BACT Limit	Control	Notes
BIG RIVER STEEL LLC	EAFS SN-01 AND SN-02	AL-0275	7/22/2014	Filterable and condensable PM10	0.0018 GR/DSCF	BAGHOUSE	NA
BIG RIVER STEEL LLC	EAFS SN-01 AND SN-02	AL-0275	7/22/2014	Filterable and condensable PM2.5	0.0024 GR/DSCF	BAGHOUSE FOR FILTERABLE	NA
BIG RIVER STEEL LLC	EAFs and LMFs	AL-0301	7/22/2014	Filterable PM	0.0018 GR/DSCF	Fabric Filter	250 Tons per hour of Steel
BIG RIVER STEEL LLC	EAFs and LMFs	AL-0301	7/22/2014	Filterable and condensable PM10	0.0024 GR/DSCF	Fabric Filter	250 Tons per hour of Steel
BIG RIVER STEEL LLC	EAFs and LMFs	AL-0301	7/22/2014	Filterable and condensable PM2.5	0.0024 GR/DSCF	Fabric Filter	250 Tons per hour of Steel
NUCOR STEEL ARKANSAS	SN-01 EAF	MI-0417	10/27/2014	Particulate matter, total < 2.5 Âµ (TPM2.5)	0.0052 GR/DSCF	Baghouse	585 Tons per hour of Steel
CMC STEEL, Durant, OK	Electric Arc Furnace	AL-0309	3/2/2016	Filterable PM	0.0024 GR/DSCF	P2 - Pre-cleaned Scrap Add-on - Baghouse	650,000 Tons per year of Steel
STEEL MILL	ELECTRIC ARC FURNACE	OK-0173	1/19/2016	Particulate matter, filterable < 2.5 Âµ (FPM2.5)	0.0032 GR/DSCF	ENCLOSURE, CAPTURE, FABRIC FILTER	316 Tons per hour of Steel
STEEL MILL	ELECTRIC ARC FURNACE	OK-0173	1/19/2016	Particulate matter, total < 2.5 Âµ (TPM2.5)	0.0052 GR/DSCF	ENCLOSURE, CAPTURE, FABRIC FILTER	316 TPH
CMC STEEL SOUTH CAROLINA	Melt Shop	AL-0319	3/9/2017	Filterable PM	0.0018 GR/DSCF	Baghouse	1,000,000 Tons per year of Steel (Billets)
CMC STEEL SOUTH CAROLINA	Melt Shop	AL-0319	3/9/2017	Filterable and condensable PM10	0.0018 GR/DSCF	Baghouse	1,000,000 Tons per year of Steel (Billets)
GERDAU MACSTEEL MONROE	EUEAF (Electric arc furnace)	AL-0319	3/9/2017	Filterable and condensable PM2.5	7.84 LB/H	Direct-Shell Evacuation Control, reaction chamber, and baghouse with high temperature fabric filter bags.	130 Tons per hour of Steel
NUCOR STEEL KANKAKEE, INC.	Electric Arc Furnace (EAF)	SC-0188	10/3/2017	Particulate matter, filterable (FPM)	0.0018 GR/DSCF	Direct evacuation capture (DEC) system with captured emissions controlled by 2 baghouses	1,226,400 Tons per year of Steel
NUCOR STEEL KANKAKEE, INC.	Electric Arc Furnace (EAF)	SC-0188	10/3/2017	Particulate matter, total < 10 Âµ (TPM10)	0.0052 GR/DSCF	Direct evacuation capture (DEC) system with captured emissions controlled by 2 baghouses	1,226,400 Tons per year of Steel
NUCOR STEEL BRANDENBURG	Melt Shop (EU 01) & Melt Shop Combustion Sources (EU 02)	MI-0438	10/29/2018	Filterable PM	0.0018 GR/DSCF	Negative Pressure Pulse-Jet Baghouse (C0101). The Melt Shop is equipped with canopy hoods to capture and vent emissions that are not captured by the direct shell evacuation system (DEC or DSE). The melt shop has an overall capture efficiency of 99% of emissions generated within the melt shop. Additionally, all EPs have a Good Work Practices (GWP) Plan or a Good Combustion and Operation Practices (GCOP) Plan	1,750,000 Tons per year of Steel
NUCOR STEEL BRANDENBURG	Melt Shop (EU 01) & Melt Shop Combustion Sources (EU 02)	MI-0438	10/29/2018	Particulate matter, total < 10 Âµ (TPM10)	0.0052 GR/DSCF	Negative Pressure Pulse-Jet Baghouse (C0101). The Melt Shop is equipped with canopy hoods to capture and vent emissions that are not captured by the direct shell evacuation system (DEC or DSE). The melt shop has an overall capture efficiency of 99% of emissions generated within the melt shop. Additionally, all EPs have either a Good Work Practices (GWP) Plan or a Good Combustion and Operating Practices (GCOP) Plan.	1,750,000 Tons per year of Steel
NUCOR STEEL BRANDENBURG	Melt Shop (EU 01) & Melt Shop Combustion Sources (EU 02)	MI-0438	10/29/2018	Particulate matter, total < 2.5 Âµ (TPM2.5)	0.0034 GR/DSCF	Negative Pressure Pulse-Jet Baghouse (C0101). The Melt Shop is equipped with canopy hoods to capture and vent emissions that are not captured by the direct shell evacuation system (DEC or DSE). The melt shop has an overall capture efficiency of 99% of emissions generated within the melt shop. Additionally, All EPs are required to have either a Good Work Practices (GWP) Plan or a Good Combustion and Operating Practices (GCOP) Plan.	1,750,000 Tons per year of Steel
NUCOR STEEL GALLATIN, LLC	Melt Shop #1 (EU 01 Baghouse #1 & #2 Stack)	SC-0183	5/4/2018	Filterable PM	31.49 LB/HR	Emissions are controlled by 2 baghouses (combined stack). Combustion processes must develop a Good Combustion and Operating Practices (GCOP) Plan and non-combustion processes must develop a Good Work Practices (GWP) Plan to minimize emissions.	2,000,000 Tons per year of Steel
NUCOR STEEL GALLATIN, LLC	Melt Shop #1 (EU 01 Baghouse #1 & #2 Stack)	SC-0183	5/4/2018	Particulate matter, total < 10 Âµ (TPM10)	90.97 LB/HR	Emissions are controlled by 2 baghouses (combined stack). Combustion processes must develop a Good Combustion and Operating Practices (GCOP) Plan and non-combustion processes must develop a Good Work Practices (GWP) Plan to minimize emissions.	2,000,000 Tons per year of Steel
NUCOR STEEL GALLATIN, LLC	Melt Shop #1 (EU 01 Baghouse #1 & #2 Stack)	SC-0183	5/4/2018	Filterable PM	59.48 LB/HR	Emissions are controlled by 2 baghouses (combined stack). Combustion processes must develop a Good Combustion and Operating Practices (GCOP) Plan and non-combustion processes must develop a Good Work Practices (GWP) Plan to minimize emissions.	2,000,000 Tons per year of Steel
NUCOR STEEL GALLATIN, LLC	Melt Shop #2 (EU 20 Baghouse #3 Stack)	SC-0183	5/4/2018	Particulate matter, filterable (FPM)	26.2 LB/HR	Emissions are controlled by a baghouse. Combustion processes must develop a Good Combustion and Operating Practices (GCOP) Plan and non-combustion processes must develop a Good Work Practices (GWP) Plan to minimize emissions.	2,000,000 Tons per year of Steel
NUCOR STEEL GALLATIN, LLC	Melt Shop #2 (EU 20 Baghouse #3 Stack)	SC-0183	5/4/2018	Particulate matter, total < 10 Âµ (TPM10)	75.67 LB/HR	Emissions are controlled by a baghouse. Combustion processes must develop a Good Combustion and Operating Practices (GCOP) Plan and non-combustion processes must develop a Good Work Practices (GWP) Plan to minimize emissions.	2,000,000 Tons per year of Steel
NUCOR STEEL GALLATIN, LLC	Melt Shop #2 (EU 20 Baghouse #3 Stack)	SC-0183	5/4/2018	Filterable PM	49.48 LB/HR	Emissions are controlled by a baghouse. Combustion processes must develop a Good Combustion and Operating Practices (GCOP) Plan and non-combustion processes must develop a Good Work Practices (GWP) Plan to minimize emissions.	2,000,000 Tons per year of Steel
NUCOR, Sedalia, MO	Electric Arc Furnace	2018-03-048	9/12/2018	PM10/PM2.5 (Total)	0.0024 GR/DSCF	Baghouse	450,000 Tons per year of Steel
CMC, Mesa, AZ	Electric Arc Furnace and Ladle Metallurgy Furnace	V-07001	6/14/2018	PM10/PM2.5 (Total)	0.0024 GR/DSCF	Baghouse	635,000 Tons per year of Steel
STEEL MILL	Electric Arc Furnace and Ladle Metallurgy Furnace	TX-0848	9/14/2018	Particulate matter, total < 10 Âµ (TPM10)	0.0024 GR/DSCF	baghouse	NA
STEEL MILL	Electric Arc Furnace and Ladle Metallurgy Furnace	TX-0848	9/14/2018	Particulate matter, total < 2.5 Âµ (TPM2.5)	0.002 GR/DSCF	baghouse	NA
GERDAU MACSTEEL MONROE	EUEAF (Electric arc furnace)	AL-0327	8/14/2019	Filterable PM	12.91 LB/H	Direct-Shell Evacuation Control, reaction chamber, and baghouse with high temperature fabric filter bags.	130 Tons per hour of Steel
GERDAU MACSTEEL MONROE	EUEAF (Electric arc furnace)	AL-0327	8/14/2019	Particulate matter, total < 2.5 Âµ (TPM2.5)	12.91 LB/H	Direct-Shell Evacuation Control, reaction chamber, and baghouse with high temperature fabric filter bags.	130 Tons per hour of Steel
NORTHSTAR BLUESCOPE STEEL, LLC	Electric Arc Furnace #2 (P905)	AR-0171	2/14/2019	Filterable PM	26.57 LB/H	Operation of a baghouse control system a consisting of the following: of emissions from EAF and LMF; fugitive to the inside of Meltshop #2 from casting operations (P907-Caster #2) and emissions not captured by the DEC control systems;	250 Tons per hour of Steel
NORTHSTAR BLUESCOPE STEEL, LLC	Electric Arc Furnace #2 (P905)	AR-0171	2/14/2019	Particulate matter, total < 2.5 Âµ (TPM2.5)	26.57 LB/H	Operation of a baghouse control system a consisting of the following: of emissions from EAF and LMF; fugitive to the inside of Meltshop #2 from casting operations (P907-Caster #2) and emissions not captured by the DEC control systems;	250 Tons per hour of Steel
NUCOR STEEL	MELTSHOP	AR-0171	2/14/2019	Particulate matter, filterable < 10 Âµ (FPM10)	0.0052 GR/DSCF	MELTSHOP BAGHOUSES 1 AND 2 - CONTROLLING 2 EAFS, 1 AOD, 1 DESULFURIZATION STATION, 2 CONTNUOUS CASTERS AND 3 LMFS	502 Tons per hour of Steel
NUCOR STEEL - BERKELEY	Melt Shop Equipment (furnace baghouse)	FL-0368	2/14/2019	Filterable PM	0.0022 GR/DSCF	Direct shell evacuation furnace baghouse.	175 Tons per hour of Steel
NUCOR STEEL - BERKELEY	Melt Shop Equipment (canopy baghouse)	FL-0368	2/14/2019	Particulate matter, filterable (FPM)	0.0018 GF/DSCF	Baghouse; Proper Operation and Maintenance	NA

NUCOR STEEL FLORIDA FACILITY	Meltshop Baghouse & Fugitives	OH-0381	9/27/2019	Particulate matter, filterable (FPM)	0.0018 GR/DSCF	Baghouse	450,000 Tons per hour of Steel
NUCOR STEEL FLORIDA FACILITY	Meltshop Baghouse & Fugitives	OH-0381	9/27/2019	Particulate matter, total (TPM)	0.0024 GR/DSCF	Baghouse	450,000 Tons per hour of Steel
NUCOR STEEL, Frostproof, FL	Meltshop Baghouse & Fugitives	FL-0368/FL-446	2/14/2019	PM10/PM2.5 (Total)	0.0024 GR/DSCF	Baghouse	450,000 Tons per year of Steel
Gerdau McSteel, Charlotte, NC	Meltshop Baghouse	19-01-V-567	5/1/2019	PM10/PM2.5 (Total)	0.24 LBS/TON	Baghouse	575,000 Tons per year of Steel
STEEL MILL	ELECTRIC ARC FURNACE	TX-0880	12/20/2019	Filterable PM	0.0052 GR/DSCF	Use direct shell evacuation system with 99% capture, canopy hood with 95% capture and building enclosure with 95% capture. Also use baghouse as add on control.	1,500,000 Tons per year of Steel
STEEL MILL	ELECTRIC ARC FURNACE	TX-0880	12/20/2019	Filterable PM	0.0032 GR/DSCF	Use direct shell evacuation system with 99% capture, canopy hood with 95% capture and building enclosure with 95% capture. Also use baghouse as add on control.	1,500,000 Tons per year of Steel
STEEL MILL	ELECTRIC ARC FURNACE	TX-0880	12/20/2019	Particulate matter, filterable < 10 Âµ (FPM10)	0.0032 GR/DSCF	Use direct shell evacuation system with 99% capture, canopy hood with 95% capture and building enclosure with 95% capture. Also use baghouse as add on control.	1,500,000 Tons per year of Steel
STEEL MILL	ELECTRIC ARC FURNACE	TX-0880	12/20/2019	Particulate matter, filterable < 2.5 Âµ (FPM2.5)	0.0032 GR/DSCF	Use direct shell evacuation system with 99% capture, canopy hood with 95% capture and building enclosure with 95% capture. Also use baghouse as add on control.	1,500,000 Tons per year of Steel
NUCOR STEEL - BERKELEY	Melt Shop Equipment (canopy baghouse)	KY-0110	2/23/2020	Filterable PM	0.0033 GR/DSCF	Baghouse; Proper Operation and Maintenance	NA
NUCOR STEEL - BERKELEY	Melt Shop Equipment (canopy baghouse)	KY-0110	2/23/2020	Particulate matter, total < 2.5 Âµ (TPM2.5)	0.0021 GR/DSCF	Baghouse; Proper Operation and Maintenance	NA
NUCOR STEEL - BERKELEY	Melt Shop Equipment (electric arc furnaces fugitives)	KY-0110	2/23/2020	Particulate matter, filterable (FPM)	0	Good work practice standards and proper operation and maintenance of baghouses.	175 Tons per hour of Steel
NUCOR STEEL TUSCALOOSA, INC.	ELECTRIC ARC FURNACE BAGHOUSE # 2	TX-0882	1/7/2020	Filterable PM	0.0052 GR/DSCF	Agency did not provide any information.	600,000 Lbs per hour of Steel
NUCOR STEEL TUSCALOOSA, INC.	ELECTRIC ARC FURNACE BAGHOUSE # 2	TX-0882	1/7/2020	Particulate matter, total < 2.5 Âµ (TPM2.5)	0.0049 GR/DSCF	Agency did not provide any information.	600,000 Lbs per hour of Steel
NUCOR STEEL TUSCALOOSA, INC.	Electric Arc Furnace	TX-0882	1/7/2020	Particulate matter, filterable (FPM)	0.0018 GR/DSCF	0	NA
NUCOR STEEL	MELTSHOP	AR-0172	9/1/2021	Filterable PM	0.0052 GR/DSCF	MELTSHOP BAGHOUSE 1 AND 2 - CONTROLLING 2 EAFS, 1 AOD, 1 DESULFURIZATION STATION, 2 CONTINUOUS CASTERS AND 3 LMFS	502 Tons per hour of Steel
NUCOR STEEL	MELTSHOP	AR-0172	9/1/2021	Filterable and condensable PM10	0.0018 GR/DSCF	BAGHOUSE	502 Tons per hour of Steel
NUCOR STEEL	ELECTRIC ARC FURNACE	AR-0172	9/1/2021	Particulate matter, total < 10 Âµ (TPM10)	0.0052 GRAIN/DSCF	The EAF and melthshop will be controlled by two baghouse. The existing positive pressure baghouse has a maximum design value of 965,000 acfm. The project will require Nucor to add a second negative pressure baghouse rated at 630,000 acfm. The source will also use Direct Evacuation Control to capture emissions.	206 Tons per hour of Scrap processed
NUCOR STEEL	ELECTRIC ARC FURNACE	AR-0172	9/1/2021	Particulate matter, total < 2.5 Âµ (TPM2.5)	0.0052 GRAIN/DSCF	The EAF and melthshop will be controlled by two baghouse. The existing positive pressure baghouse has a maximum design value of 965,000 acfm. The project will require Nucor to add a second negative pressure baghouse rated at 630,000 acfm. The source will also use Direct Evacuation Control to capture emissions.	206 Tons per hour of Scrap processed
NUCOR STEEL	ELECTRIC ARC FURNACE	AR-0172	9/1/2021	Particulate matter, filterable (FPM)	0.0008 GR/DSCF	The EAF and melthshop will be controlled by two baghouse. The existing positive pressure baghouse has a maximum design value of 965,000 acfm. The project will require Nucor to add a second negative pressure baghouse rated at 630,000 acfm. The source will also use Direct Evacuation Control to capture emissions.	206 Tons per hour of Scrap processed
NUCOR STEEL ARKANSAS	SN-01 EAF	KY-0115	4/19/2021	Filterable PM	0.0018 GR/DSCF	Baghouse	585 Tons per hour of Steel
NUCOR STEEL ARKANSAS	SN-01 EAF	KY-0115	4/19/2021	Particulate matter, total < 10 Âµ (TPM10)	0.0052 GR/DSCF	Baghouse	585 Tons per hour of Steel
NUCOR STEEL ARKANSAS	SN-01 EAF	KY-0115	4/19/2021	Particulate matter, filterable < 10 Âµ (FPM10)	0.0052 GR/DSCF	baghouse	585 Tons per hour of Steel
NUCOR STEEL ARKANSAS	SN-01 EAF	KY-0115	4/19/2021	Filterable PM	0.0018 GR/DSCF	Fabric Filter	585 Tons per hour of Steel
NUCOR STEEL ARKANSAS	SN-01 EAF	KY-0115	4/19/2021	Particulate matter, filterable < 10 Âµ (FPM10)	0.0018 GR/DSCF	Baghouse	585 Tons per hour of Steel
NUCOR STEEL ARKANSAS	SN-01 EAF	KY-0115	4/19/2021	Particulate matter, filterable < 2.5 Âµ (FPM2.5)	0.0018 GR/DSCF	Baghouse	585 Tons per hour of Steel
NUCOR STEEL TUSCALOOSA, INC.	Electric Arc Furnace	IL-0132	1/25/2021	Filterable PM	0.0052 GR/DSCF	0	NA
NUCOR STEEL TUSCALOOSA, INC.	Electric Arc Furnace	IL-0132	1/25/2021	Particulate matter, total < 2.5 Âµ (TPM2.5)	0.0049 GR/DSCF	0	NA
REPUBLIC STEEL	Electric Arc Furnace	IL-0132	1/25/2021	Particulate matter, filterable (FPM)	0.0052 GR/DSCF	Direct-Shell Evacuation Control system with adjustable air gap and water-cooled elbow and duct to Baghouse	150 Tons per hour of Steel
NUCOR STEEL	ELECTRIC ARC FURNACE	AR-0173	1/31/2022	Filterable PM	0.0008 GR/DSCF	The EAF and melthshop will be controlled by two baghouse. The existing positive pressure baghouse has a maximum design value of 965,000 acfm. The project will require Nucor to add a second negative pressure baghouse rated at 630,000 acfm. The source will also use Direct Evacuation Control to capture emissions.	206 Tons per hour of Scrap processed
NUCOR STEEL	ELECTRIC ARC FURNACE	AR-0173	1/31/2022	Particulate matter, filterable < 2.5 Âµ (FPM2.5)	0.0008 DSCF/MIN	The EAF and melthshop will be controlled by two baghouse. The existing positive pressure baghouse has a maximum design value of 965,000 acfm. The project will require Nucor to add a second negative pressure baghouse rated at 630,000 acfm. The source will also use Direct Evacuation Control to capture emissions.	206 Tons per hour of Scrap processed
NUCOR STEEL - BERKELEY	Melt Shop Equipment (furnace baghouse)	AR-0173	1/31/2022	Particulate matter, filterable (FPM)	0.0031 GR/DSCF	Direct shell evacuation furnace baghouse	175 Tons per hour of Steel
NUCOR, Kingman, AZ	EAF	95370	10/5/2022	PM10/PM2.5 (Total)	0.0024 GR/DSCF	Baghouse	650,000 Tons per year of Steel
WEST VIRGINIA STEEL MILL	EAF/LMF	WV-0034	05/05/2022 ACT	Particulate matter, total < 2.5 Âµ (TPM2.5)	49.19 LB/HR	Direct-shell evacuation control (DEC) system designed and operated to achieve a minimum capture efficiency of 95% of all potential particulate matter emissions from the EAFs and LMFs and evacuate the exhaust to each associated EAF baghouse.	NA
STEEL MILL	Electric Arc Furnace (EAF)	TX-0959	06/28/2023 ACT	Particulate matter, filterable (FPM)	0.0024 GR/DSCF	Baghouse with 0.0024 grains/dscf outlet grain loading. Additionally, a fume treatment plant (FTP) will be used to capture emissions, and a canopy hood will be used to collect emissions not captured by the FTP system.	NA
NUCOR STEEL ARKANSAS	SN-01 EAF	AR-0172	09/01/2021 ACT	Particulate matter, total < 10 Âµ (TPM10)	0.0052 GR/DSCF	Baghouse	NA

NA = Not Available from RBLC Database

PSGM3 Project
Appendix E - RBLC Data Search Results

Search Period	**01/01/2014 to 04/01/2024**
Process:	**Cooling Towers**
Pollutant:	**PM/PM10/PM2.5**

Facility	Process	RBLC ID	Permit Date	PM Type	BACT Limit	Control	Notes
WEST VIRGINIA STEEL MILL	Cooling Towers	*WV-0034	05/05/2022 ACT	Particulate matter, total (TPM)	0.0005 % DRIFT LOSS	High Efficiency Drift Eliminator at 0.0005%.	
NUCOR STEEL ARKANSAS	Cooling tower, SN-241	AR-0177	11/21/2022 ACT	Particulate matter, total < 2.5 Âµ (TPM2.5)	0.0005 % DRIFT LOSS	High efficiency Drift/mist eliminator	
BIG RIVER STEEL LLC	Cooling Towers	*AR-0183	02/28/2024 ACT	Particulate matter, total (TPM)	0.0005 % DRIFT LOSS	High efficiency Drift/mist eliminator	
BIG RIVER STEEL LLC	Cooling Towers	*AR-0183	02/28/2024 ACT	Particulate matter, total < 10 Âµ (TPM10)	0.0005 % DRIFT LOSS	High efficiency Drift/mist eliminator	
BIG RIVER STEEL LLC	Cooling Towers	*AR-0183	02/28/2024 ACT	Particulate matter, total < 2.5 Âµ (TPM2.5)	0.0005 % DRIFT LOSS	High efficiency Drift/mist eliminator	
NUCOR STEEL ARKANSAS	SN-212 Cooling Tower	AR-0172	09/01/2021 ACT	Particulate matter, total < 10 Âµ (TPM10)	0.0005 % DRIFT LOSS	High efficiency Drift/mist eliminator	
NUCOR STEEL ARKANSAS	SN-212 Cooling Tower	AR-0172	09/01/2021 ACT	Particulate matter, total < 2.5 Âµ (TPM2.5)	0.0005 % DRIFT LOSS	High efficiency Drift/mist eliminator	
NUCOR STEEL ARKANSAS	SN-212 Cooling Tower	AR-0172	09/01/2021 ACT	Particulate matter, filterable (FPM)	0.0005 % DRIFT LOSS	High efficiency Drift/mist eliminator	
BIG RIVER STEEL LLC	Contact Cooling Towers	AR-0168	03/17/2021 ACT	(Particulate Matter (PM))	0.001 % DRIFT LOSS	Drift Eliminators Low TDS	

Appendix F
AERMOD Modeling Protocol with Revisions

Air dispersion modeling analysis with appendices will be provided separately as supplemental information to this application.

Appendix G
Air Dispersion Modeling Figures

Air dispersion modeling analysis with appendices will be provided separately as supplemental information to this application.

Appendix H
Air Dispersion Modeling Files

Air dispersion modeling analysis with appendices will be provided separately as supplemental information to this application.

Appendix I

Environmental Impact Report – Air Quality Section

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KERN COUNTY
MAR 21 2024
AIMEE X. ESPINOZA
AUDITOR CONTROLLER-COUNTY CLERK
BY [signature] DEPUTY

CEQA Transmittal #5704

Submitted to Department	3/20/2024 11:34:50 AM by TORRES, ALYSSA A	

Enter CEQA Information

Lead Agency: KERN COUNTY PLANNING AND NATURAL RESOURCES DEPARTMENT
Project Title: PP22402 - MOJAVE MICRO MILL PROJECT
Project Applicant Name: PSGM3 HOLDINGS CORP (PACIFIC STEE **Phone Number:** (661) 862-5015
Address: 4805 MURPHY CANYON ROAD **City:** SAN DIEGO
State: CA **ZIP:** 92123
Posting Period: ◉ **30 Days** ○ **45 Days** ○ **Other** 30
Project Applicant Type: Private Entity

Select Fee

○ **Notice of Intent**
○ **Notice of Availability**
○ **Notice of Public Hearing**
○ **Notice of Preparation**
○ **Mitigated Negative Declaration/Negative Declaration**
◉ **Environmental Impact Report**
○ **Notice of Exemption**
○ **Other**
☐ **No Fish & Wildlife Fee**

Total: $4,101.25

Proof of Payment

Please enter Proof of Payment: 465290 View Cashiering (/Cashiering/Placing%20Orders/OrderSummary.aspx?IsPending=false&ReceiptNo=465290)

Additional Information

Reference Number:

Notes: JV ACCT STRING:
24010/2750/5730 $4,051.25
24012/2750/5730 $50.00

Enter JV Information (if needed)

JV Sequence Number 784564 (/journalvouchers/CreateJV.aspx?jvHeaderId=784564)

Okay / JJ 3/20/24
Hand deliver to Alyssa

Notice of Environmental Document
Posted by County Clerk on 03/21/2024
and for 30 days thereafter, Pursuant to
Section 21152(C), Public Resources Code

24782

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RECEIPT# 15150626

FILED
KERN COUNTY

MAR 21 2024

AIMEE X. ESPINOZA
AUDITOR CONTROLLER-COUNTY CLERK
BY ______ DEPUTY

NOTICE OF DETERMINATION
(CALIFORNIA ENVIRONMENTAL QUALITY ACT OF 1970)

TO WHOM IT MAY CONCERN:

1. The Board of Supervisors of the County of Kern has approved the following described project in the County of Kern, State of California:

   a. Applicant, or sponsoring agency or department: PSGM3 Holdings Corp (Pacific Steel Group) (PP22402);

   b. Name of Project: (a) General Plan Amendment Case No. 3, Map 213; (b) Amendment of Zoning Map 213, Zone Change Case No. 62; (c) Conditional Use Permit Case No. 71, Map 213; (d) Conditional Use Permit Case No. 72, Map 213; (e) Precise Development Plan No. 3, Map 213; (f) Zone Variance Case No. 24, Map 213; (g) Zone Variance Case No. 25, Map 213;

   c. Street Address/Cross-Street of Project: The proposed project site is located at the southeast corner of Sierra Highway and Sopp Road in the unincorporated area of Southeastern Kern County; (APNs: 431-010-02 & 431-030-02)

      Map of Project (if no street address): Attached

   d. Description of Project The proposed Mojave Micro Mill Project is for the construction and operation of a micro steel mill facility and associated infrastructure necessary to produce rebar from scrap metal (e.g., shredded automobiles, appliances, structural and sheet metal, and other pre-processed steel bundles) through various recycling processes. Development would include an approximate 489,200-square-foot steel mill facility with an additional 61,721 square feet of accessory buildings and structures, for a total of 550,921 square feet, and an approximate 63-acre accessory solar array, all on 174 acres of privately owned land in unincorporated Kern County. The proposal includes:

      (a) Amendment to the Land Use, Open Space, and Conservation Element of the Kern County General Plan (GPA No. 3, Map 213) from Map Code 8.5 (Resource Management) to 7.3 (Heavy Industrial), or a more restrictive map code designation, on approximately 174 acres;

      (b) Change in zone classification (ZCC No. 62, Map 213) from A-1 (Limited Agriculture) to M-3 PD (Heavy Industrial – Precise Development Combining), or a more restrictive district, on approximately 174 acres;

      (c) Conditional Use Permit (CUP No. 71, Map 213) to allow on-site capture of carbon dioxide (CO_2) and temporary storage for eventual transport for off-site distribution (Sections 19.08.085 & 19.06.920) on an approximate 174-acre project site;

      (d) Conditional Use Permit (CUP No. 72, Map 213) to allow an on-site water treatment plant (Section 19.40.030.K) on an approximate 174-acre project site;

      (e) Precise Development Plan (PD Plan No. 3, Map 213) to allow for the construction and operation of an approximate 489,200-square-foot micro steel mill facility with an additional 61,721 square feet of accessory buildings, for a total of 550,921 square

34782

Notice of Environmental Document Posted by County Clerk on 03/21/2024 and for 30 days thereafter, Pursuant to Section 21152(C), Public Resources Code feet, served by a 63-acre solar array accessory to the proposed use, all on 74 total acres in the M-3 PD District (Sections 19.40.020.E.1 & 19.40.020.H);

(f) Zone Variance (ZV No. 24, Map 213) to allow for a reduction in the required number parking spaces from 993 spaces to 306 spaces;

(g) Zone Variance (ZV No. 25, No. 213) to allow for a maximum building and structure height of 165 feet where 150 feet is permitted (Sections 19.40.080.A & 19.08.160.B) in the M-3 PD (Heavy Industrial – Precise Development Combining) District

2. Approval – Summary of Proceedings:

Adoption date March 19, 2024, Item No. 8 2:00 p.m.

3. The Board of Supervisors of the County of Kern has determined that the project in its approved form will have a significant effect on the environment.

4. An Environmental Impact Report (EIR) and a Mitigation Monitoring and Reporting Program were prepared pursuant to California Environmental Quality Act of 1970 (CEQA) and the State CEQA Guidelines and were received and considered by this Board and certified as required by Section 15090 the State CEQA Guidelines.

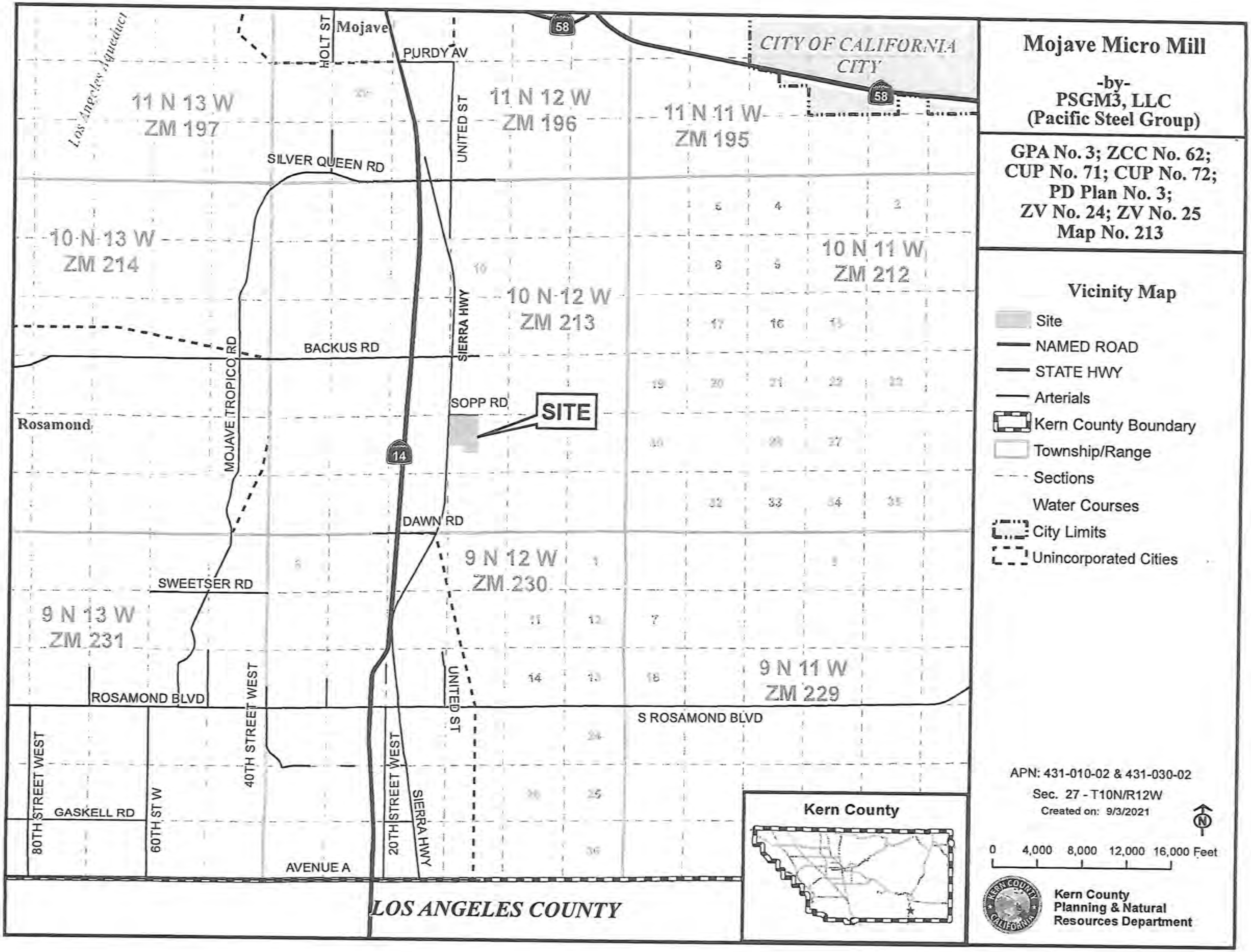
5. Mitigation measures and a Mitigation Monitoring and Reporting Program were made as conditions of approval of the project. Findings were made pursuant to Section 15091 of the State CEQA Guidelines. A Statement of Overriding Considerations was adopted for the project, pursuant to Section 15093 of the State CEQA Guidelines.

6. A copy of the EIR may be examined by any interested person during regular business hours at the following location: Kern County Administrative Center, 1115 Truxtun Avenue, Fifth Floor, Bakersfield, California 93301, Telephone No. 868-3585.

Lorelei H. Oviatt, AICP, Director
Planning and Natural Resources Department
County of Kern, State of California

Telephone No. 862-8600 By: Lorelei H. Oviatt

MT:an


Mojave Micro Mill
-by-
PSGM3, LLC
(Pacific Steel Group)
GPA No. 3; ZCC No. 62;
CUP No. 71; CUP No. 72;
PD Plan No. 3;
ZV No. 24; ZV No. 25
Map No. 213
Vicinity Map
Site
NAMED ROAD
STATE HWY
Arterials
Kern County Boundary
Township/Range
Sections
Water Courses
City Limits
Unincorporated Cities
APN: 431-010-02 & 431-030-02
Sec. 27 - T10N/R12W
Created on: 9/3/2021
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Kern County
Planning & Natural
Resources Department
Kern County
CITY OF CALIFORNIA CITY
Mojave
Rosamond
LOS ANGELES COUNTY
SITE
Los Angeles Aqueduct
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ZM 197
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ZM 196
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ZM 195
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ZM 214
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ZM 213
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ZM 212
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ZM 231
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ZM 229
PURDY AV
HOLT ST
UNITED ST
SILVER QUEEN RD
BACKUS RD
SIERRA HWY
SOPP RD
MOJAVE TROPICO RD
DAWN RD
SWEETSER RD
ROSAMOND BLVD
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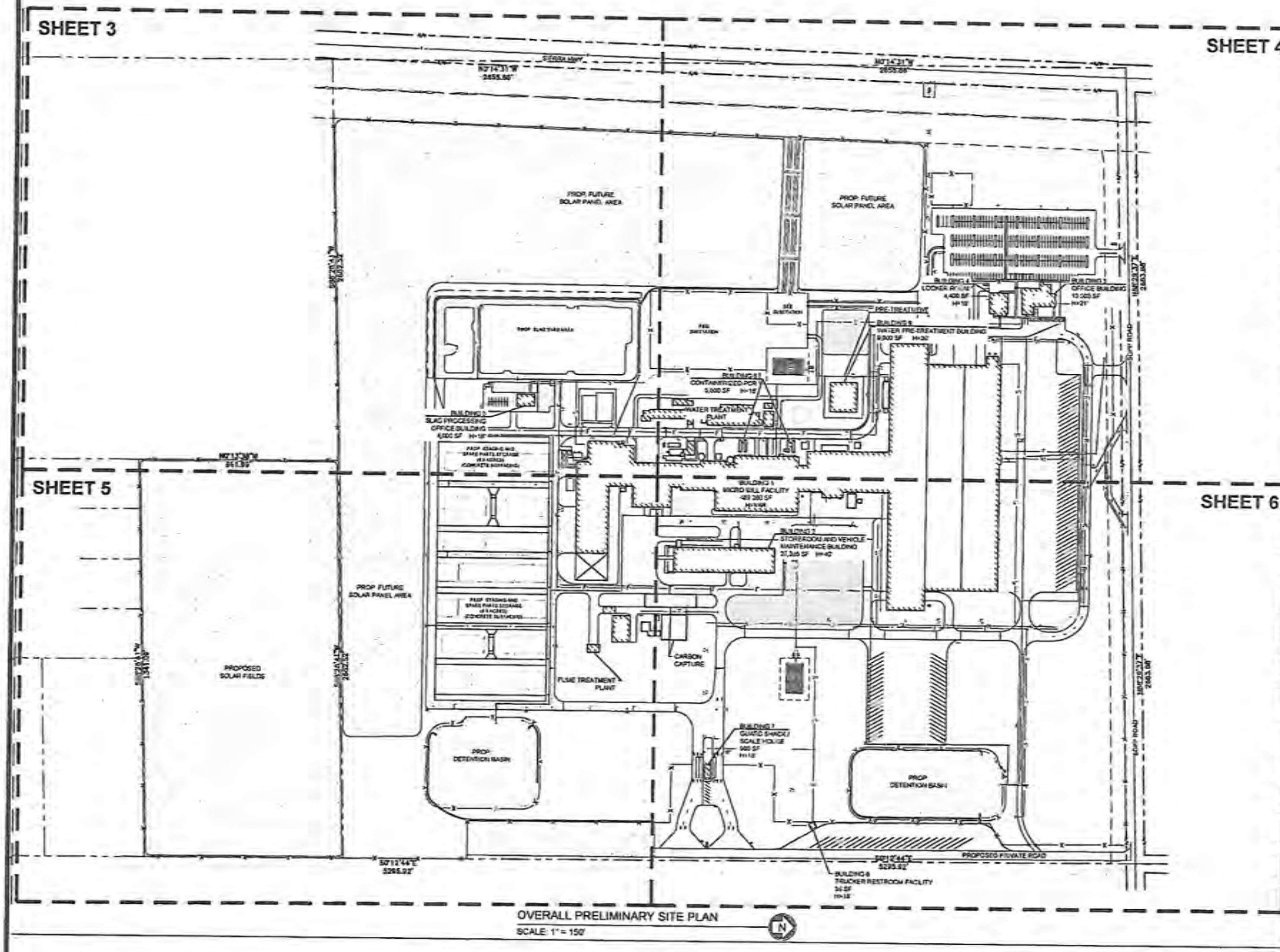
40TH STREET WEST
80TH STREET WEST
60TH ST W
GASKELL RD
20TH STREET WEST
AVENUE A
58
14

Mojave Micro Mill Project

GPA No.3, Map No. 213
ZCC No. 62, Map No. 213
CUP No. 71, Map No. 213
CUP No. 72, Map No. 213
PD Plan No. 3, Map No. 213
ZV No. 24, Map No. 213
ZV No. 25, Map No. 213

Proposed PD Plan – Overall PD Plan

PSGM3, LLC (Pacific Steel Group)



APN: 431-010-02 & 431-030-02
Sec. 27 - T10N/R12W

State of California - Department of Fish and Wildlife
2024 ENVIRONMENTAL DOCUMENT FILING FEE
CASH RECEIPT
DFW 753.5a (REV. 01/01/24) Previously DFG 753.5a

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RECEIPT NUMBER:
15 — 03212024 — 15150626

STATE CLEARINGHOUSE NUMBER *(If applicable)*

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY.

LEAD AGENCY	LEAD AGENCY EMAIL	DATE
KERN COUNTY PLANNING AND NATURAL RESOURCES DEPARTMENT		3/21/2024

COUNTY/STATE AGENCY OF FILING	DOCUMENT NUMBER
Kern	24782

PROJECT TITLE
PP22402 - MOJAVE MICRO MILL PROJECT

PROJECT APPLICANT NAME	PROJECT APPLICANT EMAIL	PHONE NUMBER
PSGM3 HOLDINGS CORP (PACIFIC STEEL GROUP)		(661) 862-5015

PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
4805 MURPHY CANYON ROAD	SAN DIEGO	CA	92123

PROJECT APPLICANT *(Check appropriate box)*
☐ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☑ Private Entity

CHECK APPLICABLE FEES:

☑ Environmental Impact Report (EIR)	$4,051.25	$ 3,445.25
☐ Mitigated/Negative Declaration (MND)(ND)	$2,916.75	$ 0.00
☐ Certified Regulatory Program (CRP) document - payment due directly to CDFW	$1,377.25	$ 0.00

☐ Exempt from fee
☐ Notice of Exemption (attach)
☐ CDFW No Effect Determination (attach)
☐ Fee previously paid (attach previously issued cash receipt copy)

☐ Water Right Application or Petition Fee (State Water Resources Control Board only)	$850.00	$ 0.00
☑ County documentary handling fee		$ 50.00
☑ Other		$

PAYMENT METHOD:
☐ Cash ☐ Credit ☐ Check ☐ Other **TOTAL RECEIVED** $ 4,101.25

SIGNATURE	AGENCY OF FILING PRINTED NAME AND TITLE
X PD	P. DEL VILLAR, KERN COUNTY CLERK, FST

Section 4.3
Air Quality

4.3.1 Introduction

This section of the EIR describes the affected environment and regulatory setting of the project and evaluates the short- and long-term air quality impacts associated with development of the site. Further, this analysis describes the affected environment and regulatory setting for air quality. Where necessary, mitigation measures are included to avoid or lessen the impacts of the proposed project.

Information in this section is based primarily on the *Air Quality Technical Report* located in Appendix C (ESA, 2023d) and the *Air Quality Analysis of Off-Site Power Utilities Memorandum* located in Appendix D (ESA, 2023a). The report was prepared in accordance with the Kern County Planning Department's *Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports* (Kern, 2006) and Eastern Kern Air Pollution Control District's (EKAPCD) *Guidelines for Implementation of the California Environmental Quality Act* (CEQA) (EKAPCD, 2021b).

Existing Conditions

The Mojave Micro Mill Project ("project" or "proposed project") will be situated on a 174-acre site located at 860 Sopp Road, at the southeast corner of Sopp Road and Sierra Highway, in unincorporated southeastern Kern County, California. The project site is bounded by the Union Pacific Railway and Sierra Highway (west), Sopp Road (north), vacant land (south) and Edwards Air Force Base (east). The project site is located approximately 57 miles southeast of the City of Bakersfield, approximately 4 miles north of the unincorporated community of Rosamond and 8 miles south of the unincorporated community of Mojave in unincorporated Kern County, California. Regional access to the project site is provided by State Route 14 (SR-14). The project site would be accessed by Backus Road one mile north of the project site, from Sierra Highway to the east off of SR-14. The proposed project is located in the western portion of the Mojave Desert, in the Antelope Valley area. The Mojave Desert is to the south and east of several low mountain ranges and is dominated by desert vegetation. Topography is mostly flat, but elevations gradually rise toward the west and northwest. The Tehachapi Mountains are to the north and west and the San Gabriel Mountains to the south.

Nearby uses surrounding the project site include vacant agriculturally designated land to the south, industrial development (Shemshad Food Products Inc.) to the north, the Edwards Solar Facility followed by Edwards Airforce Base lie east of the project site, and vacant agricultural land, Sierra Highway, and Union Pacific lie to the west of the project site. The immediate area surrounding the project has a few nearby residences; the nearest residence is approximately 1,000 feet to the northwest. Farther away are a few clusters of unincorporated residences located near the State Route 14 and Backus Road exit, as well as approximately 1.25 miles west of the project site beyond State Route 14.

4.3.2 Environmental Setting

Project Description

The proposed project would include development of an approximate 489,200 square-foot micro mill facility which would produce and fabricate reinforcing steel commonly known as "rebar". The proposed project would also include an additional 61,721square feet of accessory buildings, for a total of 550,921 square feet, as well as an approximate 63-acre accessory solar array on 174 total acres of privately owned land that is currently vacant. Outdoor storage for scrap materials and staging is included as part of the proposed project.

The 489,200 square-foot micro mill facility would include raw materials handling, melt shop processes, rolling mill processes, and fabrication shop processes. The micro mill facility would support seven ancillary structures for storeroom and vehicle maintenance, office building, locker room, slag processing office building, containerized power control room, guard shack/scale house, and a trucker restroom facility. Additional site components would include: 63 acres of ground-mounted solar panels, a carbon capture system (CCS), substation to support solar panels, fume treatment plant, water treatment plant, slag processing plant, dolomite and lime silos, staging and spare parts storage, numerous AC power unit substations located throughout the project site to power the various buildings, on-site access corridors, perimeter security fencing, on-site parking area, road improvements along Sopp Road and future private road south of Lone Butte Road/Sopp Road corner, two fiber optic cable lines to provide electricity and telecommunications, a new water main, landscaping, and new pavement, and curb and gutter.

It is anticipated that construction activities would commence as early as the second quarter 2024 with full build-out occurring in second quarter 2026. Construction is anticipated to last approximately 24 months.

The California Air Resources Board (CARB) has divided California into regional air basins according to topographic drainage features. The project site is located in the Mojave Desert Air Basin (MDAB) and is under the jurisdiction of EKAPCD. The MDAB includes the eastern half of Kern County, the northern part of Los Angeles County, most of San Bernardino County except for the southwest corner, and the eastern edge of Riverside County. It is separated from the South Coast Air Basin, to its south, by the San Gabriel and San Bernardino Mountains. It is separated from the San Joaquin Valley to the northwest by the Tehachapi Mountains and the southern end of the Sierra Nevada.

Topography and Meteorology

Air pollution, especially the dispersion of air pollutants, is directly related to a region's topographic features. Air quality is a function of both the rate and location of pollutant emissions and the meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, which affects ambient air quality.

The project is located within the Antelope Valley, approximately 4 miles north of the unincorporated community of Rosamond, in the southeast portion of Kern County. The Antelope Valley is within the western portion of the Mojave Desert and is bounded by the Tehachapi Mountains to the northwest and the San Gabriel Mountains to the southwest. Land uses in the project area include undeveloped desert, fallow and active agriculture, low-density residences, and energy development (e.g., solar and wind). The Mojave Desert is bordered on the southwest by the San Bernardino Mountains, separated from the San Gabriel Mountains by the Cajon Pass (4,200 feet above mean sea level [amsl]). A lesser valley lies between the San Bernardino Mountains and the Little San Bernardino Mountains (the Morongo Valley). The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley) whose primary channel is the San Gorgonio Pass (2,300 feet amsl) between San Bernardino and San Jacinto Mountains.

The MDAB is characterized by hot summers, cold winters, large diurnal ranges in temperature, low relative humidity, and irregular rainfall. The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest, due to the proximity of the MDAB to the Pacific Ocean and the blocking nature of the Sierra Nevada Mountains to the north. Air masses pushed onshore in southern California by differential heating are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet amsl), the passes of which form the main channels for these air masses.

During the summer, the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast to the west, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south.

Weather recorded at the Mojave, California Station (NCDC COOP Station # 045756), would be representative of the climate at the project site. The average maximum and minimum temperatures, average precipitation, and average snowfall are recorded below in **Table 4.3-1:** *Mojave Station 045756 Monthly Climate Summary.*

Table 4.3-1: Mojave Station 045756 Monthly Climate Summary

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
Avg. Max Temp. (F)	57.8	61.2	64.7	71.3	79.9	89.9	97.6	96.4	89.0	78.5	65.7	57.2	75.8
Avg. Min Temp. (F)	34.2	37.1	41.0	46.3	55.1	63.8	69.7	68.0	60.3	50.3	40.2	32.9	49.9
Average Total Precipitation (in.)	1.20	1.27	0.93	0.30	0.09	0.03	0.11	0.15	0.21	0.24	0.53	0.87	5.93
Average Total Snowfall (in.)	0.8	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.7

Source: Western Regional Climate Center, 2016.
Period of record 01/01/1904 to 06/08/2016

Criteria Air Pollutants

Air pollution, especially the dispersion of air pollutants, is directly related to a region's topographic features. Air quality is a function of both the rate and location of pollutant emissions and the meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, which affects ambient air quality. The project is located within the Antelope Valley, approximately 8 miles south of the unincorporated community of Mojave in unincorporated Kern County within the Mojave Desert Air Basin (Basin). The Basin encompasses the eastern half of Kern County, the northern part of Los Angeles County, most of San Bernardino County except for the southwest corner, and the eastern edge of Riverside County. It is separated from the South Coast Air Basin, to its south, by the San Gabriel and San Bernardino Mountains. It is separated from the San Joaquin Valley, to the northwest, by the Tehachapi Mountains and the south end of the Sierra Nevada. The Basin has four air districts which regulate air quality. The project site lies within the Eastern Kern Air Pollution Control District (EKAPCD).

The Antelope Valley is within the western portion of the Mojave Desert and is bounded by the Tehachapi Mountains to the northwest and the San Gabriel Mountains to the southwest. The Mojave Desert is bordered on the southwest by the San Bernardino Mountains, separated from the San Gabriel Mountains by the Cajon Pass. A lesser valley lies between the San Bernardino Mountains and the Little San Bernardino Mountains (the Morongo Valley). The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley) whose primary channel is the San Gorgonio Pass between San Bernardino and San Jacinto Mountains.

The Basin is characterized by hot summers, cold winters, large diurnal ranges in temperature, low relative humidity, and irregular rainfall. The Basin is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the Basin are out of the west and southwest, due to the proximity of the Basin to the Pacific Ocean and the blocking nature of the Sierra Nevada Mountains to the north. Air masses pushed onshore in southern California by differential heating are channeled through the Basin. The Basin is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet above mean sea level), the passes of which form the main channels for these air masses.

During the summer, the Basin is generally influenced by a Pacific Subtropical High cell that sits off the coast to the west, inhibiting cloud formation and encouraging daytime solar heating. The Basin is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south. Average temperatures recorded in the Mojave area, range from a low of 35 degrees Fahrenheit (°F) in January to highs of 100°F in July and August (NOAA, 2022). Rainfall is light, averaging about seven inches a year (NOAA, 2022). The Basin averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inch of precipitation). The Basin is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, which indicates at least three months have maximum average temperatures over 100°F.

Certain air pollutants have been recognized to cause notable health problems and consequential damage to the environment either directly or in reaction with other pollutants, due to their presence in elevated concentrations in the atmosphere. Such pollutants have been identified and regulated as part of the overall endeavor to prevent further deterioration and facilitate improvement in air quality. The following pollutants are regulated by the United States Environmental Protection Agency (USEPA) and are subject to emissions control requirements adopted by federal, state and local regulatory agencies. These pollutants are referred to as "criteria air pollutants" as a result of the specific standards, or criteria, which have been adopted for them. A brief description of the health effects of these criteria air pollutants are provided below.

Ozone (O_3)

Ozone is a regional air pollutant, which is generated over a large area and transported and spread by the wind. As the primary constituent of smog, ozone is the most complex, difficult to control, and pervasive of the criteria pollutants. Unlike other pollutants, it is not emitted directly into the air by specific sources but is created by sunlight acting on other air pollutants (the precursors), specifically nitrogen oxides (NO_X) and reactive organic gases (ROG). Sources of precursor gases number in the thousands and include common sources such as consumer products, gasoline vapors, chemical solvents, and combustion byproducts of various fuels. Originating from gas stations, motor vehicles, large industrial facilities, and small businesses such as bakeries and dry cleaners, the ozone forming chemical reactions often take place in another location, catalyzed by sunlight and heat. Thus, high ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable.

According to the USEPA, ozone can cause the muscles in the airways to constrict potentially leading to wheezing and shortness of breath (USEPA, 2022c). Ozone can make it more difficult to breathe deeply and vigorously; cause shortness of breath and pain when taking a deep breath; cause coughing and sore or scratchy throat; inflame and damage the airways; aggravate lung diseases such as asthma, emphysema and chronic bronchitis; increase the frequency of asthma attacks; make the lungs more susceptible to infection; continue to damage the lungs even when the symptoms have disappeared; and cause chronic obstructive pulmonary disease (USEPA, 2022c). Long-term exposure to ozone is linked to aggravation of asthma, and is likely to be one of many causes of asthma development and long-term exposures to higher concentrations of ozone may also be linked to permanent lung damage, such as abnormal lung development in children (USEPA, 2022c). According to the California Air Resource Board (CARB), inhalation of ozone causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms and exposure to ozone can reduce the volume of air that the lungs breathe in and cause shortness of breath (CARB, 2022m). The USEPA states that people most at risk from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers (USEPA, 2022c). Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure (USEPA, 2022c). According to CARB, studies show that children are no more or less likely to suffer harmful effects than adults; however, children and teens may be more susceptible to ozone and other pollutants because they spend nearly twice as much time outdoors and engaged in vigorous activities compared to adults (CARB, 2022m). Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults and are less likely than adults to notice their own symptoms and avoid harmful exposures (CARB, 2022m). Further research may be able to better distinguish between health effects in children and adults (CARB, 2022m). Elevated ozone concentrations also reduce crop and timber yields, damage native plants, and damage materials such as rubber, paints, fabric, and plastics (CARB, 2007).

Reactive Organic Gases (ROG) and Volatile Organic Compounds (VOCs)

ROG and VOCs are organic chemical compounds of carbon and are not “criteria” pollutants themselves; however, they contribute with NO_X to form ozone, and are regulated to prevent the formation of ozone (USEPA, 2022i). According to CARB, some ROG and VOCs are highly reactive and play a critical role in the formation of ozone, other ROG and VOCs have adverse health effects, and in some cases, can be both highly reactive and have adverse health effects (CARB, 2022d). ROG and VOCs are typically formed from combustion of fuels and/or released through evaporation of organic liquids, internal combustion associated with motor vehicle usage, and consumer products (e.g., architectural coatings, deodorants, hair spray, cleaning products, spray paint, insecticides, etc.) (CARB, 2022d).

The primary health effects of hydrocarbons result from the formation of ozone and its related health effects. High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. There are no separate federal or California ambient air quality standards for ROG and VOC. Carcinogenic forms of ROG and VOCs are considered toxic air contaminants (TACs). An example is benzene, which is a carcinogen. The health effects of individual ROG and VOCs are described under the “Toxic Air Contaminants” heading below. For the purposes of this assessment ROG and VOC are used interchangeably.

Nitrogen Dioxide (NO_2) and Nitrogen Oxides (NO_X)

NO_X is a term that refers to a group of compounds containing nitrogen and oxygen. The primary compounds of air quality concern include NO_2 and nitric oxide (NO). Ambient air quality standards have been promulgated for NO_2, which is a reddish-brown, reactive gas (CARB, 2022k). The principle form of NO_X produced by combustion is NO, but NO reacts quickly in the atmosphere to form NO2, creating the mixture of NO and NO_2 referred to as NO_X (CARB, 2022k). Major sources of NO_X include emissions from cars, trucks and buses, power plants, and off-road equipment (USEPA, 2022e). The terms NO_X and NO_2 are sometimes used interchangeably. However, the term NO_X is typically used when discussing emissions, usually from combustion-related activities, and the term NO_2 is typically used when discussing ambient air quality standards. Where NO_X emissions are discussed in the context of the thresholds of significance or impact analyses, the discussions are based on the conservative assumption that all NO_X emissions would oxidize in the atmosphere to form NO_2.

According to the USEPA, short-term exposures to NO_2 can potentially aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms while longer exposures to elevated concentrations of NO_2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections (USEPA, 2022e). According to CARB, controlled human exposure studies that show that NO_2 exposure can intensify responses to allergens in allergic asthmatics (CARB, 2022k). In addition, a number of epidemiological studies have demonstrated associations between NO_2 exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses (CARB, 2022k). Infants and children are particularly at risk from exposure to NO_2 because they have disproportionately higher exposure to NO_2 than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration while in adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease (CARB, 2022k). CARB states that much of the information on distribution in air, human exposure and dose, and health effects is specifically for NO_2 and there is only limited information for NO and NO_X, as well as large uncertainty in relating health effects to NO or NO_X exposure (CARB, 2022k).

NO_X contributes to a wide range of environmental effects both directly and indirectly when combined with other precursors in acid rain and ozone. NO_X can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to the production of particulate nitrates. Airborne NO_X can also impair visibility. Increased nitrogen inputs to terrestrial and wetland systems can lead to changes in plant species composition and diversity. Similarly, direct nitrogen inputs to aquatic ecosystems such as those found in estuarine and coastal waters can lead to eutrophication (a condition that promotes excessive algae growth, which can lead to a severe depletion of dissolved oxygen and increased levels of toxins harmful to aquatic life). Nitrogen, alone or in acid rain, also can acidify soils and surface waters. Acidification of soils causes the loss of essential plant nutrients and increased levels of soluble aluminum, which is toxic to plants. Acidification of surface waters creates conditions of low pH and levels of aluminum that are toxic to fish and other aquatic organisms. NO_X also contributes to visibility impairment (CAPCOA, 2019).

Carbon Monoxide (CO)

CO is primarily emitted from combustion processes and motor vehicles due to the incomplete combustion of fuel, such as natural gas, gasoline, or wood, with the majority of outdoor CO emissions from mobile sources (CARB, 2022c). According to the USEPA, breathing air with a high concentration of CO reduces the amount of oxygen that can be transported in the blood stream to critical organs like the heart and brain and at very high levels, which are possible indoors or in other enclosed environments, CO can cause dizziness, confusion, unconsciousness and death (USEPA, 2022a). Very high levels of CO are not likely to occur outdoors; however, when CO levels are elevated outdoors, they can be of particular concern for people with some types of heart disease since these people already have a reduced ability for getting oxygenated blood to their hearts and are especially vulnerable to the effects of CO when exercising or under increased stress (USEPA, 2022a). In these situations, short-term exposure to elevated CO may result in reduced oxygen to the heart accompanied by chest pain also known as angina (USEPA, 2022a). According to CARB, the most common effects of CO exposure are fatigue, headaches, confusion, and dizziness due to inadequate oxygen delivery to the brain (CARB, 2022c). For people with cardiovascular disease, short-term CO exposure can further reduce their body's already compromised ability to respond to the increased oxygen demands of exercise, exertion, or stress; inadequate oxygen delivery to the heart muscle leads to chest pain and decreased exercise tolerance (CARB, 2022c). Unborn babies, infants, elderly people, and people with anemia or with a history of heart or respiratory disease are most likely to experience health effects with exposure to elevated levels of CO (CARB, 2022c).

Sulfur Dioxide (SO_2)

Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO_2) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California because of regional meteorological features. According to the USEPA, the largest source of SO_2 emissions in the atmosphere is the burning of fossil fuels by power plants and other industrial facilities while smaller sources of SO_2 emissions include industrial processes such as extracting metal from ore; natural sources such as volcanoes; and locomotives, ships and other vehicles and heavy equipment that burn fuel with a high sulfur content (USEPA, 2022g). In 2006, California phased-in the ultra-low-sulfur diesel regulation limiting vehicle diesel fuel to a sulfur content not exceeding 15 parts per million, down from the previous requirement of 500 parts per million, substantially reducing emissions of sulfur from diesel combustion (CARB, 2003). SO_2 is a colorless, irritating gas with a "rotten egg" smell that is formed primarily by the combustion of sulfur-containing fossil fuels. Historically, SO_2 was a pollutant of concern in Kern County, but with the successful implementation of regulations, the levels have been reduced significantly.

According to the USEPA, short-term exposures to SO_2 can harm the human respiratory system and make breathing difficult (USEPA, 2022g). According to CARB, health effects at levels near the state one-hour standard are those of asthma exacerbation, including bronchoconstriction accompanied by symptoms of respiratory irritation such as wheezing, shortness of breath and chest tightness, especially during exercise or physical activity and exposure at elevated levels of SO_2 (above 1 part per million (ppm)) results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality (CARB, 2022r). Children, the elderly, and those with asthma, cardiovascular disease, or chronic lung disease (such as bronchitis or emphysema) are most likely to experience the adverse effects of SO_2 (CARB, 2022r; USEPA, 2022g).

SO_2 tends to have more toxic effects when acidic pollutants, liquid or solid aerosols, and particulates are also present. Effects are more pronounced among "mouth breathers," e.g., people who are exercising or who have head colds. These effects include:

- Health problems, such as episodes of bronchitis requiring hospitalization associated with lower level acid concentrations;
- Self-reported respiratory conditions, such as chronic cough and difficult breathing, associated with acid aerosol concentrations (individuals with asthma are especially susceptible to these effects. The elderly and those with chronic respiratory conditions may also be affected at lower concentrations than the general population);

- Increased respiratory tract infections associated with longer term, lower level exposures to SO_2 and acid aerosols; and
- Subjective symptoms, such as headaches and nausea, in the absence of pathological abnormalities due to long-term exposure.

SO_2 easily injures many plant species and varieties, both native and cultivated. Some of the most sensitive plants include various commercially valuable pines, legumes, red and black oaks, white ash, alfalfa, and blackberry. The effects include:

- Visible injury to the most sensitive plants at exposures as low as 0.12 ppm for eight hours;
- Visible injury to many other plant types of intermediate sensitivity at exposures of 0.30 ppm for eight hours; and
- Positive benefits from low levels in a very few species growing on sulfur-deficient soils.

Increases in SO_2 concentrations accelerate the corrosion of metals, probably through the formation of acids. SO_2 is a major precursor to acidic deposition. Sulfur oxides may also damage stone and masonry, paint, various fibers, paper, leather, and electrical components.

Increased SO_2 also contributes to impaired visibility. Particulate sulfate, much of which is derived from SO_2 emissions, is a major component of the complex total suspended particulate mixture.

Particulate Matter (PM_{10} and $PM_{2.5}$)

Particulate matter air pollution is a mixture of solid particles and liquid droplets found in the air (USEPA, 2022f). Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye while other particles are so small they can only be detected using an electron microscope (USEPA, 2022f). Particles are defined by their diameter for air quality regulatory purposes: inhalable particles with diameters that are generally 10 micrometers and smaller (PM_{10}); and fine inhalable particles with diameters that are generally 2.5 micrometers and smaller ($PM_{2.5}$) (USEPA, 2022f). Thus, $PM_{2.5}$ comprises a portion or a subset of PM_{10}. Sources of PM_{10} emissions include dust from construction sites, landfills and agriculture, wildfires and brush/waste burning, industrial sources, and wind-blown dust from open lands (CARB, 2022g). Sources of $PM_{2.5}$ emissions include combustion of gasoline, oil, diesel fuel, or wood (CARB, 2022g). PM_{10} and $PM_{2.5}$ may be either directly emitted from sources (primary particles) or formed in the atmosphere through chemical reactions of gases (secondary particles) such as SO_2, NO_X, and certain organic compounds (CARB, 2022g).

According to CARB, both PM_{10} and $PM_{2.5}$ can be inhaled, with some depositing throughout the airways; PM_{10} is more likely to deposit on the surfaces of the larger airways of the upper region of the lung while $PM_{2.5}$ is more likely to travel into and deposit on the surface of the deeper parts of the lung, which can induce tissue damage, and lung inflammation (CARB, 2022g). Short-term (up to 24 hours duration) exposure to PM_{10} has been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits (CARB, 2022g). The effects of long-term (months or years) exposure to PM_{10} are less clear, although studies suggest a link between long-term PM_{10} exposure and respiratory mortality. The International Agency for Research on Cancer published a review in

2015 that concluded that particulate matter in outdoor air pollution causes lung cancer (CARB, 2022g). Short-term exposure to $PM_{2.5}$ has been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days and long-term exposure to $PM_{2.5}$ has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children (CARB, 2022g). According to CARB, populations most likely to experience adverse health effects with exposure to PM_{10} and $PM_{2.5}$ include older adults with chronic heart or lung disease, children, and asthmatics and children and infants are more susceptible to harm from inhaling pollutants such as PM_{10} and $PM_{2.5}$ compared to healthy adults because they inhale more air per pound of body weight than do adults, spend more time outdoors, and have developing immune systems (CARB, 2022g). Research has shown that children living in communities with high levels of $PM_{2.5}$ had slower lung growth, and had smaller lungs at age 18 compared to children who lived in communities with low $PM_{2.5}$ levels (Appendix C) (CARB, 2022g). CARB conducted a risk assessment of premature mortality associated with exposure to $PM_{2.5}$ which indicated that $PM_{2.5}$ exposure contributes to 5,400 (uncertainty range of 4,200 – 6,700) premature deaths due to cardiopulmonary causes per year in California (CARB, 2022g). Additionally, $PM_{2.5}$ exposure contributes to approximately 2,800 hospitalizations for cardiovascular and respiratory diseases (uncertainty rage 350 – 5,100), and about 6,700 emergency room visits for asthma (uncertainty range 4,300 to 9,300) each year in California (CARB, 2022g).

Lead

Lead is a metal that is a natural constituent of air, water, and the biosphere. Major sources of lead emissions include ore and metals processing, piston-engine aircraft operating on leaded aviation fuel, waste incinerators, utilities, and lead-acid battery manufacturers (USEPA, 2022d). In the past, leaded gasoline was a major source of lead emissions; however, the removal of lead from gasoline has resulted in a decrease of lead in the air by 98 percent between 1980 and 2014 (USEPA, 2022d). EKAPCD no longer monitors lead ambient levels of atmospheric lead in the Air Basin. Lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems and the cardiovascular system, and affects the oxygen carrying capacity of blood (USEPA, 2022d). The lead effects most commonly encountered in current populations are neurological effects in children, such as behavioral problems and reduced intelligence, anemia, and liver or kidney damage (CARB, 2022i). Excessive lead exposure in adults can cause reproductive problems in men and women, high blood pressure, kidney disease, digestive problems, nerve disorders, memory and concentration problems, and muscle and joint pain (CARB, 2022i).

Other Criteria Pollutants (California Only)

The California Ambient Air Quality Standards (CAAQS) regulate the same criteria pollutants as the National Ambient Air Quality Standards (NAAQS) but in addition, regulate State-identified criteria pollutants, including sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride (CARB, 2022a). According to CARB, California law continues to mandate CAAQS, although attainment of the NAAQS has precedence over attainment of the CAAQS due to federal penalties for failure to meet federal attainment deadlines (CARB, 2022a). California law does not require that CAAQS be met by specified dates as is the case with NAAQS. Rather, it requires incremental progress toward attainment (CARB, 2022a).

With respect to the State-identified criteria pollutants (i.e., sulfates, hydrogen sulfide, visibility reducing particles, and vinyl chloride), the project would either not emit them (i.e., hydrogen sulfide and vinyl chloride), or they would be accounted for as part of the pollutants estimated in this analysis (i.e., sulfates and visibility reducing particles). For example, visibility reducing particles are associated with particulate matter emissions and sulfates are associated with SO_X emissions. Both particulate matter and SO_X are included in the emissions estimates for the project. A description of the health effects of the State-identified criteria air pollutants is provided below.

Sulfates (SO_4^{2-})

Sulfates (SO_4^{2-}) are particulate product that comes from the combustion of sulfur-containing fossil fuels. When sulfur monoxide or SO_2 is exposed to oxygen, it precipitates out into sulfates (SO_3 or SO_4). Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur (CARB, 2022q). This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California because of regional meteorological features.

Exposure to SO_4^{2-}, which are part of $PM_{2.5}$, results in health effects similar to those from exposure to $PM_{2.5}$ including reduced lung function, aggravated asthmatic symptoms, and increased risk of emergency department visits, hospitalizations, and death in people who have chronic heart or lung diseases (CARB, 2022q). Population groups with higher risks of experiencing adverse health effects with exposure to SO_4^{2-} include children, asthmatics, and older adults who have chronic heart or lung diseases (CARB, 2022q). CARB's sulfates standard is designed to prevent aggravation of respiratory symptoms. When acidic pollutants and particulates are also present, SO_2 tends to have an even more toxic effect. In addition to particulates, SO_3 and SO_4 are also precursors to acid rain. SO_X and NO_X are the leading precursors to acid rain. Acid rain can lead to corrosion of man-made structures and cause acidification of water bodies. Sulfates are particularly effective in degrading visibility and because they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide (H_2S)

H_2S is a colorless gas with a strong odor of rotten eggs. The most common sources of H2S emissions are oil and natural gas extraction and processing, and natural emissions from geothermal fields. Industrial sources of H_2S include petrochemical plants and kraft paper mills. H_2S is also formed during bacterial decomposition of human and animal wastes, and is present in emissions from sewage treatment facilities and landfills (CARB, 2022f).

H_2S is regulated as a nuisance based on its odor detection level; if the standard were based on adverse health effects, it would be set at a much higher level (CARB, 2022f). According to CARB, there are insufficient data available to determine whether or not some groups are at greater risk than others (CARB, 2022f). Exposure to H_2S can induce tearing of the eyes and symptoms related to overstimulation of the sense of smell, including headache, nausea, or vomiting; additional health effects of eye irritation have only been reported with exposures greater than 50 ppm, which is considerably higher than the odor threshold (CARB, 2022f). Exposure to higher concentrations (above 100 ppm) can cause olfactory fatigue, respiratory paralysis, and death. Brief exposures to high concentrations of H_2S (greater than 500 ppm) can cause a loss of consciousness. In most cases, the person appears to regain consciousness without any other effects. However, in many individuals, there may be permanent or long-term effects such as headaches, poor attention span, poor memory, and poor motor function. No health effects have been found in humans exposed to typical environmental concentrations of H_2S (0.00011–0.00033 ppm). Deaths due to breathing in large amounts of H_2S have been reported in a variety of different work settings, including sewers, animal processing plants, waste dumps, sludge plants, oil and gas well drilling sites, and tanks and cesspools.

Visibility-Reducing Particles

Visibility-reducing particles come from a variety of natural and manmade sources and can vary greatly in shape, size and chemical composition. Visibility reduction is caused by the absorption and scattering of light by the particles in the atmosphere before it reaches the observer. Certain visibility-reducing particles are directly emitted to the air such as windblown dust and soot, while others are formed in the atmosphere through chemical transformations of gaseous pollutants (e.g., sulfates, nitrates, organic carbon particles) which are the major constituents of particulate matter. As the number of visibility reducing particles increases, more light is absorbed and scattered, resulting in less clarity, color, and visual range (CARB, 2022t). Exposure to some haze-causing pollutants have been linked to adverse health impacts similar to PM_{10} and $PM_{2.5}$ as discussed above (CARB, 2022t).

Vinyl Chloride

Vinyl chloride is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products and are generally emitted from industrial processes and other major sources of vinyl chloride have been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents (CARB, 2022s).

Short-term health of effects of exposure to high levels of vinyl chloride in the air include central nervous system effects, such as dizziness, drowsiness, and headaches while long-term exposure to vinyl chloride through inhalation and oral exposure causes liver damage and has been shown to increase the risk of angiosarcoma, a rare form of liver cancer in humans (CARB, 2022s). Most health data on vinyl chloride relate to carcinogenicity; thus, the people most at risk are those who have long-term exposure to elevated levels, which is more likely to occur in occupational or industrial settings; however, control methodologies applied to industrial facilities generally prevent emissions to the ambient air (CARB, 2022s).

Toxic Air Contaminants (TACs)

In addition to criteria pollutants, the EKAPCD periodically assesses levels of toxic air contaminants (TACs) in the Air Basin. A TAC is defined by California Health and Safety Code Section 39655:

> "Toxic air contaminant" means an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard

to human health. A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the federal act (42 U.S.C. Sec. 7412(b)) is a toxic air contaminant.

Diesel particulate matter, which is emitted in the exhaust from diesel engines, was listed by the state as a toxic air contaminant in 1998. Most major sources of diesel emissions, such as ships, trains, and trucks operate in and around ports, railyards, and heavily traveled roadways. These areas are often located near highly populated areas resulting in greater health consequences for urban areas than rural areas (CARB, 2022l). Diesel particulate matter has historically been used as a surrogate measure of exposure for all diesel exhaust emissions. Diesel particulate matter consists of fine particles (fine particles have a diameter <2.5 μm), including a subgroup of ultrafine particles (ultrafine particles have a diameter <0.1 μm). Collectively, these particles have a large surface area which makes them an excellent medium for absorbing organics. The visible emissions in diesel exhaust include carbon particles or "soot." Diesel exhaust also contains a variety of harmful gases and cancer-causing substances.

Exposure to diesel particulate matter may be a health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems. Diesel particulate matter levels and resultant potential health effects may be higher in proximity to heavily traveled roadways with substantial truck traffic or near industrial facilities. According to CARB, diesel particulate matter exposure may lead to the following adverse health effects: (1) Aggravated asthma; (2) Chronic bronchitis; (3) Increased respiratory and cardiovascular hospitalizations; (4) Decreased lung function in children; (5) Lung cancer; and (6) Premature deaths for people with heart or lung disease (CARB, 2008 & 2022l).

Airborne Fungus (*Coccidioides immitis*)

Coccidioidomycosis, commonly referred to as San Joaquin Valley Fever or Valley Fever, is one of the most studied and oldest known fungal infections. Valley Fever most commonly affects people who live in hot dry areas with alkaline soil and varies with the season. This disease, which affects both humans and animals, is caused by inhalation of arthroconidia (spores) of the fungus Coccidioides immitis.

Coccidioides immitis spores are found in the top few inches of soil. The cocci fungus lives as a saprophyte in dry, alkaline soil. When weather and moisture conditions are favorable, the fungus "blooms" and forms many tiny spores that lie dormant in the soil until they are stirred up by wind, vehicles, excavation, or other ground-moving activities and become airborne. Agricultural workers, construction workers, and other people who work outdoors and who are exposed to wind and dust are more likely to contract Valley Fever. Children and adults whose hobbies or sports activities expose them to wind and dust also are more likely to contract Valley Fever. After the fungal spores have settled in the lungs, they change into a multicellular structure called a spherule. Fungal growth in the lungs occurs as the spherule grows and bursts, releasing endospores, which then develop into more spherules.

Approximately 60 percent of Valley Fever cases are mild and display flu-like symptoms or no symptoms at all. Of those who are exposed and seek medical treatment, the most common symptoms include fatigue, cough, loss of appetite, rash, headache, and joint aches. In some cases, painful red bumps may develop on the skin. Because these symptoms are not unique to Valley

Fever and also may be caused by other illnesses, identifying and confirming this disease requires specific laboratory tests, such as the following (VFCE, 2022b):

- Microscopic identification of the fungal spherules in infected tissue, sputum or body fluid sample.
- Growing a culture of Coccidioides immitis from a tissue specimen, sputum, or body fluid.
- Detection of antibodies (serological tests specifically for Valley Fever) against the fungus in blood serum or other body fluids.
- Administering the Valley Fever Skin Test (called coccidioidin or spherulin), which indicate prior exposure to the fungus.

The highest incidence rate within California occurs in Kern County within the San Joaquin Valley Air Basin, with 3,045 annual cases reported for the year 2021 (Kern, 2022). Valley Fever is not contagious, and therefore cannot be passed on from person to person. Most of those who are infected recover without treatment within six months and thereafter have a lifelong immunity to the fungal spores. In severe cases, especially in those patients with rapid and extensive primary illness, those who are at risk for dissemination of disease, and those who have disseminated disease, antifungal drug therapy is used.

The type of medication used and the duration of drug therapy are determined by the severity of disease and response to the therapy. The medications used include ketoconazole, itraconazole, and fluconazole in chronic, mild-to-moderate disease, and amphotericin B, given intravenously or inserted into the spinal fluid, for rapidly progressive disease. Although these treatments are often helpful, evidence of disease may persist and years of treatment may be required (VFCE, 2022a). Approximately 60 percent of people infected are asymptomatic and do not seek medical attention. In the remaining 40 percent, symptoms range from mild to severe. A small percentage, approximately one percent, die as a result of the disease (CDPH, 2022).

The usual course of Valley Fever in healthy people is complete recovery within six months. In most cases, the body’s immune response is effective, and no specific course of treatment is necessary. About five percent of cases result in pneumonia (infection of the lungs), while another 5 to 10 percent of patients develop lung cavities. These cavities occur most often in adults, usually without symptoms, and about 50 percent of them disappear within two years. Occasionally, these cavities rupture, causing chest pain and difficulty breathing which requires surgical repair. Only one to two percent of those exposed who seek medical attention would develop a disease that disseminates (spreads) to other parts of the body other than the lungs (CDPH, 2022).

Asbestos

Asbestos is a term used for several types of naturally-occurring fibrous minerals found in many parts of California. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the United States. In addition, naturally occurring asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in the counties associated with the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. According to information provided by the Department of Conservation Division of Mines and Geology, the project site is not located in an area where naturally occurring asbestos is likely to be present (CDOC, 2000).

Local Air Quality

CARB has established and maintains a network of sampling stations (called the State and Local Air Monitoring Stations [SLAMS] network) that work in conjunction with local air pollution control districts and air quality management districts to monitor ambient pollutant levels. The SLAMS network in Kern County consists of eight stations that monitor various pollutant concentrations. The locations of these stations were chosen to meet monitoring objectives, which, for the SLAMS network, call for stations that monitor the highest pollutant concentrations, representative concentrations in areas of high population density, the impact of major pollution emissions sources, and general background concentration levels.

The EKAPCD is responsible for monitoring air quality in the Kern County portion of the MDAB to determine whether pollutant concentrations meet state and national air quality standards. The nearest air monitoring station to the project site is the Mojave air monitoring station, located approximately 7.5 miles north of the project site. The Mojave monitoring station monitors ambient concentrations of ozone, PM_{10}, and $PM_{2.5}$. CO and NO_2 data were obtained from the Lancaster monitoring station and SO_2 data was obtained from the Victorville-Park Avenue monitoring station as these are the closest stations that monitors for these pollutants. Data obtained for 2019 through 2022 is summarized below in **Table 4.3-2**, *Ambient Air Quality Data.*

Table 4.3-2: Ambient Air Quality Data

Pollutant/Standard	2019	2020	2021	2022
O_3 (1-hour) Mojave				
Maximum Concentration (ppm)	0.085	0.108	0.094	0.091
Days > CAAQS (0.09 ppm)	0	5	0	0
O_3 (8-hour) Mojave				
Maximum Concentration (ppm)	0.077	0.100	0.084	0.075
Days > CAAQS (0.070 ppm)	10	16	19	9
Days > NAAQS (0.075 ppm)	2	9	10	0
NO_2 (1-hour) Lancaster				
Maximum Concentration (ppm)	0.050	0.052	0.046	0.044
NO_2 (Annual) Lancaster				
Annual Arithmetic Mean (0.030 ppm)	0.025	0.026	0.027	N/A
CO (1-hour) Lancaster				
Maximum Concentration (ppm)	1.388	1.617	1.416	N/A
CO (8-hour) Lancaster				
Maximum Concentration (ppm)	0.628	0.707	0.746	N/A

Pollutant/Standard	2019	2020	2021	2022
SO_2 (1-hour) Victorville-Park				
Maximum Concentration (ppm)	0.016	0.006	0.136	N/A
SO_2 (24-hour) Victorville-Park				
Maximum Concentration (ppm)	0.009	0.003	0.016	N/A
PM_{10} (24-hour) Mojave				
Maximum Concentration (µg/m^3)	248.7	114.8	352.0	121.5
Samples > CAAQS (50 µg/m^3)	15	13	33	7
Samples > NAAQS (150 µg/m^3)	2	0	1	0
$PM_{2.5}$ (24-hour) Mojave				
Maximum Concentration (µg/m^3)	19.8	72.8	50.7	10.9
Samples > NAAQS (35 µg/m^3)	0	6	3	0

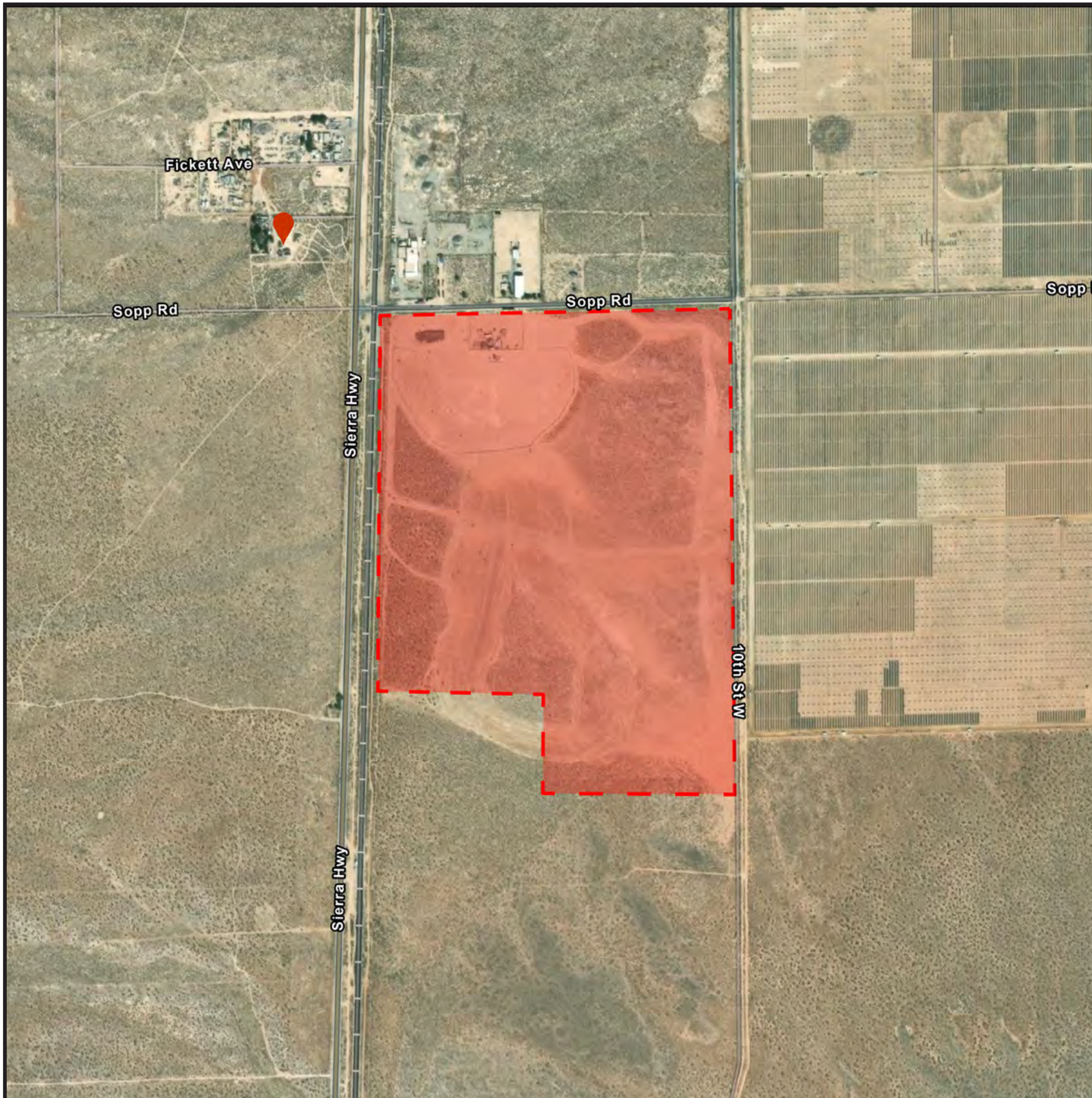
ppm = parts per million; µg/m^3 = micrograms per cubic meter
SOURCE:CARB, Air Quality and Meteorological Information System (AQMIS), 2022. https://arb.ca.gov/aqmis2/aqdselect.php. Accessed October 12, 2023.
CARB, Top 4 Summary. https://www.arb.ca.gov/adam/topfour/topfour1.php. Accessed October 12, 2023.

4.3.3 Sensitive Receptors

Certain population groups, such as children, elderly, and acutely and chronically ill persons (especially those with cardio-respiratory diseases), are considered more sensitive to the potential effects of air pollution than others. Sensitive land uses within ¼ mile of the project site are shown in **Figure 4.3-1**: *Sensitive Receptor Locations Nearest to the Project Site*, and include the following:

- Residential Uses: Single-family residences located approximately 1,000 feet to the northwest of the project site along Dobbs Road.

All other air quality sensitive receptors are located at greater distances from the project site, and would be less impacted by project emissions. Impacts are quantified for the sensitive receptors listed here.



Mojave Micro Mill Project

GPA No.3, Map No. 213
ZCC No. 62, Map No. 213
CUP No. 71, Map No. 213
CUP No. 72, Map No. 213
PD Plan No. 3, Map No. 213
ZV No. 24, Map No. 213
ZV No. 25, Map No. 213

Figure 4.3-1: Sensitive Receptor Locations Nearest to the Project Site

PSGM3 Holdings Corp (Pacific Steel Group)

Project Site
Sensitive Receptor

APN: 431-010-02 & 431-030-02
Sec. 27 - T10N/R12W

Kern County
Planning & Natural
Resources Department

4.3.4 Regulatory Setting

A number of statutes, regulations, plans and policies have been adopted which address air quality concerns. The project site and vicinity is subject to air quality regulations developed and implemented at the federal, State, and local levels. At the federal level, the USEPA is responsible for implementation of the federal CAA. Some portions of the CAA (e.g., certain mobile source requirements and other requirements) are implemented directly by the USEPA. Other portions of the CAA (e.g., stationary source requirements) are implemented through delegation of authority to state and local agencies. A number of plans and policies have been adopted by various agencies that address air quality concerns. Those plans and policies that are relevant to the project are discussed below.

Federal

The federal Clean Air Act (CAA) was enacted in 1955 and has been amended numerous times in subsequent years, with the most recent amendments occurring in 1990 (42 U.S.C. §7401 et seq.). The CAA is the comprehensive federal law that regulates air emissions in order to protect public health and welfare (USEPA, 2022h). The USEPA is responsible for the implementation and enforcement of the CAA, which establishes federal NAAQS, specifies future dates for achieving compliance, and requires USEPA to designate areas as attainment, nonattainment, or maintenance. The CAA also mandates that each state submit and implement a State Implementation Plan (SIP) for each criteria pollutant for which the state has not achieved the applicable NAAQS. The SIP includes pollution control measures that demonstrate how the standards for those pollutants will be met. The sections of the CAA most applicable to the project include Title I (Nonattainment Provisions) and Title II (Mobile Source Provisions) (USEPA, 2022b).

The federal Clean Air Act (CAA) establishes a classification system for the level of protection from the impacts of air pollution in an area. Areas designated as Class I receive the greatest level of protection from the impacts of air pollution. There are three Class I areas within 62 miles (100 kilometers (km)) of the proposed project site. These include the Domeland Wilderness Area which is located approximately 85 km to the north, the San Gabriel Wilderness Area located approximately 67 km to the south, and the Cucamonga Wilderness Area located approximately 88 km to the south-southeast.

Title I requirements are implemented for the purpose of attaining NAAQS for criteria air pollutants. The NAAQS were amended in July 1997 to include an 8-hour standard for ozone and to adopt a NAAQS for $PM_{2.5}$. The NAAQS were also amended in September 2006 to include an established methodology for calculating $PM_{2.5}$, as well to revoke the annual PM_{10} threshold.

Table 4.3-3, *Ambient Air Quality Standards*, shows the NAAQS currently in effect for each criteria pollutant. The NAAQS and the CAAQS for the California criteria air pollutants (discussed below) have been set at levels considered safe to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly with a margin of safety; and to protect public welfare, including against decreased visibility and damage to animals, crops, vegetation, and buildings (USEPA, 2023a). In addition to criteria pollutants, Title I also includes air toxics provisions which require USEPA to develop and enforce regulations to protect the public from exposure to airborne contaminants that are known to be hazardous to human health. In accordance with Section 112, USEPA establishes National Emission Standards for Hazardous Air Pollutants. The list of hazardous air pollutants (HAPs), or air toxics, includes specific compounds that are known or suspected to cause cancer or other serious health effects. It also includes the requirements for the Prevention of Significant Deterioration (PSD) of Air Quality, which sets limits on sulfur oxide and particulate matter and other pollutants as outlined in Sections 163 and 166.

Additionally, Title I also includes measures for the Prevention of Significant Deterioration (PSD) of Air Quality (40 CFR 52.21) which requires new and modified stationary sources to demonstrate that their allowable emissions will not cause or contribute to a violation of "any national ambient air quality standard in any air quality control region. Under the PSD, major sources located in a NAAQS attainment or unclassifiable area require the following: installation of Best Available Control Technology (BACT); an air quality analysis (specifically for the PSD permit which demonstrates that new emissions would not cause or contribute to a violation of any applicable NAAQS or PSD increment); an additional impact analysis; and public involvement. The PSD permit dos not prevent sources from increasing emissions, but is designed to (USEPA, 2023c):

- Protect public health and welfare.
- Preserve, protect and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value.
- Ensure that economic growth will occur in a manner consistent with the preservation of existing clean air resources.
- Assure that emissions from any source in any state will not interfere with any portion of the applicable implementation plan to prevent significant deterioration of air quality for any other State.
- Assure that any decision to permit increased air pollution in any area to which this section applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decision making process.

Title II requirements pertain to mobile sources, such as cars, trucks, buses, and planes. Reformulated gasoline, automobile pollution control devices, and vapor recovery nozzles on gas pumps are a few of the mechanisms the USEPA uses to regulate mobile air emission sources. The provisions of Title II have resulted in tailpipe emission standards for vehicles, which have been strengthened in recent years to improve air quality. For example, the standards for NO_X emissions have been lowered substantially, and the specification requirements for cleaner burning gasoline are more stringent.

Table 4.3-3: Ambient Air Quality Standards

Pollutant	Average Time	California Standards[a]		National Standards[b]		
		Concentration[c]	Method[d]	Primary[c,e]	Secondary[c,f]	Method[g]
O_3[h]	1 Hour	0.09 ppm (180 µg/m3)	Ultraviolent Photometry	-	Same as Primary Standard	Ultraviolent Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m3)		
NO_2[i]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	None	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		53 ppb (100 µg/m^3)	Same as Primary Standard	
CO	1 Hour	20 ppm (23 mg/m3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m3)	None	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10mg/m3)		9 ppm (10 mg/m3)		
SO_2[i]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	-	Ultraviolet Fluorescene; Spectropho-tometry (Pararosani-ine Method)[9]
	3 Hour	-		-	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[j]	-	
PM_{10}[k]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuat-ion	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic	20 µg/m^3		-		
$PM_{2.5}$[k]	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3[k]	15 µg/m^3	
Lead [l,m]	30 Day Average	1.5 µg/m^3	Atomic Absorption	-	-	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average [m]	--		0.15 µg/m^3		
Visibility Reducing Particles [n]	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of 10 miles or more due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates (SO_4)	24 Hour	25 µg/m^3	Ion Chrom ato-graphy			

Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultravi olet Fluores ce-nce
Vinyl Chloride [l]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chrom ato-graphy

[a] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 micrograms/per cubic meter (µg/m³) is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] Any equivalent procedure which can be shown to the satisfaction of the California Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

[e] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[f] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[g] Reference method as described by the USEPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the USEPA.

[h] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[i] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[j] On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated non-attainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[k] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m³ to 12.0 µg/m³.

[l] The California Air Resources Board has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[m] The national standard for lead was revised on October 15, 2008 to a rolling three-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[n] In 1989, the California Air Resources Board converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: California Air Resources Board, Ambient Air Quality Standards (5/4/16). Available https://ww2.arb.ca.gov/resources/documents/ambientair-quality-standards-0. Accessed November 2022.

Table 4.3-4, *EKAPCD Attainment Status*, shows the attainment status of the Air Basin for each criteria pollutant. Further, **Table 4.3-4**, the Air Basin is designated under federal or state ambient air quality standards as nonattainment for ozone and PM_{10}. As detailed in the EKAPCD 2020- 2021 Information Report (EKAPCD, 2021), the major sources of air pollution in the Air Basin are mining, military, aerospace, farming, cannabis, renewable energy, and most recently the wildfires.

Title V of the CAA, as amended in 1990, creates an operating permit program for certain defined major sources. In general, owner/operators of defined industrial or commercial sources that emit more than 100 tons per year (tpy) of any pollutant must process a Title V permit. However, in non-attainment areas, lower thresholds apply as defined in the CAA. Additionally, major source thresholds for HAPs are 10 tpy for a single HAP or 25 tpy for any combination of HAPs. As EKAPCD is in severe non-attainment for ozone, the threshold changes from 100 tpy to 25 tpy.

Title V does not impose any new air pollution standards, require installation of any new controls on the affected facilities, or require reductions in emissions. Title V does enhance public and EPA participation in the permitting process and requires additional record keeping and reporting by businesses, which results in significant administrative requirements.

Table 4.3-4: **EKAPCD Attainment Status**

Pollutant	National Standards (NAAQS)	California Standards (CAAQS)
O_3 (1-hour standard)	Attainment/Maintenance [a b]	Non-attainment
O_3 (8-hour standard)	Non-attainment – Severe	Non-attainment
CO	Unclassified/Attainment	Unclassified
NO_2	Unclassified/Attainment	Attainment
SO_2	Unclassified/Attainment	Attainment
PM_{10}	Unclassified/Attainment [d]	Non-attainment
$PM_{2.5}$	Unclassified/Attainment	Unclassified
Lead (Pb)	Unclassified/Attainment	Attainment
Visibility Reducing Particles	N/A	Unclassified
Sulfates	N/A	Attainment
Hydrogen Sulfide	N/A	Unclassified
Vinyl Chloride [c]	N/A	N/A

N/A = not applicable

[a] The NAAQS for 1-hour ozone was revoked on June 15, 2005, for all areas except Early Action Compact areas.

[b] EKAPCD was in attainment for the 1-hour ozone NAAQS at time of revocation, the proposed Attainment Maintenance designation's effective date was June 21, 2005, therefore it did not become effective.

[c] In 1990, the California Air Resources Board identified vinyl chloride as a toxic air contaminant and determined that it does not have an identifiable threshold. Therefore, the California Air Resources Board does not monitor or make status designations for this pollutant.

[d] The proposed project area is located in the portion of EKAPCD that is designated Unclassified/Attainment, the Kern River/Cummings Valleys area is classified as Nonattainment – Serious, and the Indian Wells Valley is classified at Attainment Maintenance.

SOURCE: USEPA, The Green Book Non-Attainment Areas for Criteria Pollutants, https://www.epa.gov/green-book; CARB, Area Designations Maps/State and National, http://www.arb.ca.gov/desig/adm/adm.htm, and Eastern Kern APCD Attainment Status, http://www.kernair.org/Documents/Announcements/Attainment/EKAPCD%20Attainment%20Status%202022.pdf. Accessed November 2022.

New Source Review

New Source Review (NSR) is a Clean Air Act program that requires industrial facilities to install modern pollution control equipment when they are built or when making a change that increases emissions significantly (USEPA, 2015). The program accomplishes this when owners or operators obtain permits limiting air emissions before they begin construction.

There are three types of NSR permitting requirements: Prevention of Significant Deterioration (PSD), Nonattainment NSR, and Minor source permits. Most NSR permits are issued by state or local air pollution control agencies with the USEPA issues permits in some cases (USEPA, 2023b).

Prevention of Significant Deterioration (PSD)

PSD applies to new major sources or major modifications at existing sources for pollutants where the area the source is located is in attainment or unclassified with the NAAQS (USEPA, 2023c).

A PSD permit requires the following:

- Installation of the Best Available Control Technology;
- An air quality analysis
- An additional impact analysis; and
- Public involvement.

PSD does not prevent sources from increasing emissions (USEPA, 2023c). Instead, PSD is designed to: Protect public health and welfare; preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value; insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources; and assure that any decision to permit increased air pollution in any area to which this section applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decision making process (USEPA, 2023c).

State

California Air Resources Board

The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of California to achieve and maintain the CAAQS. CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets the CAAQS, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB has primary responsibility for the development of California's SIP, for which it works closely with the federal government and the local air districts. The SIP is required for the state to take over implementation of the federal CAA from USEPA.

California Clean Air Act

The California Clean Air Act, signed into law in 1988, requires all areas of the state to achieve and maintain the CAAQS by the earliest practical date. The CAAQS are established to protect the health of the most sensitive groups and apply to the same criteria pollutants as the federal Clean Air Act and also includes State-identified criteria pollutants, which are sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. CARB has primary responsibility for ensuring the implementation of the California Clean Air Act (Chapter 1568 of the Statutes of 1988), responding to the federal Clean Air Act planning requirements applicable to the state, and regulating emissions from motor vehicles and consumer products within the state.

Health and Safety Code Section 39607(e) requires CARB to establish and periodically review area designation criteria. Table 3 provides a summary of the attainment status of the Eastern Kern County portion of the Air Basin with respect to the state standards. The Air Basin is designated as attainment for the California standards for sulfates and unclassified for hydrogen sulfide and visibility-reducing particles. The Air Basin is currently in non-attainment for ozone and PM_{10} under the CAAQS. Since vinyl chloride is a carcinogenic toxic air contaminant, CARB does not classify attainment status for this pollutant.

California Code of Regulations

The California Code of Regulations (CCR) is the official compilation and publication of regulations adopted, amended or repealed by the state agencies pursuant to the Administrative Procedure Act. The CCR includes regulations that pertain to air quality emissions. Specifically, Section 2485 in Title 13 of the CCR states that the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds) during construction shall be limited to five minutes at any location. In addition, Section 93115 in Title 17 of the CCR states that operations of any stationary, diesel-fueled, compression-ignition engines shall meet specified fuel and fuel additive requirements and emissions standards.

California Air Resources Board On-Road and Off-Road Vehicle Rules

In 2004, CARB adopted an Airborne Toxic Control Measure (ATCM) to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel PM and other TACs (Title 13 California Code of Regulations [CCR], Section 2485). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than five minutes at any given time.

In 2008 CARB approved the Truck and Bus regulation to reduce NO_X, PM_{10}, and $PM_{2.5}$ emissions from existing diesel vehicles operating in California (13 CCR, Section 2025). The requirements were amended to apply to nearly all diesel-fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. For the largest trucks in the fleet, those with a GVWR greater than 26,000 pounds, there are 2 methods to comply with the requirements. The first method is for the fleet owner to retrofit or replace engines, starting with the oldest engine model year, to meet 2010 engine standards, or better. This is phased over 8 years, starting in 2015 and would be fully implemented by 2023, meaning that all trucks operating in the state subject to this option would meet or exceed the 2010 engine emission standards for NO_{10} and $PM_{2.5}$ by 2023. The second method, if chosen, required fleet owners, starting in 2012, to retrofit a portion of their fleet with diesel particulate filters achieving at least 85 percent removal efficiency, with installation of diesel particulate filters (DPFs) for their entire fleet by January 1, 2016. However, DPFs do not typically lower NO_X emissions. Thus, fleet owners choosing the second option had until 2020 to comply with the 2010 engine emission standards for their trucks and buses.

In addition to limiting exhaust from idling trucks, CARB also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The regulation adopted by the CARB on July 26, 2007, aims to reduce emissions by the installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models (13 CCR, Section 2449). Implementation is staggered based on fleet size (which is the total of all off-road horsepower under common ownership or control), with the largest fleets to begin compliance in 2014, medium fleets in 2017, and small fleets in 2019. Each fleet must demonstrate compliance through one of two methods. The first option is to calculate and maintain fleet average emissions targets, which encourages the retirement or repowering of older equipment and rewards the introduction of newer cleaner units into the fleet. The second option is to meet the Best Available Control Technology (BACT) requirements by turning over or installing Verified Diesel Emission Control Strategies (VDECS) on a certain percentage of its total fleet horsepower. The compliance schedule requires that BACT turn overs or retrofits (VDECS installation) be fully implemented by 2023 in all equipment for large and medium fleets and by 2028 for small fleets.

Toxic Air Contaminants

The California Air Toxics Program was established in 1983, when the California Legislature adopted Assembly Bill (AB) 1807 to establish a two-step process of risk identification and risk management to address potential health effects from exposure to toxic substances in the air. In the risk identification step, CARB and OEHHA determine if a substance should be formally identified, or “listed”, as a TAC in California. inception of the program, a number of such substances have been listed (https://ww2.arb.ca.gov/resources/documents/carb-identified-toxicair-contaminants). In 1993, the California Legislature amended the program to identify the 189 federal HAPs as TACs.

In the risk management step, CARB reviews emission sources of an identified TAC to determine whether regulatory action is needed to reduce risk. Based on the results of that review, CARB has promulgated a number of ATCMs, both for mobile and stationary sources. As discussed above, in 2004, CARB adopted an ATCM to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other TACs. The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than five minutes at any given time.

In addition to limiting exhaust from idling trucks, as discussed above, CARB promulgated emission standards for off-road diesel construction equipment such as bulldozers, loaders, backhoes, and forklifts, as well as many other self-propelled off-road diesel vehicles. The regulation, adopted by CARB on July 26, 2007, aims to reduce emissions by the installation of diesel particulate filters and encouraging the replacement of older, dirtier engines with newer emission controlled models. Reduction over time with occur as implementation is staggered based on fleet size, with the largest operators beginning compliance in 2014 with full implementation by 2023 for large and medium fleets and 2028 for small fleets.

The AB 1807 program is supplemented by the AB 2588 Air Toxics "Hot Spots" program, which was established by the California Legislature in 1987. Under this program, facilities are required to report their air toxics emissions, assess health risks, and notify nearby residents and workers of significant risks if present. In 1992, the AB 2588 program was amended by Senate Bill (SB) 1731 to require facilities that pose a significant health risk to the community to reduce their risk through implementation of a risk management plan.

California State Implementation Plan

The CAA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The EPA has the responsibility to review all State Implementation Plans to determine if they conform to the requirements of the CAA. State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards SIP revisions to the EPA for approval and publication in the Federal Register. As discussed below, the *EKAPCD 2017 Ozone Attainment Plan* informs the EKAPCD's portion of the SIP.

Regional

Eastern Kern Air Pollution Control District

The project site is located within the Mojave Desert Air Basin which encompasses the desert portions of Kern, Los Angeles, Riverside, and San Bernardino Counties. The Basin has four air districts which regulate air quality. The project site lies within the EKAPCD. EKAPCD is responsible for air quality planning in its portion of the Air Basin and developing rules and regulations to bring the area into attainment of the ambient air quality standards. This is accomplished though air quality monitoring, evaluation, education, implementation of control measures to reduce emissions from stationary sources, permitting and inspection of pollution sources, enforcement of air quality regulations, and by supporting and implementing measures to reduce emissions from motor vehicles. The EKAPCD has established the following rules and regulations which apply to the project to ensure compliance with local, State, and federal air quality regulations:

Rule *201*

Rule 201 establishes permitting requirements for stationary sources to operate. The proposed project must obtain Authority to Construct and Permit to Operate approval under Rule 201.

Rule 201.1

Rule 201.1 implements the requirements of Title V of the CAA for permits to operate for certain sources emitting regulated air pollutants, including attainment and non-attainment pollutants. This rule covers Title I requirements of the CAA, including: New Source Review, PSD, New Source Performance Standards; NAAQS; NESHAPs; Maximum Achievable Control Technologies; Risk Management Plan Preparation and Registration Requirements; Solid Waste Incineration requirements, Consumer and Commercial requirements; Tank Vessel requirements; District prohibitory rules approved by the SIP; Standards or regulation promulgated to a Federal Implementation Plan, and Enhanced Monitoring and Compliance Certification requirements.

Rule 208.2

This Rule establishes criteria by which a project under review by EKAPCD can be found to have no potential for causing a significant environmental impact, and, thus, be granted a general rule exemption pursuant to Section 15061(b)(3) of the State CEQA Guidelines.

For purposes of determining whether a proposed projects has no potential to cause a significant effect on the environment, a new or modified emissions unit (as defined in Rule 210.1, Subsection II.L.) at a facility shall be found to have no potential for causing a significant effect on the environment if the new or modified emissions unit meets all of the following requirements:

A. All answers to the KCAPCD "Environmental Information Form and Initial Study Evaluation" are "No";

B. The proposed new or modified emissions unit will comply with all applicable requirements and limits established in Regulation IV of the Kern County Air Pollution Control District Rules and Regulations, and all provisions of state and federal law and regulations which the Kern County Air Pollution Control District has authority to enforce;

C. Expected emissions from the proposed new or modified emissions unit are calculated using:

1. Standardized emission factors from published CARB or U.S. EPA sources;

2. Source tests for the same or similar facilities conducted in accordance with CARB or U.S. EPA test methods;

3. Recognized formulas from published engineering and scientific handbooks, material safety data sheets, or other similar published literature;

4. Manufacturer's guarantees; and/or

5. Other fixed standards;

D. Best Available Control Technology (BACT) as required by Rule 210.1, Subsection III.A., is proposed and BACT is established based on:

1. The latest edition of the CARB/U.S. EPA BACT/LAER Clearinghouse;

2. The EKAPCD’s own compilations of BACT for specific types of sources; or

3. A more stringent BACT proposed by the project proponent;

E. Any emission reduction offsets required by Rule 210.1, Subsection III.B., are provided solely from emissions units within the facility at which the new or modified emissions unit is proposed to be constructed and the emission reductions from those units can be determined from source tests, production data, or other existing District records;

F. Any increase in the quantity or type of toxic air contaminants emitted from the facility is shown by a risk assessment prepared in accordance with current Cal-EPA guidelines to have increased cancer risk at any receptor outside the facility perimeter less than one in one million (1 x 10-6) and total hazard index at any receptor outside the facility perimeter less than 0.2; and G. The proposed project will not have a significant impact due to cumulative effects of successive projects of the same type at the same location.

Rule 210.1

Rule 210.1 is EKAPCD's New and Modified Stationary Source Review rule and establishes stationary source offset levels for new and modified stationary sources of air pollutants. Under this rule, the EKAPCD has established required offsets for when the emissions from a source exceed the following trigger levels:

- PM_{10} – 15 tons/year
- SO_X (as SO_2) – 27 tons/year
- VOCs – 25 tons/year
- NO_X (as NO_2) – 25 tons/year.

Additionally, this rule requires BACT for all affected pollutants expected to be emitted from a new emissions unit. Offsets are required for PM_{10}, SO_X, NO_X, and VOC in federal or state designated PM_{10}, SO_X, NO_X, or ozone non-attainment areas. After a stationary sources New Source Review (NSR) balance and/or stationary source potential to emit equals or exceeds these trigger levels and offsets have been provided fully offsetting the NSR balance or the stationary source potential to emit, any additional future increase shall be offset.

Rule 210.4

The purpose of this Rule is to include the federal Prevention of Significant Deterioration rule requirements into the EKAPCD Rules and Regulations by incorporating the federal requirements by reference. The PSD program is a construction permitting program for new major source facilities and major modifications to existing major source facilities located in areas classified as attainment or in areas that are unclassifiable for any criteria air pollutant.

Rule 210.5

This rule prevents adverse impacts to Federal Class I areas. For any new major stationary source or major modification which would have the potential to emit NO_X, SO_X, or particulate matter in significant amounts and is required to utilize BACT for such pollutants, EKAPCD shall not issue an Authority to Construct unless the analysis required by this Rule demonstrates that an adverse impact on visibility will not occur.

Rule 401

Rule 401 states that a person shall not discharge into the atmosphere, from any single source of emissions whatsoever, any air contaminant from any single emissions source for a period of periods aggregating more than 3 minutes in any one hour which is:

- As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or
- Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Subsection A [of the Rules].

Rule 402

Rule 402 of the EKAPCD's rules and regulations addresses significant man-made dust sources from active operations. An active operation is defined as "Activity capable of generating fugitive dust, including any open storage pile, earth-moving activity, construction/demolition activity, disturbed surface area, and nonemergency movement of motor vehicles on unpaved roadways and any parking lot served by an unpaved road subject to this Rule." Rule 402 applies to specified bulk storage, earthmoving, construction and demolition, and man-made conditions resulting in wind erosion, and includes the following requirements:

- A person shall not cause or allow emissions of fugitive dust from any active operation to remain visible in the atmosphere beyond the property line of the emission source.
- A person shall utilize one or more Reasonably Available Control Measures (RACM) or Bulk Material Control Measures (BMCM) to minimize fugitive dust emissions from each source type that is part of any active operation, including unpaved roadways.
- No person shall conduct a large operation without filing for and obtaining an approved fugitive dust emission control plan. Large operation is defined as "Any construction activity on any site involving 10 or more contiguous acres of disturbed surface area, or any earthmoving activity exceeding a daily volume of 10,000 cubic yards or relocating more than 2,500 cubic yards per day of bulk materials at least three days per year."
- EKAPCD may require onsite PM_{10} monitoring for any large operation that causes downwind PM_{10} ambient concentrations to increase more than 50 micrograms per cubic meter above upwind concentrations as determined by utilizing high-volume particulate matter samplers, or other EPA approved equivalent method(s).

Rule 404.1

Rule 404.1 pertains to Particulate Matter Concentrations – Desert Basin and states:

- A person shall not discharge into the atmosphere from any single source operation, in service on the date this Rule is adopted, particulate matter in excess of 0.2 grains per cubic foot of gas at standard conditions.
- A person shall not discharge into the atmosphere from any single source operation, the construction or modification of which commenced after the adoption of this Rule, particulate matter in excess of 0.1 grains per cubic foot of gas at standard conditions.

Rule 410.1

This rule limits VOC emissions from architectural coatings by specifying VOC content limits, storage, cleanup, and labeling requirements.

Rule 410.4

The purpose of this rule is to limit VOC emissions from the coating of metal parts and products, large appliances parts and products, metal furniture, plastic parts and products, automotive/transportation and business machine plastic parts and products, and pleasure crafts, and from cleaning, storage, and disposal of organic solvents and waste solvent materials associated with such coating operations.

Rule 414

Rule 414 states that a person shall not use any compartment of any vessel or device operated for the recovery of oil or tar from effluent water, from any equipment which processes, refines, stores or handles petroleum or coal tar products unless such compartments is equipped with one of the following:

- A solid cover with all openings sealed and totally enclosing the liquid contents of the compartment, except for such breathing vents as are structurally necessary; or
- A floating pontoon or double-deck type cover, equipped with closure seals that have no holes or tears, installed and maintained so that gaps between the compartment wall and seal shall not exceed 0.32 centimeters (1/8 inch) for an accumulative length of 97 percent of the perimeter of the tank, and shall not exceed 1.3 centimeters (1/2 inch) for an accumulative length of the remaining 3 percent of the perimeter of the tank. No gap between the compartment wall and the seal shall exceed 1.3 centimeters (1/2 inch); or a vapor recovery system with a combined collection and control efficiency of at least 90 percent by weight.

Rule 419

Rule 419 states that a person shall not discharge from any source whatsoever such quantities of contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or that endanger the comfort, repose, health, or safety of such persons or the public or that cause or have a natural tendency to cause injury or damage to business or property.

Rule 423

Rule 423 adopts the EPA’s National Emissions Standards for Hazardous Air Pollutants by reference, which grants EKAPCD the ability to ensure that all sources of hazardous air pollution would comply with applicable standards, criteria, and requirements set forth in Title 40, Chapter 1, Parts 61 and 63, of the Code of Federal Regulations that are in effect as of October 10, 2017.

2023 Ozone Air Quality Attainment Plan

In 2008, USEPA adopted a more stringent 8-hour ozone NAAQS of 0.075 ppm, and in 2015, adopted the 8-hour ozone NAAQS of 0.070 ppm. Although EKAPCD attained the 1997 8-hour ozone NAAQS, and the Indian Wells Valley planning area met the new (2008) ozone NAAQS, the EKAPCD's Design Value was higher than 0.075 ppm. In 2012, a portion of the EKAPCD was classified "marginal" nonattainment pursuant to the 2008, 8-hour Ozone NAAQS Air Quality Designations. However, EKAPCD failed to meet the 0.075 ppm standard by the applicable attainment date and was reclassified as "moderate" nonattainment, effective June 3, 2016. As a result, EKAPCD was required to submit a SIP revision for the nonattainment area by January 1, 2017, which showed compliance with statutory and regulatory conditions applicable to the "moderate" designation (EKAPCD, 2023).

EKAPCD, in partnership with CARB, conducted photochemical modeling along with supplemental analyses to determine whether the EKAPCD could attain the 2008 ozone NAAQS by the "moderate" nonattainment deadline. Modeling indicated EKAPCD would not meet the 0.075 ppm standard by the moderate deadline but could attain it by 2020, which is the attainment date for "serious" nonattainment areas. Pursuant to Section 181(b)(3) of the CAA "Voluntary Reclassification," EKAPCD requested CARB formally submit a request to USEPA asking for voluntary reclassification of EKAPCD from "moderate" to "serious" nonattainment for the 2008, 8-hour ozone NAAQS, and revise the attainment date to December 31, 2020 (EKAPCD, 2023).

In response, on May 15, 2021, the EKAPCD requested CARB submit documentation to the USEPA to reclassify the EKAPCD's nonattainment area from Serious to Severe pursuant to the 2008 ozone NAAQS. On June 25, 2021, the USEPA approved/conditionally approved, all elements of the 2017 Eastern Kern Ozone SIP, with the exception of deferred action on the Severe nonattainment redesignation request and reasonably available control measures (RACM) demonstrations. On July 7, 2021, the USEPA reclassified the EKAPCD's nonattainment area to Severe nonattainment pursuant to the 2008 ozone NAAQS, with an attainment date of July 2027 (EKAPCD, 2023).

The 2023 Ozone Air Quality Attainment Plan (2023 AQAP) was adopted by EKAPCD on May 4, 2023. The 2023 AQMP includes required elements of an attainment plan, as well as the emissions reductions and control measures necessary to demonstrate attainment with the 2008 and 2016 8-hour ozone NAAQS. Modeling completed by EKAPCD indicates that EKAPCD would not attain the 2015, 8-hour ozone NAAQS (0.070 ppm) by 2027, attainment deadline for the Serious nonattainment designation, but could attain it by 2033, the attainment deadline for the Severe nonattainment designation. Pursuant to CAA Section 181(b)(3) "Voluntary Reclassification", EKAPCD is petitioning CARB in the 2023 AQAQP to formally submit a request to the USEPA asking for the voluntary reclassification from "Serious" to "Severe" for the 2015 8-hour ozone NAAQS. The voluntary reclassification would extend the attainment deadline to August 27, 2033. As of June 1, 2023, neither CARB nor the USEPA have approved the 2023 AQAP (EKAPCD, 2023).

EKAPCD Air Quality Guidance Documents

The EKAPCD published the *Guidelines For Preparing An Air Quality Assessment For Use In Environmental Impact Reports* (EKAPCD, 2006) to assist with the preparation of the air quality assessments for use as a technical document in Environmental Impact Reports. These guidelines are intended to ensure that the assumptions and methodology used in the County's environmental documents are uniform from one project to the next to facilitate the comparison of air quality environmental effects. The *Guidelines For Preparing An Air Quality Assessment For Use In Environmental Impact Reports* provides standards, methodologies, and procedures for conducting air quality analyses in EIRs and was used extensively in the preparation of this analysis. EKAPCD recommends using the latest version of all models for the appropriate application.

Kern Council of Governments

Kern Council of Governments (KCOG) is the Metropolitan Planning Organization (MPO) for the region in which the project is located. In addition, on September 23, 2010, CARB adopted the GHG emissions reduction targets of 5 percent per capita reduction by 2020 and 10 percent per capita reduction by 2035 relative to 2005 levels for KCOG (CARB, 2020). Under SB 375, the reduction target must be incorporated within that region's Regional Transportation Plan (RTP), which is used for long-term transportation planning, in a Sustainable Communities Strategy (SCS). Certain transportation planning and programming activities would then need to be consistent with the SCS; however, Senate Bill 375 expressly provides that the SCS does not regulate the use of land, and further provides that local land use plans and policies (e.g., general plan) are not required to be consistent with either the RTP or SCS.

Pursuant to Health & Safety Code Section 40460, KCOG is responsible for preparing and approving the portions of the AQMP relating to regional demographic projections and integrated regional land use, housing, employment and transportation programs, measures and strategies. With regard to air quality planning, KCOG adopted the 2018 Regional Transportation Plan and Sustainable Communities Strategy (2018 RTP/SCS) (KCOG, 2018), which is an update to the previous 2014 RTP/SCS, on August 16, 2018. The 2018 RTP/SCS seeks to: improve economic vitality, improve air quality, improve the health of communities, improve transportation and public safety, promote the conservation of natural resources and undeveloped land, increase regional access to community services, increase regional and local energy independence and increase opportunities to help shape the communities' future, while successfully achieving the GHG-emission-reduction targets set by CARB. CARB approved that the KCOG 2018 RTP/SCS would achieve the 2020 and 2035 GHG reduction targets (CARB, 2020). Kern COG makes conformity findings for each air basin. Kern County recently prepared a draft 8-hour ozone air quality conformity analysis to analyze Kern County's federally approved Federal Transportation Improvement Program (FTIP) and the 2018 RTP/SCS. The conformity findings conclude that all air quality conformity requirements have been met (DOT, 2018).

KCOG adopted the 2022 RTP/SCS (KCOG, 2022a) on December 16, 2022. The 2022 RTP serves as a blueprint that establishes a set of regional transportation goals, policies, and actions intended to guide development of the planned multimodal transportation systems in Kern County. The 2022 SCS includes land use planning strategies and policies to reduce air emissions from passenger and light duty truck travel by better coordinating transportation expenditures with forecasted development patterns in order to meet the GHG emissions reduction target for the region by achieving a 9 percent reduction in per capita transportation GHG emissions by 2020 and a 15 percent reduction in per capita transportation emissions by 2035 compared to the 2005 level (KCOG, 2022a). Compliance with and implementation of the 2022 RTP/SCS policies and strategies would have co-benefits of reducing per capita criteria air pollutant emissions (e.g., nitrogen dioxide, carbon monoxide, etc.) associated with reduced per capita vehicle miles traveled (VMT).

The 2022 RTP/SCS states that Kern County region was home to approximately 927,500 people in 2020 and included approximately 272,900 homes and 341,000 jobs (KCOG, 2022a). By 2050, the integrated growth forecast projects that these figures will increase by 299,700 people, with approximately 89,200 more homes and 61,200 more jobs (KCOG, 2022a). KCOG's 2022 RTP/SCS provides specific strategies for implementation. These strategies include supporting projects that encourage diverse job opportunities for a variety of skills and education, recreation and cultures and a full-range of shopping, entertainment and services all within a relatively short distance; encouraging employment development around current and planned transit stations and neighborhood commercial centers; encouraging the implementation of a "Complete Streets" policy that meets the needs of all users of the streets, roads and highways including bicyclists, children, persons with disabilities, motorists, electric vehicles, movers of commercial goods, pedestrians, users of public transportation, and seniors; and supporting alternative fueled vehicles (KCOG, 2022a).

In addition, the 2022 RTP/SCS includes strategies to promote active transportation; support local planning and projects that serve short trips; promote transportation investments, investments in active transportation, more walkable and bikeable communities that will result in improved air quality and public health and reduced GHG emissions; and support building physical infrastructure such as local and regional bikeways, sidewalk and safe routes to schools pedestrian improvements, regional greenways and first-last mile connections to transit, including to light rail and bus stations. The 2022 RTP/SCS aligns active transportation investments with land use and transportation strategies, increases competitiveness of local agencies for federal and state funding, and expands the potential for all people to use active transportation. CARB is in the process of reviewing the KCOG GHG quantification determination in the 2022 RTP/SCS for future GHG emission reduction targets. Although there are GHG emission reduction targets for passenger vehicles set by CARB for 2045, the 2022 RTP/SCS GHG emission reduction trajectory shows that more aggressive GHG emission reductions are needed for 2045. By meeting and exceeding the SB 375 targets for 2035, as well as achieving an additional 0.4 percent reduction in GHG from transportation-related sources in the ten years between 2035 and 2045, the 2022 RTP/SCS is expected to fulfill and exceed its portion of SB 375 compliance with respect to meeting the state's future GHG emission reduction goals (KCOG, 2022a). The conformity findings conclude that all air quality conformity requirements have been met (KCOG, 2022b).

Local

Kern County General Plan

The Kern County General Plan was originally adopted on June 15, 2004 and was last amended on September 22, 2009. It contains the following policies that relate to air quality. The policies and implementation measures in the Kern County General Plan for air quality emissions that are applicable to the project are provided below. The Kern County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed project. Therefore, they are not listed below, but all policies, goals, and implementation measures in the Kern County General Plan are incorporated by reference.

Chapter 1. Land Use, Conservation, and Open Space Element

1.10.2 Air Quality

Policies

Policy 18: The air quality implications of new discretionary land use proposals shall be considered in approval of major developments. Special emphasis will be placed on minimizing air quality degradation in the desert to enable effective military operations and in the valley region to meet attainment goals.

Policy 19: In considering discretionary projects for which an Environmental Impact Report must be prepared pursuant to the California Environmental Quality Act, the appropriate decision-making body, as part of its deliberations, will ensure that:

(a) All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and

(b) The benefits of the proposed project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required pursuant to the California Environmental Quality Act.

Policy 20: The County shall include fugitive dust control measures as a requirement for discretionary projects and as required by the adopted rules and regulations of the San Joaquin Valley Unified Air Pollution Control District and the Kern County Air Pollution Control District on ministerial permits.

Implementation Measures

Measure F: All discretionary permits shall be referred to the appropriate air district for review and comment.

Measure G: Discretionary development projects involving the use of tractor-trailer rigs shall incorporate diesel exhaust reduction strategies including, but not limited to:

a. Minimizing idling time.

b. Electrical overnight plug-ins.

Measure H: Discretionary projects may use one or more of the following to reduce air quality effects:

a. Pave dirt roads within the development.

b. Pave outside storage areas.

c. Provide additional low Volatile Organic Compounds (VOC) producing trees on landscape plans.

d. Use of alternative fuel fleet vehicles or hybrid vehicles.

e. Use of emission control devices on diesel equipment.

f. Develop residential neighborhoods without fireplaces or with the use of EPA certified low emission natural gas fireplaces.

g. Provide bicycle lockers and shower facilities on site

h. Increasing the amount of landscaping beyond what is required in the Zoning Ordinance (Chapter 19.86).

i. The use and development of park and ride facilities in outlying areas.

j. Other strategies that may be recommended by the local Air Pollution Control Districts.

Measure J: The County should include PM_{10} control measures as conditions of approval for subdivision maps, site plans, and grading permits.

Chapter 5. Energy Element

5.4.5 Solar Energy Development

Policies

Policy 1: The County shall encourage domestic and commercial solar energy uses to conserve fossil fuels and improve air quality.

Policy 2: The County should attempt to identify and remove disincentives to domestic and commercial solar energy development.

Policy 3: The County should permit solar energy development in the desert and valley planning regions that does not pose significant environmental or public health and safety hazards.

Policy 4: The County should encourage solar development in the desert and valley regions previously disturbed, and discourage development of energy projects on undisturbed land supporting State or federally protected plant and wildlife species.

Implementation Measures

Implementation Measure A: The County shall continue to maintain, and update as necessary, provisions in the Kern County Zoning Ordinance to provide adequate development standards for commercial solar energy development.

Implementation Measure B: The County should work with affected state and federal agencies and interest groups to establish consistent policies for solar energy development.

Kern County Best Management Practices for Dust Management

In 2013, solar developers and planners from Los Angeles and Kern Counties began a series of meetings to discuss the best practices for protecting air quality and minimizing construction impacts from solar projects. The process incorporated feedback from the Mojave Air and Space Port, members of the Mojave Chamber of Commerce, Rosamond Municipal Advisory Council, and numerous other community leaders. Subsequent to these meetings, Kern County has developed a new approach to best control fugitive dust emissions and improve air quality in the high desert. The County's approach recognizes that effective dust control management must be site-specific and cannot be "one-size-fits-all" because standard methods do not adequately meet the challenges of such a unique environment as the Mojave Desert region. An effective strategy has to be based on soil conditions, topography, adjacent land uses, and wind direction.

Conditions imposed on the new solar projects in Kern County are more extensive and rigorous than ever before. These include:

- Development of a Site Specific Dust Control Plan that considers ongoing community stakeholder input, to the extent feasible and practicable.
- Use of Global Positioning System (GPS) or lasers to level posts, generally avoiding grading except when elevation changes exceed design requirements.
- When grading is unavoidable, it is to be phased and done with the application of approved chemical dust palliatives (chemical substances applied to a road surface to reduce airborne dust) that stabilize the earth.
- Use of dust suppression measures during road surface preparation activities, including grading and compaction.
- Final road surfaces must be stabilized to achieve a measurable threshold friction velocity (TFV – the wind speed at which erosion starts) equal to or greater than 100 centimeters per second.
- If ground is cleared, plant roots must be left in place where possible.
- Expanded onsite watering processes.
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved (i.e., without asphalt) surface at the construction site.
- All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least 2 feet of freeboard.
- Sending mailings to residents within 1,000 feet of a project site.

Kern County is also carefully monitoring all solar construction activities to ensure that all mitigation measures are followed and are adequate to minimize dust-related health concerns.

4.3.5 Impacts and Mitigation Measures

This section describes the impact analysis relating to air quality for the project. It describes the methods used to determine the impacts of the project and lists the thresholds used to conclude whether an impact would be significant. Where warranted, measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodology

The air quality significance criteria were developed considering the CEQA significance criteria developed by the local air quality district in the project area, approved CEQA air quality checklists, and considering other federal criteria. The analysis presented within this section is based on both qualitative and quantitative approaches for determining air quality impacts associated with construction, operation, and maintenance of the project. The findings in the *Air Quality Technical Report* and the *Air Quality Analysis of Off-Site Utilities Memorandum* prepared for the project (located respectively in Appendix C and Appendix D), which was prepared in accordance with Kern County Planning Department's *Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports* documents were relied upon for the following analysis

Air Quality Plan Consistency

The EKAPCD is required, pursuant to the CAA, to reduce emissions of criteria pollutants for which the Air Basin is in non-attainment of the NAAQS (e.g., ozone). The EKAPCD's 2023 AQAP contains a comprehensive list of RACM's directed at reducing emissions and achieving NAAQS related to these pollutants (EKAPCD, 2023). EKAPCD's Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports states that the following should be included in the consistency determination for existing air quality plans:

- Discuss project in relation to Kern COG conformity and traffic analysis zones (TAZs).
- Quantify the emissions from similar projects in the Ozone Attainment Plan for the applicable basin. Discuss the Ozone Attainment Plan for the applicable air district, development, and relation to regional basin, Triennial Plan, and SIP.

Emissions

Existing Site Emissions

As previously discussed, the project site currently vacant. Thus, there are no existing site emissions.

Project Emissions

The construction and operational emissions were estimated from several emission models, emissions factors, and references, depending on the source type and data availability. Project impacts were quantitatively assessed using the following:

Construction equipment horsepower, load factors, and emission factors from the California Emissions Estimator Model (CalEEMod) model, version 2020.4.0.

- Vehicle emission factors using EMFAC2021.
- Fugitive dust emission factors for grading, truck loading/dumping, and paved road travel from the CalEEMod model and particulate matter control efficiencies based on

watering for construction dust control. Fugitive dust from travel on paved roads was calculated using AP-42 and CARB factors (CARB, 2018).

- USEPA's AP-42 Compilation of Air Pollutant Emission Factors
  - Chapter 3 (Stationary Internal Combustion Sources)
  - Chapter 13 (Miscellaneous Sources)
    - 13.4 Wet Cooling Towers
    - 13.2.2 Unpaved Roads
- Burns & McDonnell, Prevention of Significant Deterioration Air Construction Permit Application, Nucor Steel Florida, Inc. August 2018.
- Kern County, Draft Environmental Impact Report, Aratina Solar Project, May 2021.
- California Public Utilities Commission, Circle City Substation and Mira Loma-Jefferson 66 kV line Project, May 2018.

Construction Emissions

Construction of the project would generate temporary criteria pollutant emissions through the use of heavy-duty construction equipment, such as excavators and loaders, and through worker vehicle trips and haul trucks traveling to and from the project site. In addition, fugitive dust emissions would result from various soil-handling activities. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of construction activity, and prevailing weather conditions.

Micro Mill

Regional emissions during construction are forecasted by assuming a conservative estimate of construction activities (i.e., assuming all construction occurs at the earliest feasible date) and applying the mobile source and fugitive dust emissions factors. Assuming an early date for construction activities is conservative because emission factors decrease in future years due to improvements in engine technology and the retirement of older, dirtier equipment and vehicles from the fleet.

The emissions have been estimated using the California Emissions Estimator Model (CalEEMod) version 2020.4.0, an emissions inventory software program developed by the California Pollution Control Officers Association (CAPCOA), and using the most recent version of CARB's on-road vehicle emissions factor model (EMFAC2021). Construction phasing would include site preparation, grading/excavation, drainage/utilities/trenching, electrical installation, foundations/concrete pour, building erection, mechanical equipment installation, process piping installation, paving and landscaping. The Applicant provided a resource loaded construction schedule, which included the construction phases with the number of equipment pieces allocated in the various subphases. Therefore, not all equipment would be operated during the entire phase but only during the specified subphase. The resource loaded schedule is provided in Appendix C.

Haul truck trips, worker trips, and vendor truck trip estimates were based on information obtained from the Applicant, and the corresponding on-road emissions were calculated using the EMFAC model and Excel spreadsheets. The CalEEMod model was used with project-specific inputs to determine off-road emissions occurring from construction-related activities. CalEEMod relies on emission factors from CARB's OFFROAD2011 model.

The yearly emissions from these activities were estimated by construction phase and compared to the EKAPCD significance thresholds.

Incidental Solar Array

Construction emissions for the approximate 63-acre, 10 megawatt (MW) solar array were estimated from a similar solar array in the same air district (Kern, 2021b). The emissions from the Aratina Solar project, which is larger in acres than that for the proposed project, were scaled based on its size and the size of the proposed solar array of approximately 63 acres.

Offsite Improvements

Power and Fiber-optic (telecommunication) Lines

Southern California Edison (SCE) is the electricity provider for the project site. To supply power to the site, SCE requires two main components, a power line and a fiber-optic (telecommunication) line. The power line will consist of an upgrade to a portion of the Corum-Goldtown-Rosamond 66 kilovolt (kV) line, which runs from the Rosamond Substation (on the corner of Rosamond Boulevard and 60th Street W) parallel to Rosamond Boulevard before connecting to the north-south 66 kV line at approximately Rosamond Boulevard/Division Street, within the Edwards Air Force Base (EAFB) utility corridor. The connection will continue north within EAFB's utility corridor approximately following the path of Division Street until Sopp Road. From the corner of Sopp Road and Division Street a new 66 kV power line will be erected to the Project Site at 860 Sopp Road. See **Figure 3-14:** *Existing and Proposed Offsite Improvements*.

SCE estimates that the existing 66 kV line from Rosamond Substation to the corner of Sopp Road and Division Street will need to be reconductored (totaling approximately 13 miles), with all existing transmission poles requiring replacement with new poles installed for the section from the corner of Sopp Road and Division Street to the Project Site. This will consist of the installation of new poles and circuits.

There will be two fiber lines connected to the plant. One fiber optic cable will be installed by SCE who will be the electricity provider for the Project Site and it would tie into the existing telecommunications line from approximately Tehachapi Willow Springs Road following the route of Backus Road and routing around the north side of Exit 61 of State Route 14 (SR-14) to Sierra Highway. The other fiber optic cable will be for PSG business and industrial use, and it will be connected from an existing AT&T fiber at Sopp road. Additional information available in the SCE memorandum (Appendix D).

Water Line

The construction activities associated with the water line connection from the Antelope Valley-East Kern Water Agency (AVEK) to the proposed site will be analyzed. The location of the water line connection within the project site will be between the employee and visitor car parking area and the solar fields on the western side of the property, continuing linearly due west under the railroad easement and to the edge of the Sierra Highway right-of-way, connecting at approximately 34°56'09.7"N, 118°08'58.0"W, approximately 1,500 ft in length.

Traffic Improvements

The Traffic Impact Study completed for the Project included traffic improvements including as Traffic Mitigation Projects 1 through 4 (LAV, 2023). The construction activities associated with these traffic improvements will be analyzed. Construction emissions have been estimated using CalEEMod and EMFAC2021. Construction phasing would include site preparation, grading/excavation, electrical installation, and paving. Haul truck trips, worker trips, and vendor truck trip estimates were based on defaults within CalEEMod.

As stated above, fugitive dust emissions would result from various soil-handling activities during construction of the project. Construction contractors are required to comply with the applicable provision of EKAPCD Rule 402 (Fugitive Dust). As discussed previously, EKAPCD Rule 402 requires construction activities to control fugitive dust emissions by complying with reasonably available control measures or bulk material control measures to limit visible dust emissions to more than 20 percent opacity. They must meet the conditions for a stabilized surface by creating a fugitive dust emission control plan (Mitigation Measure MM 4.3-2). Applicable fugitive dust control measures are incorporated into the construction emissions modeling.

Project construction is assumed to start as early as second quarter of 2024 and require up to 24 months with full build-out occurring in the second quarter of 2026. The construction of the solar array is not yet known but expected to occur in the future, after full buildout of the micro mill. The solar array was conservatively assumed to occur over approximately 3 months at the conclusion of the micro mill construction schedule. If construction commences at a later date, construction emissions would be lower than those estimated in this Technical Report due to the use of a more energy-efficient and cleaner burning construction vehicle fleet mix, pursuant to state regulations that require vehicle fleet operators to phase-in less-polluting trucks. As a result, should project construction commence at a later date than analyzed in this Technical Report, air quality impacts would be lower than the impacts disclosed herein.

Operational Emissions

Micro Mill Facility

At the time of the Air Quality Technical Report, the exact equipment for the proposed project was not yet determined. However, the proposed project would include raw (scrap) material handling, the electric arc furnace (EAF), the ladle metallurgy station (LMS), CCS, furnace, casting, rolling, slag, cooling towers, emergency engines, and fuel tanks. Since the exact equipment for the proposed project were not available, emissions for the micro mill were calculated using emissions from a similar facility (Burn, 2018). The emissions from the Nucor facility were scaled based on the anticipated production rate for the project compared to a similar rebar facility's production rate of 450,000 tons of steel produced per year. The emissions from similar processes and equipment were scaled based on the anticipated production rate of 456,000 tons of steel produced per year for the proposed project. It should be noted, the Nucor facility is not an all-electric micro mill but rather utilizes natural gas. The emissions presented herein are considered a conservative estimate (i.e., overestimated) as the all-electric micro mill would result in lower criteria air pollutant emissions, specifically NO_X, VOCs, and SO_2 as well as a small reduction in toxic air containment emissions associated with the project's elimination of natural gas combustion. Additionally, the emissions presented do not account for the reduction of CO_2 that would be captured in the EAF from the CCS or the reduction of NO_X from the selective catalytic reduction unit. The complete Nucor document can be found in Appendix C. Details of the processes and equipment associated with the proposed project are described below.

Raw Material Handling

Recycled scrap metal for the proposed project would be purchased from outside suppliers and transported into the facility by truck. Scrap metal to be received would include un-shredded and shredded scrap largely from crushed automobiles but also may include old appliances, machinery, sheet metal, rectangular bundles, and miscellaneous scrap metal. Un-shredded scrap metal would be processed by suppliers off-site to meet industry-standard size and cleanliness, arriving in a form either suitable for direct use in the steelmaking process or in larger sizes that would require cutting by a torch cutter, located in the scrap storage area, prior to its use in the process. The scrap metal would be stored in the 24,300-square-foot scrap bay or at the overflow scrap storage piles. Scrap would be moved using a front-end loader and loaded into a conveyor system using magnet cranes to the proposed Electric Arc Furnace (EAF). Particulate matter emissions would be generated during the indoor and outdoor scrap handling and storage, from the scrap storage piles and sweepings, and from vehicular traffic on the paved facility roads. A small amount of particulate matter and combustion emissions would also be formed from the torch cutting of larger pieces of scrap.

In addition to the recycled scrap metal, the project would use carbon and fluxing agents as raw materials in the steelmaking process. Raw materials would be delivered to the project site by truck and moved into storage silos. These raw materials would be pneumatically transferred from the silos to the EAF and LMS as needed. Particulate emissions will be generated during the storage and handling of carbon and fluxing agents. The silo would have a dust collector to control dust particles.

Alloy aggregates would be used in the EAF and LMS for refining steel metallurgy. Alloys would be transported by truck, unloaded into storage bins and eventually transferred by front-end loaders or forklift to the EAF/LMS bay for use in the EAF or LMS as needed. Ferro Silicon 75 ((FeSi75) an alloy produced by combining 75 percent silicon and 25 percent iron), Ferro Silicon Manganese (FeC_5H_5MnSi), Silicon Carbide (SiC), Calcium Carbide (CaC_2), Fluorspar (CaF_2), Metallurgical carbon alloys, Ferro Vanadium (FeV), Ferro Chrome (FeCR), and Calcium Silicon (CaSi) alloys may be used as part of the steel making process. Particulate emissions will be generated during the storage and handling of alloy aggregates.

Melt Shop

The melt shop (MS) process includes use of the EAF, LMS, casting operations, ladle and tundish preheaters, and refractory repair. Scrap metal is preheated by the EAF exhaust heat and then fed into the EAF. Chemical and electrical energy would be used to melt the entire batch of scrap metal. The melted steel is then transferred to the LMS via a ladle. The main emission control device for these proposed operations is the fume treatment plant which captures emissions from the EAF and LMS. The following subsections describe each process that occurs during the melt shop process:

- **EAF**: During the first use of the EAF after downtime, loading of scrap metal would be accomplished using charge buckets, which are transported into position over the EAF using overhead electric cranes. Once in position, the charge bucket would open, allowing scrap to fill the EAF. After the first batch of steel is made, scrap for subsequent batches would be fed to the EAF using a continuous conveyor (i.e., the endless charging system (ECS)). The heating and melting of the scrap metal would generate particulate matter emissions.

During the melting, raw materials such as fluxing agents, metallurgic coal or coke, and oxygen would be added to the molten steel in order to achieve the desired product chemistry. Once the desired steel properties are reached in the EAF, the molten steel is poured (i.e., "tapped") into the ladle. The molten steel is then transferred to the LMS via a ladle car. The refining and tapping processes generate emissions of particulate matter.

The slag formed in the EAF would be emptied by tipping the EAF to the side and stored in a stockpile within the EAF/LMS bay. As the slag cools, some limited combustion of residual coke in the slag may occur resulting in emissions of NO_X, CO, and SO_2. The slag would be subsequently removed from the pit using a front-end loader, quenched using process water, and transported to an outdoor storage pile before being processed on-site.

- **LMS**: The ladles filled with molten steel would be transferred from the EAF to the LMS via the ladle car. The molten steel would be further refined with the injection and mixing of raw materials such as fluxing agents, carbon, and alloys into the molten steel. Once the molten steel reaches the desired temperature and composition, the ladle would transport the molten steel to the continuous casting machine. The refining of the molten steel would generate particulate matter emissions. Emissions from the LMS would be captured by the ladle ducts connected to the fume treatment plant. Emissions not captured by the ladle furnace ducts would be captured by the melt shop canopy or the caster canopy.
- **Casting Operations**: The ladle is transported to a continuous casting machine within the caster bay. During casting, steel flows out of the bottom of the ladle via a slide gate into a tundish. From the tundish, the steel flows into a single mold. In the mold, the steel is water-cooled and formed into bars (billets). Emissions from the process would be emitted through the caster canopy and captured by the fume treatment plant.
- **Ladle and Tundish Preheaters**: Refractory materials would line the ladles and tundishes which must be dried completely prior to steel production. Additionally, the ladles and tundishes must be preheated prior to the transfer of molten steel in order to prevent heat losses. Electrical ladle and tundish preheaters and dryers would be installed. The tundish would also use a refractory material that does not require curing.

Rolling Mill Process

The rolling mill process is a metal forming process in which metal stock is passed through one or more pairs of rolls to reduce the thickness and to make the thickness of the metal uniform. The rolling mill process includes an induction furnace located between the caster and the rolling mill for temperature elevation and stabilization, then a series of rolling mill stands that reduce the cross sectional area and hot-form final rolled steel reinforcing bar. The products are water quenched for tempering and directed to the cooling beds to cool in the ambient air. The rolled steel is then sheared to length, cooled on a natural convection cooling bed, bundled and stored or fed directly into spooler machines which roll the reinforcing bar into a spool. Particulate emissions in the form of water droplets will be created from the water quenching, as well as VOC and HAP from the oil and grease contamination of the contact water. Rolling mill emissions will vent through the roll mill vent.

Cooling Towers

Two non-contact cooling towers and one contact cooling tower would be used to remove heat from the cooling water used in the proposed project. Cooling towers reduce the temperature of the system by relying on the latent heat of water evaporation to exchange heat between the cooling water and the air passing through the cooling tower. Because cooling towers provide direct contact between the cooling water and the air passing through the tower, some of the liquid water may be entrained in the air stream and be carried out of the tower into the atmosphere as “drift” droplets. The dissolved solids within these water droplets are a source of particulate matter emissions.

Ancillary Buildings

Operational emission associated with the ancillary buildings part of the project were also calculated. The proposed project includes ancillary structures for storeroom and vehicle maintenance, water pre-treatment building, office building, locker room, slag processing office building, containerized power control room, guard shack/scale house, and a trucker restroom facility. Emissions and energy consumption from the ancillary buildings were calculated using CalEEMod version 2020.4.0. Additional sources of emissions would include: 63 acres of ground-mounted solar panels, substation to support solar panels, and a water treatment plant. Mobile source emissions would be generated by vehicle trips traveling to and from the project site. Operational impacts were assessed for the proposed project buildout year of 2026 (i.e., as early as 2025 assuming construction begins at the earliest possible time in 2024).

The project’s operational emissions for the ancillary buildings were estimated using CalEEMod to project regional emissions from area and energy sources that would occur during long-term project operations. Mobile source emissions were estimated based on CARB’s EMFAC2021 to generate Air Basin-specific vehicle fleet emission factors in units of pounds per mile, and daily trip rates from the project’s traffic study (LAV, 2023).

Area source emissions for the ancillary buildings, including landscaping equipment and consumer products, such as solvents used in non-industrial applications which emit VOCs during their product use and cleaning supplies including aerosols, were calculated using the CalEEMod software. Energy source emissions for the buildings are based on an all-electric consumption (building heating and water heaters). Natural gas would not be utilized at the project site and therefore emission from natural gas combustion are not included for the project.

Incidental Solar Array

The exact equipment for the solar array project have yet to be determined. Therefore, emissions from the approximate 63-acre solar array were calculated using emissions from a similar facility and would use similar construction equipment (i.e., excavators, graders, forklifts, etc.) (Kern, 2021b). The solar array would consist of solar panels and a substation. No structures or emergency generators would be present on the solar array. In addition, workers from the Micro Mill Facility would perform routine maintenance such as washing of the solar panels. As such, no area or additional mobile sources are included. Energy sources would be limited to water conveyance required for panel washing. Operational air quality impacts are assessed based on the incremental increase in emissions compared to baseline conditions.

Health Risk Assessment

The proposed project would emit TACs from several construction and operational sources. Diesel particulate matter (DPM) would be emitted from construction equipment and diesel trucks, and various toxic compounds from VOCs and metals would be emitted from the micro mill processing. An HRA was conducted to estimate cancer, non-cancer chronic (long-term), and noncancer acute (short-term) impacts from the proposed project.

The HRA predicted the above health risks using a dispersion model to calculate ground-level concentrations of TACs based on the proposed project's TAC emissions and toxicity and exposure factors provided by the California Office of Environmental Health Hazard Assessment (OEHHA) (OEHHA, 2015).

EPA's AERMOD atmospheric dispersion model was used to simulate physical conditions and predict pollutant concentrations from construction and operational sources at sensitive receptors near the project site. AERMOD is EPA's preferred air dispersion model for near-field modeling from vented and non-vented sources. The model uses hourly meteorological observations and emission rates to determine hourly average concentrations from which other averaging periods (e.g., 24-hour, annual averages) are determined.

Cancer risk is quantified based on the OEHHA methodology, the residential inhalation cancer risk from the annual average DPM concentrations is calculated by multiplying the daily inhalation or oral dose, by a cancer potency factor, the age sensitivity factor (ASF), the frequency of time spent at home (for residents only), and the exposure duration divided by averaging time, to yield the excess cancer risk. It is important to note that exposure duration is based on a one-year construction period. Cancer risk must be separately calculated for specified age groups, because of age differences in sensitivity to carcinogens and age differences in intake rates (per kg body weight). Separate risk estimates for these age groups provide a health-protective estimate of cancer risk by accounting for greater susceptibility in early life, including both age-related sensitivity and amount of exposure.

Non-cancer chronic impacts are calculated by dividing the annual average concentration by the Reference Exposure level (REL) for that substance. REL is defined as the concentration at which no adverse noncancer health effects are anticipated. Based off OEHHA guidance, the current REL for DPM is 5 $\mu g/m^3$.

For construction health risk, concentration outputs obtained from AERMOD were used with Microsoft Excel workbooks to calculate health risk at the nearby sensitive receptors. For operational health risk, the Hotspots Analysis and Reporting Program Version 2 (HARP2) Air Dispersion & Risk Tool (ADMRT) version 19121 was employed to calculate the health risks at nearby sensitive receptors. Dispersion modeling assumptions and results are provided in Appendix C.

While the project site is relatively isolated, there are sensitive receptors located in the vicinity. The nearest residence is approximately 1,000 feet to the northwest along Dobbs Road. There are other potential sensitive receptors as much greater distances that would observe lesser health risk impacts than the nearest residence.

Ambient Air Quality Analysis

The Kern County Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports (EKAPCD, 2006) require a dispersion modeling analysis of the maximum 24-hour average concentrations of PM_{10} and $PM_{2.5}$ resulting from construction and operation in comparison to applicable ambient air quality standards and thresholds. The purpose of the AAQA is to determine whether the project's construction and operational emissions would cause or contribute to exceedances of any CAAQS or NAAQS during construction.

CO Hotspot

Heavy traffic congestion can contribute to high levels of CO. Individuals exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects. The potential for the proposed project to result in localized CO impacts at intersections resulting from addition of its traffic volumes is assessed based on Kern County's suggested criteria, which recommends performing a localized CO impact analysis for intersections operating at or below level of service (LOS) E.

Visibility Impacts

The County guidance states that potential impacts to visibility should be evaluated for all industrial projects and any other projects, such as mining projects, that have components that could generate dust or emissions related to visibility.

The project's emissions to the Class I areas will be below the significance threshold established by USEPA and Federal Land Managers. The analysis will be demonstrated initially by the screening level Q/D approach. In this approach, all visibility-related emissions (SO_2, NO_X, PM_{10}, and sulfuric acid mist) from the project based on 24-hour maximum allowable emissions prorated to annual emissions in units of tons per year will be summed (Q). The sum will be divided by the distance in km (D) from the site to the nearest receptor for each Class I area. If the ratio (Q/D) is less than 10, the project will be presumed to have negligible impact on Class I area visibility and no further analysis will be required. If the Q/D ratio is greater than 10, then long range transport modeling will be conducted to demonstrate that the 98th percentile change in light extinction is less than 5 percent for each of the 3 years modeled, when compared to the annual average natural condition value for that Class I area.

Valley Fever (Coccidioides immitis Exposure)

While there are no specific thresholds for the evaluation of potential *Coccidioides immitis* (Valley Fever) exposure, the potential for workers or area residents contracting Valley Fever as a result of the project is evaluated based on the anticipated earth-moving activities, and considers measures such as the development and implementation of a dust control plan to help control the release of the *Coccidioides immitis* fungus during construction activities.

Asbestos

There are no quantitative thresholds related to receptor exposure to asbestos. However, EKAPCD Rule 423 (National Emission Standards for Hazardous Air Pollutants and Source Categories) requires all projects to comply with the provisions of Title 40, Chapter I, Parts 61 and 63, of the Code of Federal Regulations.

Thresholds of Significance

The significance thresholds below are derived from the Environmental Checklist question in Appendix G of the State CEQA Guidelines and EKAPCD's Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports. Pursuant to the State CEQA Guidelines (Section 15064.7), a lead agency may consider using, when available, the significance criteria established by the applicable air quality management district or air pollution control district when making determinations of significance. The proposed project would be under the EKAPCD's jurisdiction, and they use air quality significance thresholds in the Kern County Planning Department Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports. Projects that produce emissions that exceed these thresholds shall be considered significant for a project level and/or cumulatively for impacts to air quality. These thresholds will be used to evaluate the significance of the impacts listed below.

A significant air quality impact would occur if the project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;

c) Expose sensitive receptors to substantial pollutant concentrations;

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Project Impacts

Impact 4.3-1: Implementation of the proposed project would conflict with or obstruct implementation of the applicable air quality plan.

Consistency with Air Quality Plan

EKAPCD's most recently adopted air quality management plan is its 2023 AQAP. This AQAP covers the project area since it is located within the boundaries of the EKAPCD. The 2023 AQAP is a road map that demonstrates how the region will, in accordance with the requirements of the California Clean Air Act, implement all feasible measures to reduce ozone precursors (ROG/VOC and NO_X) and reduce the transport of ozone and its precursors to neighboring air basins, in order to achieve the 2008 and 2015 8-hour ozone NAAQS.

Air quality impacts are controlled through policies and provisions of the EKAPCD, the Kern County General Plan, and the Kern County Code of Building Regulations. The California CAA requires air pollution control districts with severe or extreme air quality problems to provide for a 5 percent reduction in nonattainment emissions per year. The Attainment Plans prepared for the

EKAPCD complies with this requirement. CARB reviewers approve or amend the document and forward the plan to USEPA for final review and approval within the SIP.

In determining consistency with the 2023 AQAP, this analysis considers whether the proposed project would (1) support the primary goals of the 2023 AQAP, and (2) include applicable control measures from the 2023 AQAP. The primary goals of the 2023 AQAP are: to protect air quality and public health at the regional and local scale by reducing regional ROG/VOC and NO_X emissions and ozone concentrations and reducing local air-quality-related health risks by meeting the 2008 and 2015 8-hour ozone NAAQS. Applicable control measures in the 2023 AQAP include the RACM from EKAPCD Rule 425.2 for boilers, steam generators, and process heaters.

In general, a project would not interfere with the applicable air quality plan if it is consistent with growth assumptions used to form the 2023 AQAP. The land uses designated in the Kern County General Plan and the KCOG 2022 RTP/SCS form the basis for the growth assumptions in the 2023 AQAP. The proposed project proposes changing the general land use designation from resource management to heavy industrial and the zone classification from limited agricultural to heavy industrial –precise development combining. This change in land use designation and zone classification would bring additional jobs to the area.

Implementation of the proposed project is consistent with the goals of the Kern County General Plan in providing an adequate and geographically balanced supply of land designated for a range of industrial purposes. The proposed project site is geographically isolated from sensitive uses with the nearest residence located approximately 1,000 feet to the northwest of the project site promoting compatibility with land uses that may be affected by industrial operations while ensuring economic strength for Kern County and its residents. Furthermore, the Project would not include any new residential growth or dwelling units and thus would not include a substantial increase in passenger vehicle and light duty truck trips and be consistent with the goals of the 2022 RTP/SCS.

2023 AQAP Rules

The proposed project, as a steel mill plant, would be considered a new major stationary source and would be subject to EKAPCD's NSR rule. This rule requires new major stationary sources that increase emissions in amounts exceeding specified thresholds to provide emission reduction offsets to mitigate their emissions growth. The applicability threshold for NO_X and VOC in Rule 210.1 is 50 tons per year with an offset ratio of 1.2-to-1.0. As such, there should be no net effect on emissions inventories from future construction or modifications at major stationary sources due to offset requirements. To ensure construction or modification of major sources has no net effect on emission inventories used for demonstrating attainment, banked ERCs, which otherwise would not be included as emissions in the baseline and subsequent inventories, must be added back into the inventories, pursuant to federal requirements. The 2023 AQAP includes a list of banked ERCs currently in the EKAPCD's credit bank as of 2022 . The banked ERCS would lead to an increase of 0.005 ppb in attainment year ozone design values and would not affect the attainment status. Thus, with compliance of EKAPCD Rule 210.1, construction and operation of the proposed project would comply with the 2023 AQAP.

Although the proposed project emissions were not included in the projections for the 2023 AQAP, compliance with EKAPCD's Rule 210.1, NSR would render the proposed project consistent with growth projections of the 2023 AQAP, since they would not increase emissions, over those allowed by the NSR, and would not jeopardize attainment of the AQAP. Therefore, the proposed project is consistent with the goals of the 2023 AQAP.

Proposed Project Emissions

Construction

On-Site

The construction emissions for the proposed project within the project site boundary were estimated for each construction phase and are discussed further below, under Impact 4.3-2. As shown in Table 4.3-6, with implementation of Mitigation Measure 4.3-1, construction emissions would be reduced to below the significance thresholds. See Impact 4.3-2 below for additional information regarding the proposed project emissions.

Off-Site Improvements

Construction of off-site improvements related to the water line, traffic improvements, and SCE powerlines would entail a minimal amount of ROG, NO_X, CO, SO_X, PM_{10}, $PM_{2.5}$ emissions and would comply with applicable EKAPCD rules and regulations. Haul truck, vendor truck, and worker vehicle trips would be generated during the proposed construction activities but would cease after construction is completed. This off-site improvement work would not be anticipated to conflict with any applicable air quality management plan, such that impacts would be less than significant.

Operation

As previously stated, the proposed project would include development of an approximate 489,200 square-foot micro mill facility and with an additional 61,721 square feet of accessory buildings, and an approximate 63-acre accessory solar array. Operation of the proposed project has the potential to generate emissions from the micro mill portion of the proposed project, including raw (scrap) material handling, the electric arc furnace (EAF), the ladle metallurgy station (LMS), furnace, casting, rolling, slag, cooling towers, emergency engines, and fuel tanks. Operational emissions would also be generated from the ancillary buildings and the solar array. Mobile source emissions would be generated by vehicle trips traveling to and from the project site.

The solar facility portion of the proposed project could also function to reduce the air pollutant emissions within the MDAB to the extent that the power generated is used to offset power production from fossil fueled power plants within (or contributory to) the MDAB. This power production is not projected within the existing air quality plans, and so the solar array could further aid in reducing air pollutant emissions and increase the potential for attainment of the 2023 AQAP.

The off-site improvement work would not result in a substantial increase in long-term trips or vehicle miles traveled in the areas and would not require additional employees to maintain or operate the approximate 13 mile reconductored lines. Therefore, no additional off-site improvement specific operation analysis is included herein.

As shown below in Impact 4.3-2, in **Table 4.3-7:** *Unmitigated Proposed Project Long-term Operational Emissions*, the proposed project's long-term operational emissions would exceed EKAPCD's applicable significance thresholds. Implementation of Mitigation Measure MM 4.3-1 would reduce operational emissions from off-road equipment. However, emissions would still exceed the significance thresholds.

Mitigation Measures MM 4.3-2 would reduce construction emissions by implementing exhaust reduction measures and a Fugitive Dust Control Plan. In addition, compliance with all applicable EKAPCD NSR rules would reduce operational emissions. However as shown in **Table 4.3-8:** *Mitigated Proposed Project Long-term Operational Emissions*, operational emissions of the project would still exceed EKAPCD CEQA significance thresholds; therefore, impacts would be significant and unavoidable.

Mitigation Measures

MM 4.3-1: To control NO_X and PM emissions during construction and operation, the project proponent/operator and/or its contractor(s) shall implement the following measures during construction and operation of the project, subject to verification by the County:

a. Off-road equipment engines over 25 horsepower shall be equipped with EPA Tier 4 or higher.

b. All equipment shall be maintained in accordance with the manufacturer's specifications.

c. Heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 5 minutes.

d. Notification shall be provided to trucks and vehicles in loading or unloading queues that their engines shall be turned off when not in use for more than 5 minutes.

e. Electric equipment shall be used to the extent feasible in lieu of diesel or gasoline powered equipment.

f. All vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NO_X emissions.

g. Existing electric power sources shall be used to the extent feasible. This measure would minimize the use of higher polluting gas or diesel generators.

h. The hours of operation of heavy-duty equipment and/or the quantity of equipment in use shall be limited to the extent feasible.

MM 4.3-2: To control fugitive PM emissions during construction, prior to the issuance of grading or building permits and any earthwork activities, the project proponent shall prepare a comprehensive Fugitive Dust Control Plan for review and approval by the Eastern Kern Air Pollution Control District and submitted to the Kern County Planning and Natural Resources Department. The plan shall include all Eastern Kern Air Pollution Control District recommended measures, including but not limited to, the following:

a. All soil being actively excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soils areas. Watering shall take place a minimum of three times daily where soil is being actively disturbed, unless dust is otherwise controlled by rainfall or use of a dust suppressant.

b. Vehicle speed for all on site (i.e., within the project boundary) construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. Signs identifying construction vehicle speed limits shall be posted along onsite roadways, at the site entrance/exit, and along unpaved site access roads.

c. Vehicle speeds on all offsite unpaved project-site access roads (i.e., outside the project boundary) construction vehicles shall not exceed 25 mph. Signs identifying vehicle speed limits shall be posted along unpaved site access roads and at the site entrance/exit.

d. All onsite unpaved roads and offsite unpaved public project-site access road(s) shall be effectively stabilized of dust emissions using water or Eastern Kern Air Pollution Control District approved dust suppressants/palliatives, sufficient to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. If water is used, watering shall occur a minimum of three times daily, sufficient to keep soil moist along actively used roadways. During the dry season, unpaved road surfaces and vehicle parking/staging areas shall be watered immediately prior to periods of high use (e.g., worker commute periods, truck convoys). Reclaimed (non-potable) water shall be used to the extent available and feasible.

e. The amount of the disturbed area (e.g., grading, excavation) shall be reduced and/or phased where possible.

f. All disturbed areas shall be sufficiently watered or stabilized by Eastern Kern Air Pollution Control District approved methods to prevent excessive dust. On dry days, watering shall occur a minimum of three times daily on actively disturbed areas. Watering frequency shall be increased whenever wind speeds exceed 15 mph or, as necessary, to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. Reclaimed (nonpotable) water shall be used to the extent available and feasible.

g. All clearing, grading, earth moving, and excavation activities shall cease during periods when dust plumes of 20 percent or greater opacity affect public roads or nearby occupied structures.

h. All disturbed areas anticipated to be inactive for periods of 30 days or more shall be treated to minimize wind-blown dust emissions. Treatment may include, but is not limited to, the application of an Eastern Kern Air Pollution Control District-approved chemical dust suppressant, gravel, hydro-mulch, revegetation/seeding, or wood chips.

i. All active and inactive disturbed surface areas shall be stabilized, where feasible.

j. Equipment and vehicle access to disturbed areas shall be limited to only those vehicles necessary to complete the construction activities.

k. Where applicable, permanent dust control measures shall be implemented as soon as possible following completion of any soil-disturbing activities.

l. Stockpiles of dirt or other fine loose material shall be stabilized by watering or other appropriate methods sufficient to reduce visible dust emissions to a limit of 20 percent opacity. If necessary and where feasible, three-sided barriers shall be constructed around storage piles and/or piles shall be covered by use of tarps, hydro-mulch, woodchips, or other materials sufficient to minimize windblown dust.

m. Water shall be applied prior to and during the demolition of onsite structures sufficient to minimize wind-blown dust.

n. Where acceptable to the fire department and feasible, weed control shall be accomplished by mowing instead of disking, thereby leaving the ground undisturbed and with a mulch covering.

o. All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least six inches of freeboard (minimum vertical distance between top of the load and top of the trailer) in accordance with California Vehicle Code Section 23114.

p. Gravel pads, grizzly strips, or other material track-out control methods approved for use by Eastern Kern Air Pollution Control District shall be installed where vehicles enter or exit unpaved roads onto paved roadways.

q. Haul trucks and off-road equipment leaving the site shall be washed with water or high pressure air, and/or rocks/grates at the project entry points shall be used, when necessary, to remove soil deposits and minimize the track out/deposition of soil onto nearby paved roadways.

r. During construction paved road surfaces adjacent to the site access road(s), including adjoining paved aprons, shall be cleaned, as necessary, to remove visible accumulations of track-out material. If dry sweepers are used, the area shall be sprayed with water prior to sweeping to minimize the entrainment of dust. Reclaimed water shall be used to the extent available.

s. Portable equipment, 50 horsepower or greater, used during construction activities (e.g., portable generators) shall require California statewide portable equipment registration (issued by California Air Resources Board) or an Eastern Kern Air Pollution Control District permit.

t. The Fugitive Dust Control Plan shall identify a designated person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures, as necessary, to minimize the transport of dust off site and to ensure compliance with identified fugitive dust control measures. Contact information for a hotline shall be posted on site should any complaints or concerns be received during working hours and holidays and weekend periods when work may not be in progress. The names and telephone numbers of such persons shall be provided to the Eastern Kern Air Pollution Control District Compliance Division prior to the start of any grading or earthwork.

u. Signs shall be posted at the project site entrance and written notifications shall be provided a minimum of 30 days prior to initiation of project construction to residential land uses located within 1,000 feet of the project site. The signs and written notifications shall include the following information: (a) Project Name; (b) Anticipated Construction Schedule(s); and (c) Telephone Number(s) for designated construction activity monitor(s) or, if established, a complaint hotline.

v. The designated construction monitor shall document and immediately notify Eastern Kern Air Pollution Control District of any air quality complaints received. If necessary, the project operator and/or contractor will coordinate with Eastern Kern Air Pollution Control District to identify any additional feasible measures and/or strategies to be implemented to address public complaints.

w. The solar array shall obtain a permit from the Eastern Kern Air Pollution Control District and implement phased removal of vegetation from the site to ensure dust control during construction.

Level of Significance after Mitigation

With implementation of Mitigation Measures MM 4.3-1 and MM 4.3-2, construction impacts would be less than significant, but operational impacts would remain significant and unavoidable.

Impact 4.3-2: Implementation of the project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region in non-attainment under an applicable federal or state ambient air quality standard.

Emissions

The proposed project is located within the Kern County portion of the MDAB, which is an area that is designated as non-attainment for federal and state ozone standards as well as state PM_{10} standards and is under the jurisdiction of the EKAPCD. The EKAPCD's approach for assessing cumulative impacts is based on the forecasts of attainment and ambient air quality standards in accordance with requirements of the federal and state clean air acts. With respect to determining the significance of a project's contribution to regional emissions, Kern County, in its Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports document, states that projects that produce emissions that exceed the adopted thresholds of the EKAPCD for ROG, NO_X, and PM_{10} shall be considered significant for a project level and/or cumulatively for impacts to air quality. Thus, based on Kern County's guidance, if an individual project results in air pollutant emissions of ROG, NO_X, and PM_{10} that exceed the EKAPCD's thresholds for project-specific impacts, then it would also result in a cumulatively considerable net increase of these pollutants for which the project region is in non-attainment under an applicable federal or state ambient air quality standard.

Construction

On-Site

Construction of the proposed project would result in the temporary addition of pollutants to the local airshed caused by off-road construction equipment, soil disturbance and on-road haul trucks, vendor trucks, and worker vehicle trips. Criteria air pollutant emissions associated with temporary construction activity were quantified using a combination of emission factors and methodologies from CalEEMod and EMFAC2021. Construction schedule assumptions, including phase type, duration, and sequencing, were based on information provided by the project Applicant and is intended to represent a reasonable scenario based on the best information available.

Off-Site Improvements

In addition, emissions from the construction of the off-site water line, traffic improvements, and the reconductoring and re-poling of approximately 13 miles of existing SCE 66kV power lines were also included in the whole-project analysis. Default values provided in CalEEMod were used where detailed project information was not available. Details of the emission calculations are provided in Appendix D. Details regarding the SCE improvements can be found in the SCE Memorandum prepared for the proposed project and can be found in Appendix D.

Table 4.3-5: *Unmitigated Proposed Project Construction Emissions*, presents the annual construction emission generated during construction of the project. As shown, construction-related unmitigated NO_X emissions would exceed the EKAPCD numeric significance. Therefore, impacts would be potentially significant before mitigation. As discussed previously, the project would implement Mitigation Measure MM 4.3-1 for on-site construction activities, which would reduce NO_X emissions by implementing diesel exhaust reduction measures including equipment maintenance, Tier 4 equipment, idling restrictions, and alternative fueled equipment. While it is possible Mitigation Measure 4.3-1 could be implemented for the off-site improvements, since construction activities would be implemented by a third-party, Mitigation Measure MM 4-3.1 was conservatively excluded from the analysis for the off-site improvements.

As shown in **Table 4.3-5**, temporary unmitigated emissions during construction would exceed the thresholds adopted by EKAPCD for NO_X.

Table 4.3-5: **Unmitigated Proposed Project Construction Emissions**

Phase and Year	ROG/VOC	NO_X	SO_2	PM_{10}	$PM_{2.5}$
On-Site					
Micro Mill [A]					
2024	3.95	33.27	0.18	1.76	1.19
2025	8.76	66.64	0.33	3.19	2.31
2026	0.91	7.07	0.03	0.32	0.24
Solar Array [B]					
2026	0.09	0.64	0.005	1.05	0.17
Off-Site					
Traffic Improvement Project 1[C]					
2026	0.02	0.08	0.001	0.01	0.01
Traffic Improvement Project 2 [C]					
2041	0.02	0.03	0.001	0.01	0.003

Traffic Improvement Project 3 [C]					
2026	0.04	0.08	0.003	0.01	0.01
Traffic Improvement 4 [C]					
2041	0.06	0.13	0.005	0.01	0.01
Water Line Project [C]					
2026	0.03	0.23	0.001	0.02	0.01
Power and Telecommunication 2026	0.55	4.51	0.03	0.21	0.15
Maximum Annual Emissions	**8.76**	**66.64**	**0.33**	**3.19**	**2.31**
EKAPCD Threshold (TPY)	**25**	**25**	**27**	**15**	**--**
Exceeds Thresholds?	No	**Yes**	No	No	--

Notes:
[A] Micro mill emissions calculations using information provided to ESA and CalEEMod software.
[B] Solar Array emissions were estimated using the Aratina Solar Project EIR and scaled relative to the size of the solar array for this project.
[C] Emissions calculated using information provided to ESA, conservative assumptions and CalEEMod software.
Source: ESA, 2023d

Mitigation Measures MM 4.3-1 and MM 4.3-2 would be required to reduce fugitive dust emissions by implementing exhaust reduction measures and a Fugitive Dust Control Plan, respectively. Diesel exhaust reduction measures include equipment maintenance, Tier 4 equipment, idling restrictions, alternative fueled equipment, and compliance with CARB and EKAPCD rules. As depicted in **Table 4.3-6:** *Mitigated Proposed Project Construction Emissions*, Mitigation Measure MM 4.3-1 would reduce NO_X construction emissions to below significance thresholds. Therefore, emissions from construction of the proposed project would be less than significant

Table 4.3-6: **Mitigated Proposed Project Construction Emissions**

Phase and Year	ROG/VOC	NO_X	SO_2	PM_{10}	$PM_{2.5}$
On-Site					
Micro Mill [A]					
2024	1.22	6.78	0.18	0.67	0.26
2025	2.76	13.92	0.32	1.31	0.54
2026	0.28	1.35	0.03	0.12	0.05
Solar Array [B]					
2026	0.09	0.64	0.005	1.05	0.17
Off-Site [C]					
Traffic Improvement Project 1[D]					
2026	0.02	0.08	0.001	0.01	0.01
Traffic Improvement Project 2 [D]					
2041	0.02	0.03	0.001	0.01	0.003
Traffic Improvement Project 3 [D]					
2026	0.04	0.08	0.003	0.01	0.01
Traffic Improvement Project 4 [D]					
2041	0.06	0.13	0.005	0.01	0.01
Water Line Project [D]					
2026	0.03	0.23	0.001	0.02	0.01
Power and Telecommunication 2026	0.55	4.51	0.03	0.21	0.15
Maximum Annual Emission	**2.76**	**13.92**	**0.32**	**1.31**	**0.54**
EKAPCD (TPY)	**25**	**25**	**--**	**15**	**--**
Exceeds Threshold?	No	No	No	No	--

Notes:
[A] Micro mill emissions calculations were calculated using information provided to ESA and CalEEMod software.
[B] Solar Array emissions were estimated using the Aratina Solar project EIR and scaled relative to the size of the solar array for this project.
[C] Since construction of the water line, traffic improvements, and power and telecommunication lines would be constructed by a third-party, the exact mitigation measures are unknown and no mitigation measures were applied.
[D] Emissions calculated using information provided to ESA, conservative assumptions and CalEEMod software.
Source: ESA, 2023d.

Operation

Operation of the proposed project would generate criteria air pollutants, which were analyzed according to the methodology described above. **Table 4.3-7:** *Unmitigated Proposed Project Long-Term Operational Emissions*, provides the annual operational emissions for the project. As stated in *Section 4.3.6* Methodology, the emissions presented for the Meltshop were scaled from another steel mill facility which included natural gas. The proposed project would be all-electric and would not utilize natural gas. Therefore, the emission presented herein are considered a conservative estimate (i.e., overestimated) as the all-electric micro mill would result in lower criteria air pollutant emissions, specifically NO_X, VOCs, and SO_2 as well as a small reduction in toxic air containment emissions associated with the project's elimination of natural gas combustion. Additionally, the emissions presented do not account for the reduction of CO_2 that would be captured in the EAF from the CCS or for the reduction of NO_X from the selective catalytic reduction unit. The control efficiency of the CCS is estimated to reduce CO_2 by up to 78 percent (Sgro, 2023). The control efficiency of the SCR is estimated to reduce NOx emissions by up to 90 percent (RF MacDonald Co., 2023). These emissions are above the EKAPCD criteria pollutant mass emissions thresholds, and the impact would be significant.

Table 4.3-7: **Unmitigated Proposed Project Long-Term Operational Emissions**

Operational Source	ROG/VOC	NO_X	PM_{10}	$PM_{2.5}$
Industrial Sources				
Meltshop[A]	85.47	95.85	125.24	118.43
Scrap Storage and Handling[A]	0.01	0.22	0.58	0.10
Silos and Material Storage[A]	0.00	0.00	2.38	2.30
Slag Yard[A]	0.00	0.00	1.78	0.16
Cooling Towers[B]	0.00	0.00	3.79	2.28
Emergency Equipment[B]	1.67	0.29	0.02	0.02
Off-road Equipment[B]	1.19	9.65	0.39	0.35
Auxiliary Sources				
Building Energy	0.00	0.00	0.00	0.00
Site Area	0.32	0.00	0.00	0.00
Mobile	1.35	21.55	41.52	6.78
Maximum Annual Emissions [C D]	**90.01**	**127.56**	**175.70**	**130.42**
EKAPCD Threshold (TPY)	**25**	**25**	**15**	**--**
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**--**

[A] Emissions were calculated based in Nucor Florida Permit Application and scaled to represent operational conditions for the proposed project. As such, the emissions presented assume a highly conservative estimate.
[B] ESA calculated emissions based on Applicant provided project specifics included in Appendix D.
[c] No new operational activities are assumed with the off-site improvements; therefore no operational emissions were assumed.
[D] The CCS is anticipated to have a control efficiency of up to 78%.
Source: ESA, 2023d. Sgro, 2023.

Table 4.3-8, provides the annual operational emissions for the project after implementation of Mitigation Measure MM 4.3-1. These emissions are above the EKAPCD criteria pollutant mass emissions thresholds, and the impact would be significant.

Table 4.3-8: Mitigated Proposed Project Long-Term Operational Emissions

Operational Source	**ROG/VOC**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Industrial Sources				
Meltshop[A]	85.47	92.85	125.24	118.43
Scrap Storage and Handling[A]	0.01	0.22	0.58	0.10
Silos and Material Storage[A]	0.00	0.00	2.38	2.30
Slag Yard[A]	0.00	0.00	1.78	0.16
Cooling Towers[B]	0.00	0.00	3.79	2.28
Emergency Equipment[B]	1.67	0.29	0.02	0.02
Off-road Equipment[B]	0.32	1.71	0.06	0.06
Auxiliary Sources				
Building Energy	0.00	0.00	0.00	0.00
Site Area	0.32	0.00	0.00	0.00
Transportation/Mobile	1.35	21.55	41.52	6.78
Maximum Annual Emissions [D]	**89.14**	**116.62**	**175.37**	**130.13**
EKAPCD Threshold (TPY)	**25**	**25**	**15**	**--**
Exceeds Thresholds?	**Yes**	**Yes**	**Yes**	**--**

Notes:
[A] Emissions were calculated based in Nucor Florida Permit Application and scaled to represent operational conditions for the project. As such, the emissions presented assume a highly conservative estimate.
[B] ESA calculated emissions based on Applicant provided project specifics included in workbooks included in Appendix D.
[C] No new operational activities are assumed with the off-site improvements, therefore no operational emissions were assumed.
[D] The CCS is anticipated to have a control efficiency of up to 78 percent and the SCR has an anticipated control efficiency of up to 90 percent (RF MacDonald Co., 2023).
Source: ESA, 2023d. Sgro, 2023.

Eastern Kern County is currently in nonattainment for the ozone CAAQS and NAAQS, and the PM_{10} CAAQS. Certain individuals residing in areas that do not meet the CAAQS or NAAQS could be exposed to pollutant concentrations that cause or aggregative acute and/or chronic health conditions (e.g., asthmas, lost work days, premature mortality). A description of the health effects of criteria pollutants can be found in Section 4.3.2, Existing Air Quality Conditions.

Mitigation Measures

Implement Mitigation Measures MM 4.3-1 and MM 4.3-2.

Level of Significance after Mitigation

With implementation of Mitigation Measures MM 4.3-1 and MM 4.3-2, construction impacts would be less than significant, but operational impacts would remain significant and unavoidable.

Impact 4.3-3: Implementation of the project would not expose sensitive receptors to substantial pollutant concentrations.

Health Risk Assessment

Sensitive receptors are particularly sensitive to air pollution because they are persons that are ill, elderly, or have lungs that are not fully developed. Locations where such persons reside, spend considerable amount of time, or engage in strenuous activities are also referred to as sensitive receptors. Typical sensitive receptors include inhabitants of long-term healthcare facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers, and athletic facilities. As detailed in the sensitive receptors discussion under Section 4.3.4, the closest sensitive receptors are approximately 1,000 feet from the project borders. Implementation of Mitigation Measure MM 4.3-1 would ensure that all readily available and feasible air quality control measures would be implemented to reduce emissions associated with construction and operation.

Toxic Air Contaminants

Projects are evaluated for potential health risk impacts when a new or modified source of TACs is proposed for a location near an existing residential area or other sensitive receptor. An HRA was conducted following OEHHA guidance, as discussed above. The HRA analyzed exposure to TACs starting with the construction period and continuing during operations, for a 30-year exposure period, per the guidance (OEHHA, 2015).

The primary TAC concerns during project construction would be DPM emitted within the project site. During operation of the micro mill, DPM from on-road and off-road equipment and other TACs emitted during metal processing are of concern. Operation of the project processes would follow strict compliance with EKAPCD and CARB rules and regulations to limit emissions. The anticipated construction and operational emissions from the proposed project were quantified in the HRA.

Construction plus Operation

Construction of on-site facilities and off-site improvements would generate short-term DPM air quality impacts, which were evaluated in the HRA. Detailed assumptions and calculations are included in the project-specific Health Risk Assessment Data (Appendix C) and the SCE improvements in the *Air Quality Analysis of Off-Site Power Utilities Memorandum* (Appendix D). The HRA evaluated cancer and non-cancer chronic health risks from construction. DPM is the primary TAC associated with construction, and it does not have an acute REL; therefore, acute hazard index was not quantified for construction impacts.

Exposure to TACs during the construction period was assumed to start with a fetus in the third trimester and continue for the 24 months of construction. Breathing rates and age sensitivity factors from the OEHHA guidance were assumed for the age bin from third-trimester fetus to 2 years of age.

Operation of the proposed project once construction is completed would also generate TAC emissions, as described above. Because cancer risk accumulates over time, the HRA evaluated cancer risk from the proposed project’s operations with exposure starting at the end of construction.

Exposure to TACs during the operational period was assumed to start with a 2-year old child and continue for 28 years, resulting in a total exposure period of 30 years. Breathing rates and age sensitivity factors from the OEHHA guidance for the 2-16 year and 16-30 year age bins were used for the operational exposure period.

The results of the HRA for the construction plus operational period for the unmitigated cancer risk at the maximally exposed individual resident (MEIR) is shown in **Table 4.3-9:** *Maximum Unmitigated Health Risk Impacts for Off-Site Sensitive Receptors*. The unmitigated cancer risk level would exceed the 10 in one million threshold established by the EKAPCD (OEHHA, 2015). The MEIR is located to the northwest of the project site. The non-carcinogenic chronic hazard index associated with construction activities was also quantified for proposed project. The unmitigated chronic hazard index at the same MEIR as the cancer impact would be below the EKAPCD chronic hazard index threshold of 1.0.

Table 4.3-9: **Maximum Unmitigated Health Risk Impacts for Off-site Sensitive Receptors**

Exposure Scenario	Maximum Cancer Risk (# in one million)	Chronic Hazard Index [a]
Unmitigated Construction	10.53	0.26
Traffic Improvement [b]	0.27	0.057
Water Line [b]	0.03	0.003
Power and Telecommunication	4.5	0.01
Unmitigated Operations	3.29	NA
TOTAL	18.62	0.26[c]
Maximum Individual Risk Threshold	10	1.0
Exceeds Threshold?	**Yes**	**No**

[a]DPM is the primary TAC associated with construction, and it does not have an acute REL; therefore, acute hazard was not quantified for the construction period.
[b] The maximum risk impacts from these construction studies are added to the maximum risk from Micro Mill construction and operation. This is inherently conservative because the maximum impacts may occur at different receptors than those from the Micro Mill.
[c]The hazard index is not additive as it is not a cumulative impact as operations begin after completion of construction. The maximum chronic hazard index occurs in construction year 2024.
Source: ESA, 2023d.

Implementation of Mitigation Measure MM 4.3-1 would reduce TAC emissions such that the cancer risk would be reduced to below the 10 in one million significance threshold. The maximum mitigated chronic hazard index at the MEIR would be further reduced below the significance threshold of 1.0. The mitigated risks are presented in **Table 4.3-10:** *Maximum Mitigated Health Risk Impacts for Off-Site Sensitive Receptors*.

Table 4.3-10: **Maximum Mitigated Health Risk Impacts for Off-site Sensitive Receptors**

Exposure Scenario	Maximum Cancer Risk (# in one million)	Chronic Hazard Index
Mitigated Construction	4.98	0.043
Traffic Improvement [b]	0.27	0.057
Water Line [b]	0.03	0.003
Power and Telecommunication		
Mitigated Operation	1.93	NA
TOTAL	7.17	0.06[c]
Maximum Individual Risk Threshold	10	1.0

Exceeds Threshold?	**No**	**No**

[a] The DPM is the primary TAC associated with construction, and it does not have an acute REL; therefore, acute hazard was not quantified for the construction period.
[b] The maximum risk impacts from these construction studies are added to the maximum risk from Micro Mill construction and operation. This is inherently conservative because the maximum impacts may occur at different receptors than those from the Micro Mill.
[c] The hazard index is not additive as it is not a cumulative impact.
Source: ESA, 2023d.

Operations

The HRA also evaluated the health risks from the 30-year exposure period of operations, with exposure starting once construction is completed. This was done to capture the effect of a 30-year exposure starting with the most vulnerable population in the third trimester fetus to 2-year age bin. Breathing rates and age sensitivity factors from the OEHHA guidance were assumed for the age bins including fetus to 2 years, 2 years to 16 years, and 16 years to 30 years. Detailed assumptions and calculations are included in the project specific Health Risk Assessment Data, (Appendix C).

The modeled cancer risk at the MEIR would be 9.97 in one million and is located northwest of the project site. This risk level would not exceed the 10 in one million significance threshold. The non-carcinogenic chronic and acute hazard impacts associated with project operations were also quantified. The chronic hazard index at the same MEIR as the cancer impact would be 0.03 and would not exceed the significance threshold of 1.0. The acute hazard index at the MEIR would be 0.21 and would not exceed the significance threshold of 1.0. The acute MEIR is located northwest of the project site. The unmitigated results are shown in **Table 4.3-11:** *Maximum Unmitigated 30-Year Operational Health Risk Impacts for Off-Site Sensitive Receptors*.

Table 4.3-11: **Maximum Unmitigated 30-Year Operational Health Risk Impacts for Off-site Sensitive Receptors**

Exposure Scenario	Maximum Cancer Risk (# in one million)	Chronic Hazard Index	Acute Hazard Index
30-Year Operation	9.97	0.03	0.21
Maximum Individual Risk Threshold	10	1.0	1.0
Exceeds Threshold?	**No**	**No**	**No**
Source: ESA, 2023d.			

Implementation of Mitigation Measure MM 4.3-1 would further reduce TAC emissions by requiring use of Tier 4 on-site heavy equipment such that the cancer risk would be reduced to 5.28 in one million, which would be below the 10 in one million significance threshold. The mitigated results are shown in **Table 4.3-12:** *Maximum Mitigated 30-Year Operational Health Risk Impacts for Off-Site Sensitive Receptors*.

Table 4.3-12: **Maximum Mitigated 30-Year Operational Health Risk Impacts for Off-site Sensitive Receptors**

Exposure Scenario	Maximum Cancer Risk (#one in one million)	Chronic Hazard Index	Acute Hazard Index
Operation	5.28	0.02	0.21
Maximum Individual Threshold	10	1.0	1.0
Exceeds Thresholds?	**No**	**No**	**No**
Source: ESA, 2023d.			

As shown in **Table 4.3-11**, the cancer risk impacts related to project operations would not exceed the 10 in one million significance threshold at the MEIR and thus would also not exceed the significance threshold at other nearby sensitive receptors.

Additionally, non-carcinogenic and acute hazards at the MEIR are also below EKAPCD thresholds. As such, the health risk impact attributed to the operation of the proposed project would be less than significant.

Ambient Air Quality Analysis

The proposed project would be required to comply with EKAPCD and USEPA permitting requirements. The project would require a permit application for an Authority to Construction with the EKAPCD, which would require purchase of offsets for non-attainment pollutants greater than the NSR thresholds. In addition, the proposed project would require a PSD application with the USEPA and undergo a PSD impact analysis of attainment pollutants. To obtain both of these permits, an ambient air quality analysis must show less than significant impacts to the CAAQS and NAAQS.

CO Hotspots

A CO "hotspot" can occur when vehicles are idling at highly congested intersections. CO hotspots can adversely affect nearby sensitive receptors. The Kern County Planning and Natural Resources Department's, Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports (2006) states that CO hotspots must be analyzed when one of the following conditions occur: (a) a project increases traffic at an intersection or roadway that operates at a Level of Service (LOS) E or worse; (b) a project involves adding signalization and/or channelization to an intersection; or (c) sensitive receptors such as residences, schools, hospitals, etc., are located in the vicinity of the affected intersection or signalization.

The proposed project is not located in the vicinity of an intersection that is currently operating at level of service (LOS) C or worse. The project would have trip generation associated with construction worker vehicles and vendor trucks. As construction is only expected to last approximately 24 months, it would be considered temporary and would not result in a long-term source of CO emissions.

With the addition of project-generated traffic, the intersections of Backus Road and Sierra Highway, and Sopp Road and Sierra Highway, would all maintain an LOS of C or better through 2042 and improvements are not warranted (LAV, 2023). Highway 14 ramp intersections with Backus Road are anticipated to degrade to a LOS of F with project traffic. However, with implementation of Mitigation Measure MM 4.17-3, installation of a traffic signal and expansion of the intersection at full buildout, LOS would be improved to a C or better. Additionally, under year 2042 estimated traffic volumes the State Route 14 southbound ramp intersection with Backus Road is anticipated to degrade to a LOS of F. With implementation of MM 4.17-3, a traffic signal at State Route 14 and the southbound ramp, the LOS would improve the LOS to better than C. Additionally, as previously noted, the traffic study used in the LOS determination includes both passenger vehicle and diesel trucks. However, passenger vehicles, which are predominantly gasoline-fueled, are the primary source of CO emissions at congested intersections. Regardless, with mitigation, the project would not result in intersections operating at or below LOS E.

Therefore, the project would not have CO hotspot–related impact with MM 4.17-3 and would not contribute a significant level of CO such that localized air quality and human health would be substantially degraded. Therefore, impacts would be less than significant, and a CO hotspot analysis is not required.

Visibility Impacts

Visibility at offsite locations may be impacted by emissions of airborne PM from short-term construction activities and long-term operation of the project. Federally designated Class I areas are of particular concern. These include many wilderness areas and national parks. The nearest Class I areas within 100 kilometers (km) of the proposed site include Domeland, San Gabriel, and the Cucamonga Wilderness areas.

Visibility impact analyses are intended for stationary sources of emissions which are subject to the PSD requirements in 40 CFR Part 60. To ensure visibility at offsite locations are not impacted by project emissions, Mitigation Measure 4.3-3 would be required, so that the 98th percentile change in light extinction is less than 5 percent for each year modeled, when compared to the annual average natural condition value for that Class I area. Emissions reductions pursuant to Mitigation Measures MM 4.3-1 and MM 4.3-2 would also be implemented to reduce the potential for adverse visibility impacts.

Valley Fever

During the proposed ground disturbing activities associated with the project, the potential exists that such activities could disturb dust particles and, if present, Coccidioides immitis (CI) spores, which could then be released into the air and potentially be inhaled by on-site workers and nearby sensitive receptors; exposure to these spores can cause an illness in some individuals known as Valley Fever. Because dust can be an indicator that increased efforts are needed to control other airborne particulates (including CI spores, if any), the project is required to control dust and the potential for exposure to any CI spores as well as provide training and awareness of Valley Fever via Mitigation Measures MM 4.3-2, and MM 4.3-4 and MM 4.3-5.

Mitigation Measure MM 4.3-2 requires the project to have comprehensive site construction controls in place to proactively control the generation of fugitive dust as required and regulated by the EKAPCD Rule 402. This Rule also requires the site to have a designated dust monitor, as well as visible signage for nearby residents with the phone number for the site construction management and the EKAPKD for nearby residents use if they see blowing dust.

Mitigation Measure MM 4.3-4 requires the project to provide training to construction workers on measures they must take to proactively control and reduce fugitive dust and the potential for the release of CI spores during their ground disturbing activities, training on specific worker/task safety procedures, and general information regarding symptoms testing and treatment options for Valley Fever. All workers are trained in and are expected to use their "stop work" authority if their activities are deemed to be causing the release of fugitive dust. This Mitigation Measure also requires the project to develop an educational Valley Fever Training Handout for distribution to onsite workers and nearby residents. This handout contains general information about the causes, symptoms, and treatment instructions regarding Valley Fever, including contact information of local health departments and clinics knowledgeable about Valley Fever. Additionally, MM 4.3-5 would require a one-time fee to Kern County Public Health Services Department for Valley Fever public awareness programs.

With the implementation of Mitigation Measures MM 4.3-2 and MM 4.3-4 through 4.3-5, the potential for the release of CI spores, if present, and the associated potential for workers or nearby residents to contract Valley Fever would be minimized; accordingly, the project would not add significantly to the existing exposure level of construction workers or nearby residences to the CI fungus.

Asbestos

Naturally occurring asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading of development projects, and at mining operations.

Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in the counties associated with the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. However, according to information provided by the Department of Conservation Division of Mines and Geology, the project site is not located in an area where naturally occurring asbestos is likely to be present (CDOC, 2000). Therefore, impacts associated with exposure of construction workers and nearby sensitive receptors to asbestos would be less than significant.

Off-site Improvements

The off-site improvements including the reconductoring and re-poling of existing SCE transmission lines from the Rosamond Substation to the corner of Sopp Road and Division Street will result in approximately 13 miles of existing transmission poles and circuits being replaced. Compliance with the required dust control plan would reduce fugitive dust impacts to less than significant for construction, which would so minimize release of Coccidiodides immitis fungus from construction activities. Consequently, impacts from this off-site improvement work during the construction phase will be less than significant.

Project Health Effects of Criteria Air Pollutants

The EPA and CARB have established AAQS at levels above which concentrations could be harmful to human health and welfare, with an adequate margin of safety. Further, California air districts, like the EKAPCD, have established emission-based thresholds that provide project-level estimates of criteria air pollutant quantities that air basins can accommodate without affecting the attainment dates for the AAQS. Accordingly, elevated levels of criteria air pollutants as a result of a project’s emissions could cause adverse health effects associated with these pollutants. The EKAPCD is designated as attainment area for ozone (one hour), PM_{10} and $PM_{2.5}$ and nonattainment for ozone (eight hours) under the NAAQS, and nonattainment for ozone, PM_{10} and $PM_{2.5}$ under the CAAQS.

Regarding health effects of criteria air pollutants, implementation of Mitigation Measures MM 4.3-1 through MM 4.3-4 would reduce the projects potential to result in regional health effects associated with ROG, NO_X, PM_{10} and $PM_{2.5}$; however, localized health effects associated with NO_X, PM_{10}, and $PM_{2.5}$ could occur. However, implementation of the mitigation measures would reduce both localized and regional project generated construction and operational emissions.

In *Sierra Club v. County of Fresno* (S219783) (Sierra Club) the Supreme Court held that CEQA requires environmental impact reports to either (i) make a "reasonable effort" to substantively connect the estimated amount of a given air pollutant a project will produce and the health effects associated with that pollutant, or (ii) explain why such an analysis is infeasible (6 Cal.5th at 1165-66). However, the Court also clarified that that CEQA "does not mandate" that EIRs include "an in-depth risk assessment" that provides "a detailed comprehensive analysis … to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations and to assess and quantify both the individual and population wide health risks associated with those levels of exposure." Id. at 1665. However, correlating the project's criteria air pollutant to specific health impacts, particularly with respect to ozone is not possible because there is no feasible or established scientific method to perform such analysis. This conclusion is supported by both the SJVAPCD and the South Coast Air Quality Management District (SCAQMD) who have determined that this type of analysis is speculative and infeasible and there are no unique issues for the EKAPCD that would make this analysis invalid.

Writing as amicus curiae in *Sierra Club*, the SJVAPCD explained that "[t]he health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the National Ambient Air Quality Standards (NAAQS). Accordingly, while the type of individual facility/health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task" (Appendix C).

Instead, the SJVAPCD explained that it assesses a project's potential to exceed AAQS by evaluating the project's compliance with district thresholds of significance, which are measured in mass emissions (Appendix C). As explained by SJVAPCD, its thresholds are based on factual, scientific data and have been set at a level that ensures that AAQS will not be exceeded, taking into consideration all cumulative emission sources (Appendix C). The SJVAPCD explained that attempting to connect criteria pollutant emissions to localized health impacts will "not yield reliable information because currently available modeling tools are not well suited for this task" (Appendix C). Available models are only equipped to model the impact of all emissions sources on an air basin-wide or regional basis, not on a project-level basis, and "[r]unning the photochemical grid model used for predicting ozone attainment with emissions solely from one project would thus not be likely to yield valid information given the relative scale involved" (Appendix C).

This inability to "accurately ascertain local increases in concentration" of mass emissions and then to further link emissions with health effects is particularly true for ozone and its precursors NO_X and ROG/VOC; ozone is not directly emitted into the air, but is instead formed as ozone precursors undergo complex chemical reactions through sunlight exposure (Appendix C). Given the complex nature of this process, and the fact that ozone can be transported by wind over long distances, "a specific tonnage amount of NO_X or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area" (Appendix C). For this reason, the photochemical analysis for ozone is done on a regional scale and it is inappropriate to analyze ozone impacts at a local or project-level basis because a localized analysis would at most be speculative, and at worst be misleading. Speculative analysis is not required by CEQA (CEQA Guidelines Section 15145; *Laurel Heights Improvement Association v. Regents of the University of California 1988*).

The SJVAPCD also explained that the disconnect between the tonnage of precursor pollutants and the concentration of ozone or particulate matter formed in a particular area is especially important to understand in considering potential health effects because it is the concentration, not the tonnage, that causes health effects (Appendix C). The SJVAPCD explained that even if a model were developed that could accurately assess local increases in concentrations of pollutants like ozone and particulates, it would still be "impossible, using today's models, to correlate that increase in concentration to a specific health impact" (Appendix C). The SJVAPCD stated that even a project with criteria pollutant emissions above its CEQA thresholds does not necessarily cause localized human health impacts as, even with relatively high levels of emissions, the SJVAPCD cannot determine "whether and to what extent emissions from an individual project directly impact human health in a particular area" (Appendix C). The SJVAPCD explained that this is particularly true for development projects like the proposed project, where most of the criteria pollutants derive from mobile and area sources and not stationary sources. The SCAQMD also, as amicus curiae in *Sierra Club*, made similar points, reiterating that "an agency should not be required to perform analyses that do not produce reliable or meaningful results" (Appendix C). SCAQMD agrees that it is very difficult to quantify health impacts with regard to ozone, opining that the only possible means of successfully doing so is for a project so large that emissions would essentially amount to *all* regional increases (Appendix C). With regard to particulate matter, the SCAQMD noted that while the CARB has created a methodology to predict expected mortality from large amount of $PM_{2.5}$, the primary author of the methodology has reported that it "may yield unreliable results due to various uncertainties" and CARB staff has been directed by its Governing Board to reassess and improve it, which factor "also counsels against setting any hard-and-fast rule" about conducting this type of analysis. The amicus briefs filed by SJVAPCD and SCAQMD in *Sierra Club* are included in Appendix C.

Mitigation Measures

Implement MM 4.3-1, MM 4.3-2, and MM 4.17-3, see Section 4.17, *Transportation and Traffic*

MM 4.3-3: Complete a screening procedure approved by the Federal Land Manager that demonstrates the 98th percentile change in light extinction is less than 5 percent for each modeled year, when compared to the annual average natural condition value for the Class I areas within 100 km of the proposed site.

MM 4.3-4: To minimize personnel and public exposure to potential Valley Fever–containing dust on and off site, the following control measures shall be implemented during project construction:

a. Equipment, vehicles, and other items shall be thoroughly cleaned of dust before they are moved off site to other work locations.

b. Wherever possible, grading and trenching work shall be phased so that earthmoving equipment is working well ahead or downwind of workers on the ground.

c. The area immediately behind grading or trenching equipment shall be sprayed with water before ground workers move into the area.

d. In the event that a water truck runs out of water before dust is sufficiently dampened, ground workers being exposed to dust shall leave the area until a truck can resume water spraying.

e. To the greatest extent feasible, heavy-duty earth-moving vehicles shall be closed-cab and equipped with a HEP-filtered air system.

f. Workers shall receive training in procedures to minimize activities that may result in the release of airborne Coccidioides immitis (CI) spores, to recognize the symptoms of Valley Fever, and shall be instructed to promptly report suspected symptoms of work related Valley Fever to a supervisor. Evidence of training shall be provided to the Kern County Planning and Natural Resources Department within 5 days of the training session.

g. A Valley Fever informational handout shall be provided to all onsite construction personnel. The handout shall, at a minimum, provide information regarding the symptoms, health effects, preventative measures, and treatment. Additional information and handouts can be obtained by contacting the Kern County Public Health Services Department.

h. Onsite personnel shall be trained on the proper use of personal protective equipment, including respiratory equipment. National Institute for Occupational Safety and Health–approved respirators shall be provided to onsite personal, upon request. When exposure to dust is unavoidable, provide appropriate NIOSH-approved respiratory protection to affected workers. If respiratory protection is deemed necessary, employers must develop and implement a respiratory protection program in accordance with Cal/OSHA's Respiratory Protection standard (8 CCR 5144).

MM 4.3-5: Prior to the issuance of any grading permit, a one-time fee shall be paid to the Kern County Public Health Services Department in the amount of $3,200 for Valley Fever public awareness programs.

Level of Significance

With the implementation of Mitigation Measures MM 4.3-1 through MM 4.3-5 and MM 4.17-3 from Section 4.17, *Transportation and Traffic*, impacts would be less than significant.

Impact 4.3-4: Implementation of the project would not result in other emissions (such as those leading to odors adversely affecting a substantial number of people).

Other Emissions (Such as Odors)

Land uses typically producing objectionable odors include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed project is a large industrial facility. However, the majority of the operations would be indoors. Water that has direct contact with contaminants in the steel making process (contact water) would be treated in a wastewater treatment plant. Water that has run through the steel making process would flow to a settling basin where settleable matter is dropped out. An oil skimmer would remove oils from the water in the basin then pumped to a sand filter for further treatment. Treated water would then be stored in a clarified water tank where chemical dosing units are used to balance the water's chemistry. Sewage water would not be treated at the treatment plant. The proposed project would follow EKAPCD rules, including Rule 414 (Wastewater Separators) and 419 (Nuisance) during project operations.

Additionally, the operation of the water line, traffic improvements, and the SCE power and telecommunication lines are not land uses that produce objectionable odors. During operation of the off-site improvements minimal amounts of emissions could be generated from periodic inspections and maintenance. Most regular operation and maintenance activities of the traffic improvements and overhead facilities are performed from service vehicles. For these reasons, impacts from the operations of the off-site improvements would be less than significant. During construction, odors would come predominantly from construction equipment, which would cease immediately after construction is complete. Furthermore, the project would be required to comply with California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485, which minimizes the idling time of construction equipment either by shutting it off when not in use or by reducing the time of idling to no more than five minutes. This would further reduce the detectable odors from heavy-duty equipment exhaust. Additionally, the project would follow all applicable EKAPCD rules and regulation to keep odors minimal. Given the large project area and strong prevailing winds at the project site, these odors would be dispersed and would not create significant objectionable odors. As discussed, construction-related odors would be short-term and cease upon project completion.

Sparse residences are located in the vicinity of the project site; therefore, short term fueling odors during construction and periodic refueling during long-term operations would not impact a substantial number of people. As such, the proposed project is not expected to result in adverse emissions affecting a substantial number of people.

Off-site Improvements

The reconductoring and re-poling of approximately 13 miles of existing SCE transmission lines would not result in emissions adversely affecting a substantial number of people. As discussed previously, to supply power to the site, SCE requires two main components, a power line and a fiber-optic (telecommunication) line. Given the existing, built out transmission lines, project-related improvements would not result in newly disturbed land or creation of new routes that would affect nearby sensitive receptors. For these reasons, impacts from the construction and installation of off-site improvements standing alone would be less than significant.

Mitigation Measures

No mitigation would be required.

Level of Significance

Impacts would be less than significant.

Cumulative Setting Impacts and Mitigation Measures

Local Air Quality Impacts

By definition, regional air pollution is largely a cumulative impact in that no single project is sufficient in size, by itself, to cause nonattainment of air quality standards. The contribution of a project's air emissions to regional air quality impacts is, by its nature, a cumulative effect. Emissions from cumulative projects in the vicinity could also contribute to cumulative air quality conditions and potentially adverse regional air quality impacts. The project-level thresholds for criteria air pollutants identify levels of emissions for new sources that are not anticipated to result in a considerable net increase in nonattainment criteria air pollutants. Therefore, if a project's emissions are below the project-level thresholds, the project would not result in a considerable contribution to cumulative regional air quality impacts. However, if the project contribution is above the thresholds, then the project would contribute a considerable amount to the cumulative impact. This analysis was conducted under Impact 4.3-2, and the project contribution (due to operations) was found to exceed significance thresholds, resulting in a considerable contribution.

Cumulative Projects

There are a total of 35 projects within a six-mile radius of the project site. Of the 35 projects, 16 have been approved, 15 are in the application phase, 3 are in the process stage, and 1 is completed/constructed. Since thresholds were exceeded with one approved project from each the 1-mile and the 6-mile, one of the 16 approved projects, and the completed/constructed were selected to demonstrate the localized construction impacts. The Edwards Air Force Base Solar Project is located adjacent and the east of the project site and has been completed and the Bellefield Solar Project (approved) located approximately 4.6 miles north of the project site are included in **Table 4.3-13:** *Cumulative Construction Emissions within 1-Mile and 6-Mile Radius*. As shown in **Table 4.3-13**, the combined construction emissions from the project and other potential projects within 1-mile and 6-miles from the project site would exceed EKAPCD's significance thresholds for NO_X and PM_{10}. Under a conservative scenario where construction schedules for all projects would overlap with each other and with the project, the localized effect would result in cumulatively significant construction NO_X and PM_{10} emissions.

With regard to operations, several of the cumulative projects are renewable energy, residential, and some commercial projects. During operation of the proposed project, the only likely sources of emissions for renewable facilities would be limited to vehicular emissions associated with routine employee vehicle trips for maintenance and monitoring activities, the energy storage system facilities, and emergency backup generators. Additionally, employee trips may also be made for the washing of solar PV panels, which may only occur seasonally throughout the year. During operation of the residential and commercials uses, sources would include vehicular emissions associated with residents, visitors, and delivery vehicle trips to and from the residential uses. Additional emissions from on-site sources such as natural gas combustion, landscaping equipment, and use of consumer products would also be emitted. However, as shown in **Table 4.3-8**, operational emissions of the project, even with mitigation, would exceed EKAPCD thresholds. As such, the project's contribution to the cumulative impact would be considerable.

Table 4.3-13: Cumulative Construction Emissions within 1-Mile and 6-Mile Radius

Project	VOC	NO_X	SO_X	PM_{10}
Proposed Project[a]	2.81	16.03	0.38	1.59
Project within 1-Mile Radius				
Edwards Air Force Base Solar	2.57	23.31	0.08	17.57
Projects within 6-Mile Radius				
Bellefield Solar Project	3.4	23.6	0.1	13.9
EKAPCD Threshold (TPY)	**25**	**25**	**-**	**15**
Exceeds Threshold?	No	**Yes**	-	**Yes**

Notes:
[a] Micro mill emissions calculations were calculated using information provided to ESA and CalEEMod software.
Source: ESA, 2022.

Toxic Air Contaminants

TACs from the proposed project would be considered significant and unavoidable if project specific risk exceeded cancer, chronic, and acute thresholds listed above. As discussed previously, mitigated TAC impacts from construction and operation would result in less-than significant cancer and non-cancer risk. Therefore, the contribution to health risk from project TAC emissions would not be cumulatively considerable, and impacts would be less than significant.

CO Hotspots

The project level discussion of CO hotspots, above, is in itself a cumulative analysis. There is no additional information to present for cumulative impacts. Therefore, as stated above, CO impacts would not be cumulatively considerable and impacts would be less than significant.

Cumulative Impacts Summary

As discussed in Impact Statement 4.3-1, the construction emissions generated by the project individually, but inclusive of both on-site facilities and off-site improvements, would not exceed EKAPCD thresholds. With regard to project level construction emissions, Mitigation Measures MM 4.3-1 and MM 4.3-5 would reduce impacts related to NO_X and PM_{10} from diesel emissions, reduce dust generation, and address potential Valley Fever risk by implementing fugitive dust control measures, establishing a public complaint protocol for excessive dust generation, and requiring Valley Fever-related training for construction workers. However, assuming on a worst-case basis that the construction schedules for all cumulative projects would overlap with each other and with the proposed project, cumulative impacts during construction could be significant and unavoidable related to NO_X and PM_{10} emissions.

Operation of the proposed project would result in an overall net reduction of emissions by providing electricity that could displace energy produced from fossil fuels. Operation of the project exceeds the project level regulatory thresholds and, therefore, would contribute to a long-term cumulative increase in criteria pollutants. The project's incremental contribution to operational impacts would be cumulatively considerable.

Mitigation Measures

Implement Mitigation Measures MM 4.3-1 through MM 4.3-5.

Level of Significance after Mitigation

Despite implementation of Mitigation Measures MM 4.3-1 through MM 4.3-5, construction emissions generated by the project and related projects could cumulatively combine and result in a temporary significant and unavoidable cumulative impact. Cumulative operational impacts would also be significant and unavoidable.

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Chapter 3.0, *Project Description*, Page 3-30

Offsite Improvements

SCE is the electricity provider for the project site. To supply power to the site, SCE requires two main components, a power line and a fiber-optic (telecommunication) line. The power line will consist of an upgrade to a portion of the Corum-Goldtown-Rosamond 66 kilovolt (kV) line, which runs from the Rosamond Substation (on the corner of Rosamond Boulevard and 60th Street W) parallel to Rosamond Boulevard before connecting to the north-south 66 kV line at approximately Rosamond Boulevard/Division Street, within the Edwards Air Force Base (EAFB) utility corridor. The connection will continue north within EAFB's utility corridor approximately following the path of Division Street until Sopp Road. From the corner of Sopp Road and Division Street a new 66 kV power line will be erected to the Project Site at Sopp Road. See **Figure 3-14:** *Existing and Proposed Offsite Improvements*.

SCE estimates that the existing 66 kV line from Rosamond Substation to the corner of Sopp Road and Division Street will need to be reconductored (totaling approximately 13 miles), with all existing transmission poles requiring replacement with new poles installed for the section from the corner of Sopp Road and Division Street to the Project Site. This will consist of the installation of new poles and circuits.

There will be two fiber optic lines connected to the plant. One fiber optic cable will be installed by SCE who will be the electricity provider for the project site. The fiber op it would tie into the existing telecommunications line from approximately Tehachapi Willow Springs Road following the route of Backus Road and routing around the north side of Exit 61 of SR-14 to Sierra Highway. The other fiber optic cable will be for PSG business and industrial use, and it will be connected from an existing AT&T fiber at Sopp road.

The Antelope Valley-East Kern Water Agency (AVEK) water main is located on the eastern side of Sierra Highway, approximately 200' feet from the boundary of the project site. For operations, a new water line would be installed from the project site, underneath the railroad, connecting to the 36~~0~~-inch main AVEK line via an existing 10-inch turnout that is currently capped with a blind flange. For construction, water will be trucked to the project site and the project proponent will also use the existing water well at the plant. Two trucks per day were assumed during the construction phase.

Section 4.3, *Air Quality*, Page 4.3-29

Rule 210.A

The purpose of this Rule is to provide for preconstruction review of any new major stationary source, or major modification of an existing major stationary source of a nonattaintment pollutant, insure BACT has been proposed for each emission unit included in each new major stationary source, and provide offsets for any significant net emissions increases of a nonattainment pollutant from any new major stationary source.

Section 4.3, *Air Quality*, Page 4.3-30

Rule 422

Rule 422 adopts the EPA's New Source Performance Standards by reference, which grants EKAPCD the ability to ensure that all new and modified sources shall comply with applicable standards, criteria, and requirements set forth in Title 40, Chapter 1, Part 60, of the Code of Federal Regulations that are in effect as of October 10, 2017.

Section 4.3, *Air Quality*, Page 4.3-31

The 2023 Ozone Air Quality Attainment Plan (2023 AQAP) was adopted by EKAPCD on May 4, 2023. The 2023 AQMP includes required elements of an attainment plan, as well as the emissions reductions and control measures necessary to demonstrate attainment with the 2008 and 2015~~6~~ 8-hour ozone NAAQS. Modeling completed by EKAPCD indicates that EKAPCD would not attain the 2015, 8-hour ozone NAAQS (0.070 ppm) by 2027, attainment deadline for the Serious nonattainment designation, but could attain it by 2033, the attainment deadline for the Severe nonattainment designation. Pursuant to CAA Section 181(b)(3) "Voluntary Reclassification", EKAPCD is petitioning CARB in the 2023 AQAQP to formally submit a request to the USEPA asking for the voluntary reclassification from "Serious" to "Severe" for the 2015 8-hour ozone NAAQS. The voluntary reclassification would extend the attainment deadline to August 27, 2033. As of June 1, 2023, neither CARB nor the USEPA have approved the 2023 AQAP (EKAPCD, 2023).

Section 4.3, *Air Quality*, Page 4.3-46

COVID-19

There are no definitive quantitative thresholds related to receptor exposure to Coronavirus Disease 2019 (COVID-19), and the relationship to exposure to $PM_{2.5}$.

Section 4.3, *Air Quality*, Page 4.3-47

2023 AQAP Rules

The proposed project, as a steel mill plant, would be considered a new major stationary source and would be subject to EKAPCD's MNSR rule. As such, the emissions limits under Rule 210.1A would apply. ~~This rule~~ Rule 210.1A requires new major stationary sources that increase emissions in amounts exceeding specified thresholds to provide emission reduction offsets to mitigate their emissions growth. The applicability threshold ~~for NO_x and VOC~~ in Rule 210.1A is ~~50~~ 25 tons per year for NO_x and VOC, 15 tons per year for PM_{10}, and 27 tons per year for SO_x, with an offset ratio of 1.~~2~~3-to-1.0 for emission offsets generated within the Mojave Desert Air Basin. If emission offsets generated from outside the Air Basin are utilized, the offset ratio may need to be increased to ensure the District maintains "reasonable further progress" in accordance with the AQAP. As such, there should be no net effect on emissions inventories from future construction or modifications at major stationary sources due to offset requirements. To ensure construction or modification of major sources has no net effect on emission inventories used for demonstrating attainment, banked ERCs, which otherwise would not be included as emissions in the baseline and subsequent inventories, must be added back into the inventories, pursuant to federal requirements. The 2023 AQAP includes a list of banked ERCs currently in the EKAPCD's credit bank as of 2022. The banked ERCS would lead to an increase of 0.005 ppb in attainment year ozone design values and would not affect the attainment status. Thus, with compliance of EKAPCD Rule 210.1A, construction and operation of the proposed project would comply with the 2023 AQAP.

Section 4.3, *Air Quality*, Page 4.3-48

The proposed project, as a steel mill plant, would be considered a new major stationary source and would be subject to EKAPCD's MNSR rule. This rule requires new major stationary sources that increase emissions in amounts exceeding specified thresholds to provide emission reduction offsets to mitigate their emissions growth. The applicability threshold for NOX and VOC in Rule 210.1A is 25~~50~~ tons per year with an offset ratio of 1.~~2~~3-to-1.0. As such, there should be no net effect on emissions inventories from future construction or modifications at major stationary sources due to offset requirements. To ensure construction or modification of major sources has no net effect on emission inventories used for demonstrating attainment, banked ERCs, which otherwise would not be included as emissions in the baseline and subsequent inventories, must be added back into the inventories, pursuant to federal requirements. The 2023 AQAP includes a list of banked ERCs currently in the EKAPCD's credit bank as of 2022. The banked ERCS would lead to an increase of 0.005 ppb in attainment year ozone design values and would not affect the attainment status. Thus, with compliance of EKAPCD Rule 210.1A, construction and operation of the proposed project would comply with the 2023 AQAP.

Although the proposed project emissions were not included in the projections for the 2023 AQAP, compliance with EKAPCD's Rule 210.1A, MNSR would render the proposed project consistent with growth projections of the 2023 AQAP, since they would not increase emissions, over those allowed by the MNSR, and would not jeopardize attainment of the AQAP. Therefore, the proposed project is consistent with the goals of the 2023 AQAP.

Section 4.3, *Air Quality*, Page 4.3-49 through 4.3-52

MM 4.3-2: To control fugitive PM emissions during construction, prior to the issuance of grading or building permits and any earthwork activities, the project proponent shall prepare a comprehensive Fugitive Dust Control Plan for review and approval by the Eastern Kern Air Pollution Control District and submitted to the Kern County Planning and Natural Resources Department. The plan shall include all Eastern Kern Air Pollution Control District recommended measures, including but not limited to, the following:

a. All soil being actively excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soils areas. Watering shall take place a minimum of three times daily where soil is being actively disturbed, unless dust is otherwise controlled by rainfall or use of a dust suppressant.

b. Vehicle speed for all on site (i.e., within the project boundary) construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. Signs identifying construction vehicle speed limits shall be posted along onsite roadways, at the site entrance/exit, and along unpaved site access roads.

c. Vehicle speeds on all offsite unpaved project-site access roads (i.e., outside the project boundary) construction vehicles shall not exceed 25 mph. Signs identifying vehicle speed limits shall be posted along unpaved site access roads and at the site entrance/exit.

d. All onsite unpaved roads ~~and offsite unpaved public project-site access road(s)~~ shall be effectively stabilized of dust emissions using water or Eastern Kern Air Pollution Control District approved dust suppressants/palliatives, sufficient to prevent wind-blown dust from exceeding 20 percent opacity for more than three minutes in an hour and to ensure fugitive dust would not be visible beyond the property line ~~at nearby residences or public roads.~~ If water is used, watering shall occur a minimum of three times daily, sufficient to keep soil moist along actively used roadways. During the dry season, unpaved road surfaces and vehicle parking/staging areas shall be watered immediately prior to periods of high use (e.g., worker commute periods, truck convoys). Reclaimed (non-potable) water shall be used to the extent available and feasible.

e. The amount of the disturbed area (e.g., grading, excavation) shall be reduced and/or phased where possible.

f. All disturbed areas shall be sufficiently watered or stabilized by Eastern Kern Air Pollution Control District approved methods to prevent excessive dust. On dry days, watering shall occur a minimum of three times daily on actively disturbed areas. Watering frequency shall be increased whenever wind speeds exceed 15 mph or, as necessary, to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. Reclaimed (nonpotable) water shall be used to the extent available and feasible.

g. All clearing, grading, earth moving, and excavation activities shall cease during periods when dust plumes of 20 percent or greater opacity affect public roads or nearby occupied structures.

h. All disturbed areas anticipated to be inactive for periods of 30 days or more shall be treated to minimize wind-blown dust emissions. Treatment may include, but is not limited to, the application of an Eastern Kern Air Pollution Control District-approved chemical dust suppressant, gravel, hydro-mulch, revegetation/seeding, or wood chips.

i. All active and inactive disturbed surface areas shall be stabilized, where feasible.

j. Equipment and vehicle access to disturbed areas shall be limited to only those vehicles necessary to complete the construction activities.

k. Where applicable, permanent dust control measures shall be implemented as soon as possible following completion of any soil-disturbing activities.

l. Stockpiles of dirt or other fine loose material shall be stabilized by watering or other appropriate methods sufficient to reduce visible dust emissions to a limit of 20 percent opacity. If necessary and where feasible, three-sided barriers shall be constructed around storage piles and/or piles shall be covered by use of tarps, hydro-mulch, woodchips, or other materials sufficient to minimize windblown dust.

m. Water shall be applied prior to and during the demolition of onsite structures sufficient to minimize wind-blown dust.

n. Where acceptable to the fire department and feasible, weed control shall be accomplished by mowing instead of disking, thereby leaving the ground undisturbed and with a mulch covering.

o. All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least six inches of freeboard (minimum vertical distance between top of the load and top of the trailer) in accordance with California Vehicle Code Section 23114.

p. Gravel pads, grizzly strips, or other material track-out control methods approved for use by Eastern Kern Air Pollution Control District shall be installed where vehicles enter or exit unpaved roads onto paved roadways.

q. Haul trucks and off-road equipment leaving the site shall be washed with water or high pressure air, and/or rocks/grates at the project entry points shall be used, when necessary, to remove soil deposits and minimize the track out/deposition of soil onto nearby paved roadways.

r. During construction paved road surfaces adjacent to the site access road(s), including adjoining paved aprons, shall be cleaned, as necessary, to remove visible accumulations of track-out material. If dry sweepers are used, the area shall be sprayed with water prior to sweeping to minimize the entrainment of dust. Reclaimed water shall be used to the extent available.

s. Portable equipment, 50 horsepower or greater, used during construction activities (e.g., portable generators) shall require California statewide portable equipment registration (issued by California Air Resources Board) or an Eastern Kern Air Pollution Control District permit.

t. The Fugitive Dust Control Plan shall identify a designated person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures, as necessary, to minimize the transport of dust off site and to ensure compliance with identified fugitive dust control measures. Contact information for a hotline shall be posted on site should any complaints or concerns be received during working hours and holidays and weekend periods when work may not be in progress. The names and telephone numbers of such persons shall be provided to the Eastern Kern Air Pollution Control District Compliance Division prior to the start of any grading or earthwork.

u. Signs shall be posted at the project site entrance and written notifications shall be provided a minimum of 30 days prior to initiation of project construction to residential land uses located within 1,000 feet of the project site. The signs and written notifications shall include the following information: (a) Project Name; (b) Anticipated Construction Schedule(s); and (c) Telephone Number(s) for designated construction activity monitor(s) or, if established, a complaint hotline.

v. The designated construction monitor shall document and immediately notify Eastern Kern Air Pollution Control District of any air quality complaints received. If necessary, the project operator and/or contractor will coordinate with Eastern Kern Air Pollution Control District to identify any additional feasible measures and/or strategies to be implemented to address public complaints.

w. The solar array shall obtain a permit from the Eastern Kern Air Pollution Control District and implement phased removal of vegetation from the site to ensure dust control during construction.

Section 4.3, *Air Quality*, Page 4.3-64

COVID-19

COVID-19 is a new disease, caused by a novel (or new) human coronavirus that has not previously been seen in humans. The first known case of COVID-19 was confirmed in the United States on January 20, 2020 (Holshue et al., 2020). There are many types of human coronaviruses, including some that commonly cause mild upper-respiratory tract illnesses. COVID-19 is a respiratory illness that can spread from person to person. According to the Center for Disease Control (CDC), older adults and people who have severe underlying medical conditions like heart or lung disease or diabetes seem to be at higher risk for developing more serious complications from COVID-19 illness. Symptoms may appear 2 to 14 days after the exposure to the virus and may include, but are not limited to: fever or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, and diarrhea (CDC, 2020a). According to the CDC, COVID-19 is believed to spread between people who are in close contact with one another (within about 6 feet) through respiratory droplets produced when an infected person coughs, sneezes, or talks (CDC, 2020b). COVID-19 research and causality is still in the beginning stages. A nationwide study by Harvard University found a linkage between long term exposure to PM2.5 (averaged from 2000 to 2016) as air pollution and statistically significant increased risk of COVID-19 death in the United States (Harvard, 2020).

Regarding health effects of criteria air pollutants, the project's potential to result in regional health effects associated with ROG, NO_X, PM_{10} and $PM_{2.5}$ on specific vulnerable populations cannot be calculated given existing scientific constraints. A scientific method to calculate the exact number of individuals in a vulnerable population that will get sick has not been developed and therefore, it is assumed localized health effects associated with NO_x, PM_{10}, and $PM_{2.5}$ emissions from project implementation could occur. The project proposes the construction and operation of a large-scale utility solar project that would require dust-generating construction activities such as pile-driving, mowing, and grading, over a large area. Due to the open nature of the project site, blowing dust could occur and result in the dispersal of criteria air pollutants such as $PM_{2.5}$ and potentially contribute to the transmission of respiratory diseases like COVID-19.

Since COVID-19 is understood to spread as result of close, person-to-person contact, especially within poorly ventilated indoor spaces, the likelihood of emissions from the proposed project directly increasing the spread of COVID-19 is remote. However, a nationwide study by Harvard University found a linkage between long term exposure to $PM_{2.5}$ as air pollution and statistically significant increased risk of COVID-19 death in the United States (Harvard, 2020). Though construction dust suppression measures would be implemented as a requirement of Mitigation Measure MM 4.3-2, exposure to dust during construction could still occur which could increase the severity of the disease project employees and nearby residents to COVID-19 should they contract it. However, the vaccines for COVID-19 drastically reduce the likelihood of hospitalization, much less death, as a result of contracting COVID-19. In spite of a readily available COVID-19 vaccine supply in the United States, the COVID-19 pandemic is on-going as a result of low vaccination rates and mask compliance by unvaccinated individuals. People of color may also have a higher risk of getting sick or dying from COVID-19 (California Department of Public Health 2020) and may live in areas already burdened by air pollution (NRDC 2014). On-site workers and residents near project activities potentially could be exposed to increased levels of $PM_{2.5}$ from project activities due to the emissions of $PM_{2.5}$ from the project.

Therefore, in addition to implementation of Mitigation Measure MM 4.3-2, the project would implement Mitigation Measure MM 4.3-6, which requires implementation of a COVID-19 Health and Safety Plan in accordance with the Kern County Public Health Services Department and Kern County Health Officer mandates. Implementation of Mitigation Measures MM 4.3-2 and MM 4.3-6 would be required to reduce the project's regional and localized health effects associated with criteria air pollutants and COVID-19; however, the exact reduction from implementation of these mitigation measures cannot be quantified given existing scientific constraints. Consequently, the United States COVID-19 national health emergency ended on May 11, 2023, rendering COVID-19 as less of a threat to public health as opposed to the previous three years. With implementation of MM 4.3-2 and MM 4.3-6, impacts would be less than significant.

Section 4.3, *Air Quality*, Page 4.3-65

MM 4.3-6: Prior to the issuance of grading or building permits, a COVID Health and Safety Plan shall be prepared in accordance with the California Department of Public Health Guidance. A copy of the COVID Health and Safety Plan shall be submitted to the Kern County Planning and Natural Resources Department for review and approval.

Level of Significance

With the implementation of Mitigation Measures MM 4.3-1 through MM 4.3-~~5~~6 and MM 4.17-3 from Section 4.17, *Transportation and Traffic*, impacts would be less than significant.

Section 4.3, *Air Quality*, Page 4.3-68 through 4.3-69

Cumulative Impacts Summary

As discussed in Impact Statement 4.3-1, the construction emissions generated by the project individually, but inclusive of both on-site facilities and off-site improvements, would not exceed EKAPCD thresholds. With regard to project level construction emissions, Mitigation Measures MM 4.3-1 and MM 4.3-~~5~~6 would reduce impacts related to NO_X and PM_{10} from diesel emissions, reduce dust generation, and address potential Valley Fever risk by implementing fugitive dust control measures, establishing a public complaint protocol for excessive dust generation, ~~and~~ requiring Valley Fever-related training for construction workers, and requiring preparation of a COVID Health and Safety Plan. However, assuming on a worst-case basis that the construction schedules for all cumulative projects would overlap with each other and with the proposed project, cumulative impacts during construction could be significant and unavoidable related to NO_X and PM_{10} emissions.

Mitigation Measures

Implement Mitigation Measures MM 4.3-1 through MM 4.3-~~5~~6.

Level of Significance after Mitigation

Despite implementation of Mitigation Measures MM 4.3-1 through MM 4.3-~~5~~6, construction emissions generated by the project and related projects could cumulatively combine and result in a temporary significant and unavoidable cumulative impact. Cumulative operational impacts would also be significant and unavoidable.

Section 4.5, *Cultural Resources*, Page 4.5-39

MM 4.5-3: During implementation of the project, in the event that archaeological materials are encountered during the course of grading or construction, the project contractor shall cease any ground-disturbing activities within 50 feet of the find. The area of the discovery shall