AIR QUALITY AND GREENHOUSE GAS ASSESSMENT FOR CALPORTLAND COMPANY'S

BAXTER QUARRY AMENDED RECLAMATION PLAN (90M-02)

CA Mine ID # 91-36-0036

Prepared for:

CALPORTLAND COMPANY
P.O. Box 158
Oro Grande, CA 92415

Prepared by:

LILBURN CORPORATION
1905 Business Center Drive
San Bernardino, CA 92408

March 2022

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AIR QUALITY AND GREENHOUSE GAS ASSESSMENT FOR THE BAXTER QUARRY Amended Reclamation Plan (90M-02)

CALPORTLAND COMPANY

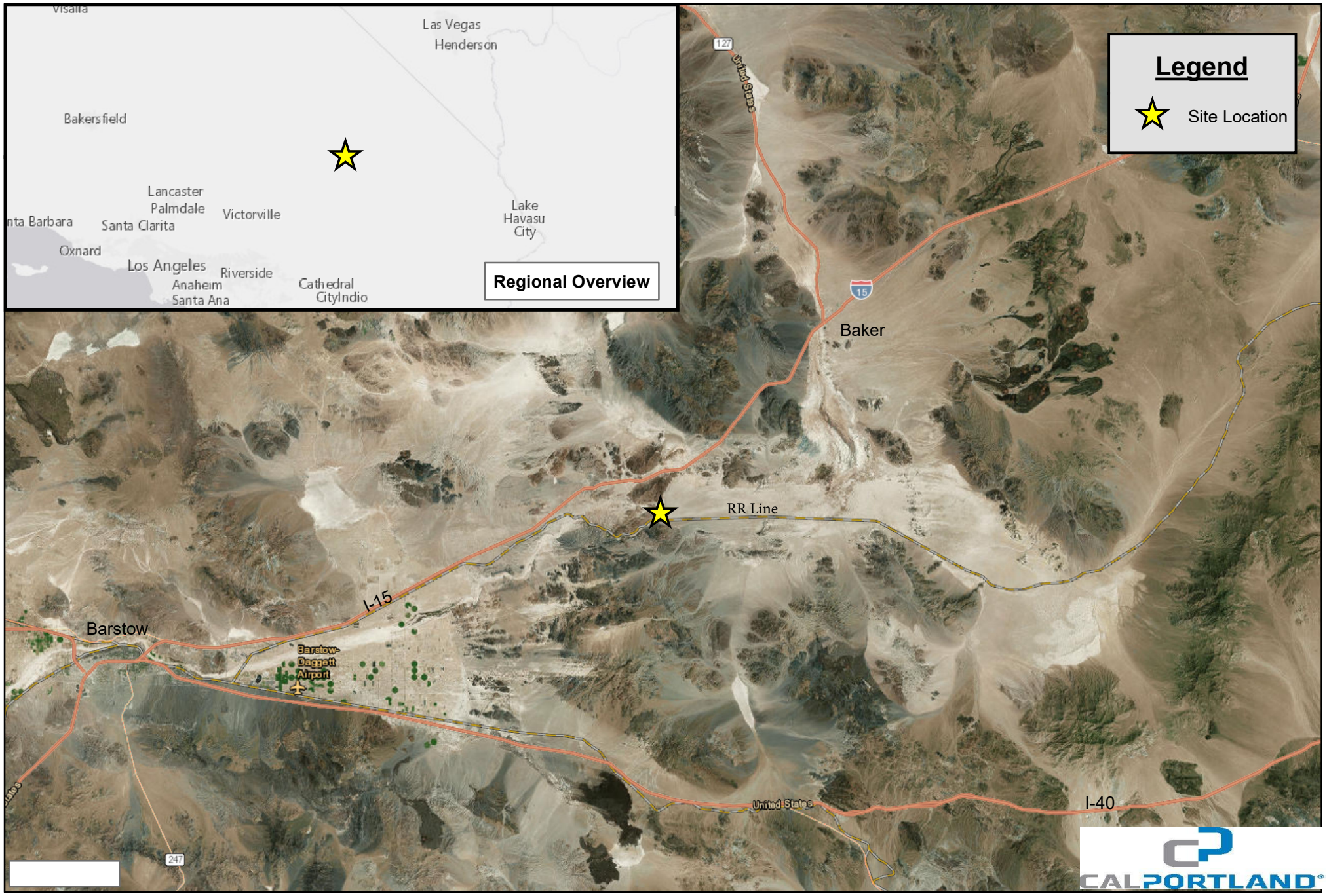
INTRODUCTION

CalPortland Company (CalPortland) is submitting to San Bernardino County (County) an Amended Reclamation Plan (Amended Plan) for the planned continuing operations and reclamation of the existing vested Baxter Quarry (90M-02) (CA Mine ID # 91-36-0036). CalPortland seeks to amend its existing reclamation plan, approved by the County in 1990, to include the reclamation of additional iron ore reserves within the vested mine site. The Baxter Quarry supplies iron ore for CalPortland's cement plants and to other markets. The local source of iron ore reduces the need to import iron ore from more distant sources, thus reducing environmental impacts and transportation costs.

The Baxter Quarry (project site, quarry) has been explored and mined historically since 1938, before the County enacted applicable use permit requirements. The County, accordingly, has recognized the quarry and its property site of 452 acres as "vested" (i.e., a legal nonconforming use), and not subject to either the Surface Mining and Reclamation Act (Pub. Resources Code, § 2710 *et seq.* [SMARA]) or the County's use permit requirements. Although CalPortland's existing operations are vested and, therefore, permitted by right without a use permit, the quarry is subject to the reclamation and financial assurance requirements of SMARA and the County's local surface mining ordinance. (Pub. Resources Code, § 2710 *et seq.*; County Development Code, Ch. 88.03) As is common for mining operations, CalPortland's existing reclamation plan only covered portions of the overall vested quarry that were subject to active mineral recovery operations at the time.

The Quarry is located approximately 19 miles southwest of the Community of Baker and 40 miles east-northeast of Barstow within approximately 452 acres of private lands mostly in Section 12, Township 11 North, Range 6 East, San Bernardino Base and Meridian (SBBM). The Baxter Quarry Reclamation Plan area totals 263 acres within Assessor Parcel Numbers (APNs) 542-201-02 to 10; 14, 15, 16, 18, 35 & 36. The site is accessed from Interstate 15 (I-15) south on Basin Road for 3.5 miles directly to the site. Refer to Figures 1 and 2 for a Location Map and Vicinity Map.

The existing Reclamation Plan for the Baxter Quarry (Reclamation Plan #90M-02) was approved by the County in 1990 and covers approximately 130 acres. The Quarry is located on patented (private) lands owned by CalPortland. The existing quarry or West Deposit (19 acres), overburden stockpile, staging area (stockpiled ore), and on-site access roads consist of approximately 49 disturbed acres. The proposed amendment will continue operations for an additional 50 years on an additional approximately 69 acres for a total disturbance area on approximately 118 acres to be reclaimed.



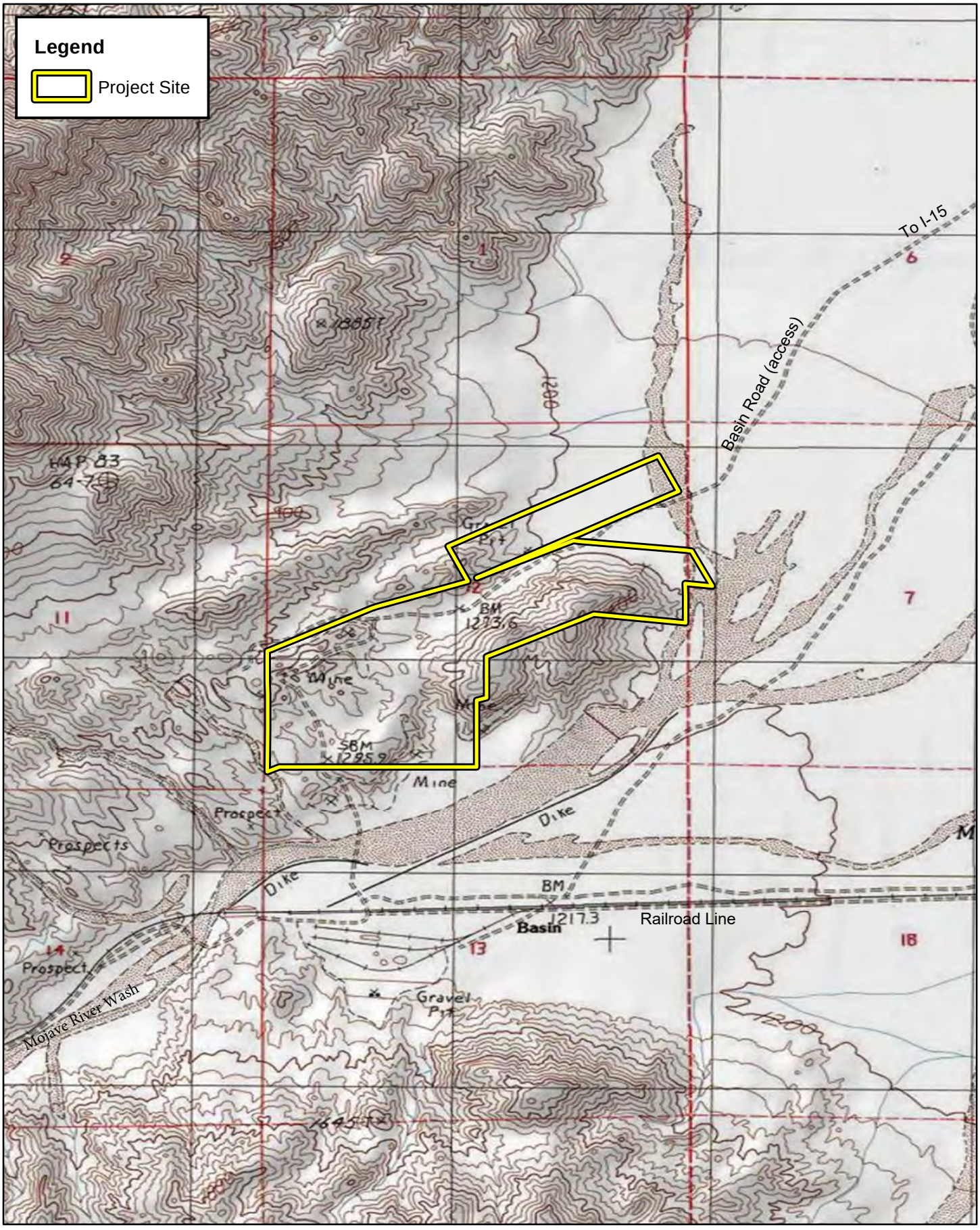
0 5 10 20 30 40 Miles

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,

JERICHO SYSTEMS INCORPORATED

Baxter Quarry
Amended Reclamation Plan

Figure 1 - Location Map
Baxter Quarry



BAXTER QUARRY
AMENDED RECLAMATION PLAN

Site Vicinity

Source: USA Topographic Map, San Bernardino County

Figure 2

The project does not propose any change to CalPortland's existing vested mining operations including, for example, productions levels, mining systems or processes, and ultimate throughput, based on market demand. The Amended Plan proposes to continue mining within the existing West Deposit and excavations will phase into the Lillian Belle and East Deposits in the final stages of the West Deposit. Thereafter, underground mining will be developed through a portal in the Lillian Belle pit floor to access the Central Deposit to its west.

The project will address reclamation of mining operations over portions of CalPortland's vested quarry. For purposes of the project, reclamation includes recontouring, stabilizing, revegetation, and monitoring of final slopes and disturbed mining areas; reclamation of roads and ancillary equipment and facilities; and removal of processing equipment. Because the quarry is vested and no discretionary use permit to conduct mining operations is required to authorize the recovery of the mineral resource or continued operation of the quarry, the reclamation plan amendment, which is required to be approved by the County as the SMARA lead agency, constitutes the discretionary authorization subject to the California Environmental Quality Act (CEQA) to be analyzed in an Initial Study / Mitigated Negative Declaration (IS/MND).

Surrounding land uses include the vacant public desert lands administered by the Bureau of Land Management (BLM) to the east, south, and north. The National Trails National Monument established in 2016, is adjacent to the site on the west and northwest. The main railroad line from Los Angeles to Las Vegas is located along the Mojave River to the south. There are no adjacent or nearby uses or residences within 8 miles.

This Air Quality and Greenhouse Gas (GHG) Assessment has been prepared to assess potential impacts and emissions of criteria pollutants from the proposed Amended Plan as compared to the existing baseline emissions to determine if changes to air quality emissions would result in significant air quality impacts based on air quality thresholds established by the Mojave Desert Air Quality Management District (MDAQMD) under the California Environmental Quality Act (CEQA). (Criteria pollutants in this assessment include carbon monoxide, nitrogen oxides, particulate matter, sulfur dioxide, and reactive organic gases, a precursor to ozone.)

In addition, this assessment includes a GHG Assessment which was not required when the 1990 Plan was approved. The GHG assessment compares the proposed Amended Plan potential GHG emissions with the existing baseline conditions.

This assessment provides information on the current air quality in the Baker region, the potential air quality impacts associated with the Amended Plan, a review of the existing air quality conditions of approval and the required implementation of current air quality rules and regulations and any recommended mitigation measures for reducing potential impacts. Background material, including air quality emissions data output, is included in the Appendix.

1.0 AMENDED RECLAMATION PLAN PROJECT DESCRIPTION

The Amended Plan describes the existing and permitted mining and reclamation activities and the planned expansion of operations for a period of 50 years on an additional 69 acres. The Amended Plan includes the logical expansion of vested mining operations on two additional

deposits and eventually underground and the continued utilization of an existing overburden stockpile.

There are no changes proposed for annual production with this amendment. Mining and processing operations will continue to produce an average of 500 tons/day of ore and 175 tons/day of overburden or non-spec iron ore based on an annual average production rate of 150,000 tons of ore and 50,000 tons of overburden on 250 to 300 annual operational days. Maximum production may reach up to 300,000 tons/year per the existing permit. Daily production will vary due to market demand and overburden ratio. The processing plant is separately permitted through the MDAQMD with a maximum throughput of 400 tons/hour and an annual throughput of nearly 1.5 million tons.

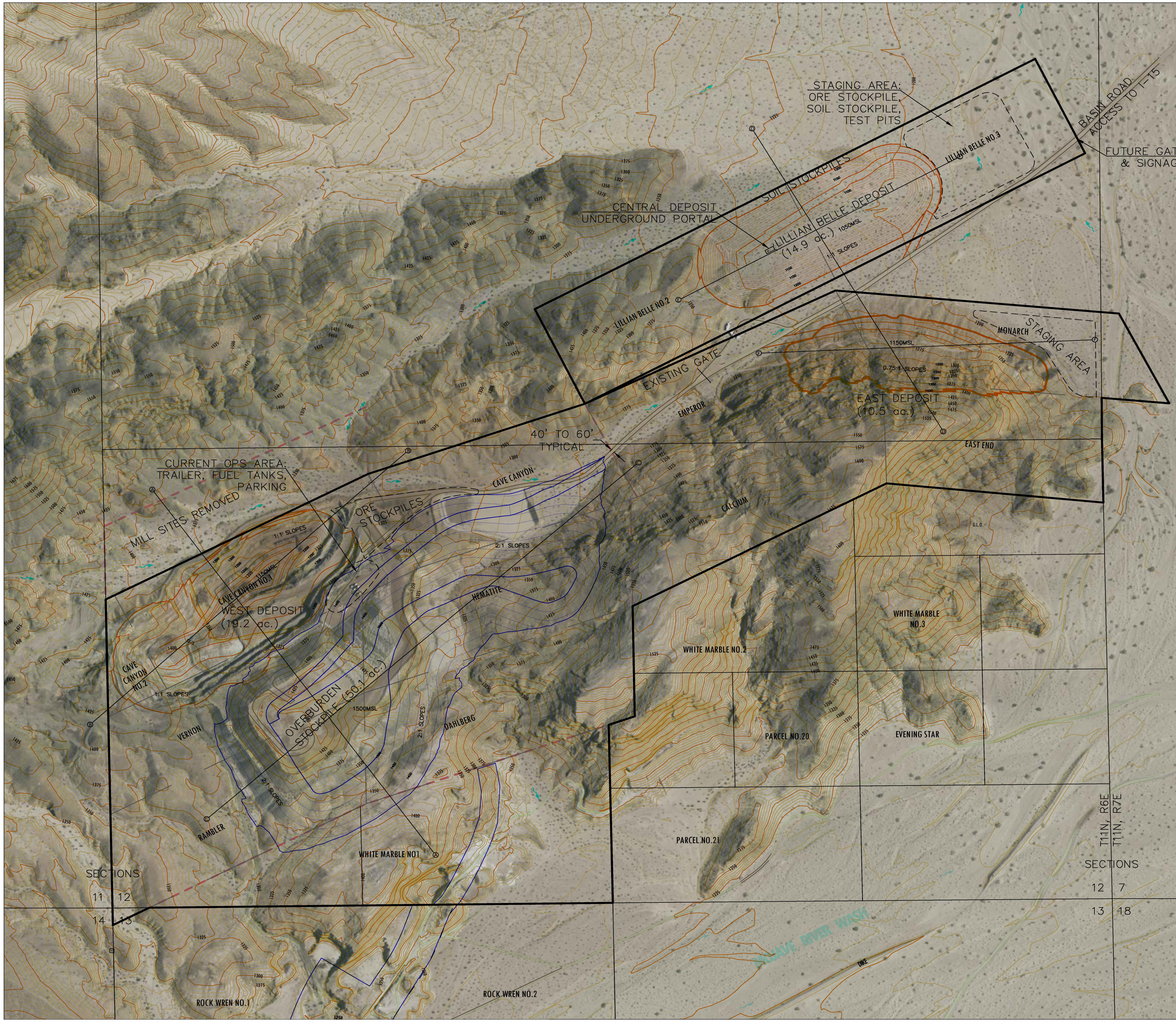
The Amended Reclamation Plan report provides detailed mining and reclamation details for the site. Figure 3 is a reduction of the full sized mine plan Sheet 2 that provides detailed mapping and mine information as summarized below.

Surface mining operations consist of drilling and blasting, excavating by loader, and loading ore from the active quarry face directly into a track-mounted portable crushing and magnetic separator plant located and moved as needed within each pit. The crushed and magnetically separated iron ore is loaded onto 45-ton off-road haul trucks (typical) by a loader and transported to the adjacent ore stockpiles and loading area located to the east of the West Deposit, and in the future, adjacent to the to be developed Lillian Belle and East Deposits. where it is loaded into street-legal trucks for transport off-site. During underground mining, the ore will be conveyed out the portal to the portable crushing and magnetic separator plant located in the floor of the Lillian Belle Pit. Off-site truck loading and shipping will be conducted in the staging area to its east.

The separated overburden and waste rock is approximately 25% of excavated material. Surface alluvium overlying the Lillian Belle Deposit will be salvaged and stored in soil stockpiles in the staging area to its north, south, and east. Overburden will be loaded into off-highway 45-ton haul trucks (typical) and transported along interior haul roads to the overburden stockpile.

In order to determine if the Amended Plan's operations would result in a significant air quality impact, the Amended Plan's emissions are compared to the existing operational emissions; and the net changes in emissions are compared to CEQA thresholds of significance to determine if significant or not. In this case, since no increases in mining or processing production is proposed there will be no changes to the existing baseline conditions. The emissions inventory is being documented for full-disclosure of the existing and future emissions. Compliance with existing MDAQMD and the California Air Resources Board (CARB) rules and regulations are included. The existing approved conditions of approval and current applicable regulations reduce emissions to the maximum extent feasible.

Per CEQA guidelines, the GHG assessment, since not required previously, utilizes the current existing conditions as a baseline to compare with future operational emissions to determine if it may cause a significant impact.



CALPORTLAND COMPANY
BAXTER QUARRY
MINE NOTES

Mine: Baxter Quarry (90M-02)

CA MINE ID #: 91-36-0023

Mineral: Iron Ore

Mine Operator: CalPortland Company
2025 E. Financial Way
Glendora, CA 91714
(626) 691-1966
dhaggard@calportland.com

Land Owner: CalPortland Company
2025 E. Financial Way
Glendora, CA 91714
(626) 691-1966

Applicant: Same as Operator

Owner of Mineral Rights: Same as Owner

Representative: Desirea Haggard
CalPortland Company
2025 E. Financial Way
Glendora, CA 91714
(626) 691-1966
dhaggard@calportland.com

Civil Engineer: Same as Operator

Map Preparer: CalPortland Company & Lilburn Corporation

Geologists: CalPortland - Ed Harrison
John S. McKeown, E.G. Senior Geologist
Terracon Consultants
1355 E. Cooley Drive
Colton, CA 92324
(909) 824-7311

Date of Map: August 2021

Utilities
Water: Off-site water purveyor and/or private well
Sewage disposal: Portable toilets
Electric: Not proposed
Gas: Not proposed
Telephone: Mobile phones

Land Use Category / Zoning (Countywide Policy Plan November 2020):

Project Site:
Land Use Categories (LUC) - Resource/Land Management (RLM)
Zoning - Resource Conservation (RC)

Surrounding Uses (LUC / Zoning):
RLM / RC

Legal Description:

APNs: 542-201-02 to 10; 14, 15, 16, 18, 35 & 36
Reclamation Plan Boundary Area: 262.7 acres
Area to be Impacted and Reclaimed: 117.9 acres

Portions of Sections 12; Township 11 North, Range 6 East and small portion of Section 7, T11N, R7E, SBBM, County of San Bernardino, State of California.

Signage/Public Safety:
There is a simple identification sign along Basin Road. Access on Basin Road is restricted to employees and authorized personnel. The entrance is gated with appropriate warning signs that notify the public that the mining area has restricted access and that the roads are not open to the public. During non-operating hours, gates are closed and locked. Other potential access roads are blocked or closed at the project boundary and have signs informing the public that the roads are closed to public access.

Quarry areas have warning signs, roads not used will be blocked or closed, and safety berms six feet high and 12 feet wide will be constructed along the quarry rims where there is potential access.

Parking:
There will be no assigned parking areas within the mine site.

Plant and Tree Protection:
Per the Desert Native plants Act and County Code 88.01.060, preconstruction surveys will determine the number and viability of each plant to survive removal and transplanting to an area ready for reclamation for any rare plants. Note that there are no protected CESA listed candidate species western Joshua trees (*Yucca brevifolia*) onsite nor is the project site within the range of this species per the species petition and notification.

PROFESSIONAL CERTIFICATIONS

Slope Stability Investigation (Terracon Consultants) (Appendix C)

We have completed the Slope Stability Investigation services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. PCB215002 dated January 26, 2021. This report presents the findings of the data review, geologic mapping, field testing, and structural evaluation, and provides recommendations concerning suitable slope angles and heights for reclamation consistent with Surface Mining and Reclamation Act (SMARA) requirements.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

John S. McKeown, C.E.G. 2396
Senior Geologist

PROFESSIONAL GEOLOGIST JOHN S. McKEOWN No. EG2396 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

Jay J. Martin, C.E.G.1529
Principal Geologist

PROFESSIONAL GEOLOGIST JAY J. MARTIN No. EG1529 Exp. 8-31-2022 STATE OF CALIFORNIA

Subject Matter Expert: Brian J. Williams, P.E., P.G.

SURVEYOR'S STATEMENT

THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF THE PROFESSIONAL LAND SURVEYORS' ACT, AT THE REQUEST OF CALIFORNIA PORTLAND CEMENT COMPANY 2021.

DATE 10/28/2021

RICHARD S FURLONG, P.L.S. 8422
RECORD OF SURVEY WAS SUBMITTED FOR REVIEW TO THE COUNTY OF SAN BERNARDINO ON 5/28/2021

PROFESSIONAL LAND SURVEYOR RICHARD S. FURLONG NO. 8422 STATE OF CALIFORNIA

PROJECT SITE

Scale: 1 inch = 400 feet
Map Prepared By: Lilburn Corporation (TAG)
Topography: Cooper Aerial, Feb. 2015
Projection: CA SPCS, Zone 5, NAD83 US Feet
Aerial: 2020-05-23

LEGEND
- Revised Reclamation Plan Boundary (262.7 ac.)
- Proposed Quarry Limits
- Approved Reclamation Plan Boundary (130.0 ac.)
- Proposed Overburden Stockpile Limits
- Proposed Mining Contours
- Roads to Remain
- Existing Topography
- Parcel Lines

MINE PLAN
Baxter Quarry - Amended Reclamation Plan
RECLAMATION PLAN No. 90M-02
CA Mine ID # 91-36-0023
SAN BERNARDINO COUNTY, CALIFORNIA

CALPORTLAND
2025 E. FINANCIAL WAY
GLENDORA, CA 91741

SHEET INDEX

#	Title
1	Cover
2	Mine Plan
3	Reclamation Plan
4	Cross Sections and Details

Scale: 1"=400'
Date: 08/2021
DGN: Sht2of4 Bax-Mine Plan 2021b
Sheet 2 of 4

LILBURN CORPORATION

MINE PLAN
Baxter Quarry
Revised Reclamation Plan 90M-02
San Bernardino County, CA
FIGURE 3

2.0 ENVIRONMENTAL SETTING

The project site is in the easter Mojave Desert area near Baker within the Mojave Desert Air Basin (MDAB), an approximate 21,000 square mile area under the jurisdiction of the MDAQMD. To assist local agencies to determine if a project's emissions could pose a significant threat to air quality, the MDAQMD has prepared *the California Environmental Quality Act (CEQA) and Federal Conformity Guidelines, February 2020*. The MDAB and climate descriptions below are summarized from the *Guidelines*.

The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains which dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions 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), whose passes form the main channels for these air masses. The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriel Mountains by the Cajon Pass (4,200 ft).

During the summer the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, 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.

This desert area experiences very hot summers and cool winters with minimal precipitation. The Community of Baker is located in the center of the Mojave Desert and the project site is approximately 19 miles to the southwest of Baker. Baker's average maximum temperatures range from 110° F in July to 62° F. in December (Data for years 1980 – 2010 wrcc@dri.edu). The average minimum temperatures range from 77° F. in July to 34° F. in December. An average of 4.2 inches of annual precipitation is reported. The MDAB is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, to indicate at least three months have maximum average temperatures over 100.4° F.

2.1 APPLICABLE POLICIES, PLANS AND REGULATIONS

Air Quality in the MDAB

Air quality is determined primarily by the types and amounts of contaminants emitted into the atmosphere, the size and topography of the local air basin and the pollutant-dispersing properties of local weather patterns. When airborne pollutants are produced in such volume that they are not dispersed by local meteorological conditions, air quality problems result. Dispersion of pollutants in the MDAB is influenced by periodic temperature inversions, persistent meteorological conditions and the local topography. As pollutants become more concentrated in the atmosphere, photochemical reactions occur, producing ozone and other oxidants.

Air emissions from the project are subject to federal, State and local rules and regulations implemented through provisions of the federal Clean Air Act, California Clean Air Act and the rules and regulations of the CARB and MDAQMD. Under the provisions of the federal and California Clean Air Acts, air quality management districts with air basins not in attainment of the air quality standards are required to prepare an Air Quality Management Plan (AQMP). An AQMP establishes an area-specific program to control existing and proposed sources of air emissions so that the air quality standards may be attained by an applicable target date.

Federal Clean Air Act

The federal Clean Air Act was established in an effort to assure that acceptable levels of air quality are maintained in all areas of the United States. These levels are based upon health-related exposure limits and are referred to as National Ambient Air Quality Standards (NAAQS). The NAAQS establish maximum allowable concentrations of specific pollutants in the atmosphere (see Table 1). Primary federal standards reflect levels of air quality deemed necessary by the federal Environmental Protection Agency (EPA) to provide an adequate margin of safety to protect public health. Areas that meet the standards are designated attainment and if found to be in violation of primary standards are designated as nonattainment areas. Secondary standards reflect levels of air quality necessary to protect public welfare from known or anticipated adverse effects of a pollutant.

California Clean Air Act

Under the federal Clean Air Act, state and local authorities have primary responsibility for assuring that their respective regions are in attainment of, or have a verifiable plan to attain, the NAAQS. The federal Clean Air Act also provides state and local agencies authority to promulgate more stringent ambient air quality standards, which is the case in California. The current updated California Ambient Air Quality Standards (CAAQS) for the above criteria pollutants and the following pollutants are also included in Table 1.

Air Quality Monitoring Data

Ozone (O3), coarse Particulate Matter (PM_{10}) which consists of extremely small-suspended particles or droplets 10 microns or smaller in diameter, and Fine Particulate Matter ($PM_{2.5}$) which consists of extremely small-suspended particles less than 2.5 microns in diameter are the primary pollutants of concern in the MDAB. Air quality monitoring data from 2018 through 2020 from the Barstow Air Monitoring Station, the nearest complete monitoring station, are summarized in Tables 2 and 3. $PM_{2.5}$ is not measured at Barstow at this time.

Data indicate that levels of ozone periodically rarely exceed the on-hour state standard and exceed the 8-hour standards 2.5 to 13% of the time; PM_{10} and $PM_{2.5}$ levels infrequently exceed the air quality standards in the region.

Table 1
STATE AND FEDERAL
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)[8]	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	---	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM_{10})[9]	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		---		
Fine Particulate Matter ($PM_{2.5}$)[9]	24-Hour	---		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 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1-Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	---	Non-Dispersive Infrared Photometry (NDIR)
	8-Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–		
Nitrogen Dioxide (NO_2)[10]	1-Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	---	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppb (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1-Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppd (196 µg/m^3)	–	Ultraviolet Flourescence, Spectrophotometry (Pararosaniline Method)
	3-Hour	---		--	0.5 ppm (1300 µg/m^3)	
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[10]	---	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[10]	–	
Lead[12,13]	30-day average	1.5 µg/m^3	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	–		0.15 µg/m^3		
Visibility-Reducing Particles[14]	8-Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: ARB, May 4, 2016.

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, 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.
2. 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 PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, 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. Contact the U.S. EPA for further clarification and current national policies.

3. 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.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m3 to 12.0 µg/m3. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 µg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. 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
11. On June 2, 2010, a new 1-hour SO2 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 SO2 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 nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. The ARB 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
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-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.
14. In 1989, the ARB 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.

Table 2
Ozone Data from the Barstow Air Monitoring Site
2018 - 2020

Year	Days Exceeding One-Hour State Standard	Maximum One Hour Reading (ppm)	Days Exceeding 8-Hour Fed. & State Standard	Maximum 8-Hour Reading (ppm)
2018	5	0.126	49	0.105
2019	0	0.090	9	0.082
2020	3	0.117	25	0.098

Source: CARB, 2022
State One-hour Standard – 0.09 ppm based on one-hour average
Federal 8-hour Standard – 0.070 ppm based on 8-hour average
State 8-hour Standard – 0.070 ppm based on 8-hour average

Table 3
Particulate Matter (PM_{10}) Data from the Barstow Air Monitoring Site
2018 - 2020

Year	Days Exceeding State Standard	Days Exceeding Federal Standard	Maximum 24-Hour Reading (μ/m^3)
2018	*	0	101
2019	*	1	209
2020	*	1	213

Source: CARB, 2022
State Standard – 50 μ/m^3 based on 24-hour average
Federal Standard – 150 μ/m^3 based on 24-hour average
μ/m^3 = micrograms per cubic meter
* Insuffiicent Data

2.2 AIR QUALITY ATTAINMENT PLANS

Under the provisions of the federal and California Clean Air Acts, air quality management districts with air basins not in attainment of the air quality standards are required to prepare an AQMP. An AQMP establishes an area-specific program to control existing and proposed sources of air emissions so that the air quality standards may be attained by an applicable target date. The MDAQMD has local regulatory review and primary permitting and enforcement authority over potential stationary sources of air pollution within the Mojave Desert portions of San Bernardino County, including all cities and towns. The EPA and CARB serve as technical review and advisory agencies, providing technical advice and guidance when necessary.

Nonattainment Designations and Classification Status

The EPA and the CARB have designated portions of the District as nonattainment for a variety of pollutants, and some of those designations have an associated classification. Table 4 lists the current designations and classifications.

Table 4
State and Federal Air Quality
Designations and Classifications

Ambient Air Quality Standard	Status
Eight-hour Ozone (Federal, 2015)	Non-attainment
Ozone (State 1-hour & 8-hour)	Non-attainment; classified Moderate
PM_{10} (Federal 24-hour)	Non-attainment; classified Moderate
PM_{10} (State 24-hour)	Non-attainment
$PM_{2.5}$ (Federal 24-hour & annual)	Unclassified/attainment
$PM_{2.5}$ (State - annual)	Attainment for project area
Carbon Monoxide (State; Federal)	Attainment; Unclassified/Attainment
Nitrogen Dioxide (State; Federal)	Attainment; Unclassified/Attainment
Sulfur Dioxide (State; Federal)	Attainment; Unclassified/Attainment

Lead (State; Federal)	Attainment; Unclassified/Attainment
Particulate Sulfate (State)	Attainment
Hydrogen Sulfide (State)	Unclassified
Visibility Reducing Particles (State)	Unclassified

Source: CARB 2022 (Data per CARB October 2020

Air Quality Attainment Plans

The MDAQMD has adopted attainment plans for a variety of nonattainment pollutants. Table 5 lists the current updated attainment plans applicable to the project area (MDAQMD 2020).

Table 5
MDAQMD Attainment Plans (for Project Area)

Name of Plan	Date of Adoption	Applicable Area	Pollutant(s) Targeted	Attainment Date*
Federal 75 ppb 8-hour Ozone Attainment Plan	Fe. 17, 2017	Western Mojave Desert Non-attainment Area (MDAQMD portion)	NO_x and VOC	2027
2004 Ozone Attainment Plan	April 26, 2004	Entire District	NO_x and VOC	2007
Triennial Revision to the 1991 Air Quality Attainment Plan	Jan. 22, 1996	Entire District	NO_x and VOC	2005
Mojave Desert Planning Area Federal Particulate Matter Attainment Plan	July 31, 1995	Mojave Desert Planning Area	PM_{10}	2000*
1991 Air Quality Attainment Plan (AQAP)	Aug. 26, 1991	San Bernardino County portion	NO_x and VOC	1994*

*Note: A historical attainment date given in an attainment plan does not necessarily mean that the affected area has been re-designated to attainment.
Source: MDAQMD CEQA and Federal Conformity Guidelines, February 2020.

MDAQMD regulates emissions from stationary sources through the permitting process and requires permits to Construct/Operate for all stationary equipment with the potential to release air contaminants. The iron ore is crushed and separated by a portable crusher and magnetic separation plant that is track-mounted. The plant is currently within the West Deposit and will be moved to the active mining area as mining progresses. The iron ore is stockpiled currently to the east of the West Deposit for load-out into 25-ton street legal haul trucks. Mining and processing operations will continue to produce an average of 500 tons/day of ore and 175 tons/day of overburden or non-spec iron ore based on an annual production rate of 150,000 tons of ore and 50,000 tons of overburden on 250 to 300 annual operational days with a maximum of 300,000 tons/year based on the current permit as needed. Daily production will vary due to market demand and overburden ratio.

The processing plant is separately permitted through the MDAQMD with a maximum throughput of 400 tons/hour and an annual throughput of nearly 1.5 million tons. Mobile

equipment and the generator run on diesel fuel. The portable processing plant is operated under MDAQMD Permit No. 12469 and the generator set under Permit No. 12473. Crushing/screening operations' dust emissions are controlled by required water sprays permitted through the MDAQMD.

2.3 CLIMATE CHANGE AND GREENHOUSE GASES

Gases that trap heat in the atmosphere are often called Greenhouse Gases (GHGs); analogous to a greenhouse. GHGs are emitted by natural processes and human activities. The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without these natural GHGs, the Earth's surface would be approximately 61°F cooler (CA 2007). Emissions from human activities such as electricity production and vehicles have elevated the concentration of these gases in the atmosphere.

GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (EPA 2006a). The reference gas for GWP is carbon dioxide; carbon dioxide has a GWP of one (1). For example, methane has a GWP of 25, which means that it has a greater global warming effect than carbon dioxide on a molecule per molecule basis. The carbon dioxide equivalent is an accepted method to assess emissions because it gives weight to the GWP of the gas. It is typically defined as metric tons of carbon dioxide equivalent (MTCO2e). Other GHGs among others include methane, nitrous oxide, chlorofluorocarbons, and aerosols.

Water vapor is the most abundant, important, and variable GHG in the atmosphere. It is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves.

Carbon dioxide (CO_2) is an odorless, colorless natural GHG. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals including humans, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (man-made) sources of carbon dioxide are from burning coal, oil, natural gas, and wood. Methane (CH_4) is a flammable gas and is the main component of natural gas. There are no health effects from methane. A natural source of methane is from the anaerobic decay of organic matter. Nitrous oxide (N_2O) is a colorless GHG produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen.

Many other gases make up the group of pollutants that are believed to contribute to global climate change. However, three gases are currently evaluated due to typical combustion and operational sources; carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Nitrous oxide is not of concern due its very low emissions from this type of operation and methane is included but is also a very minor contributor.

San Bernardino County GHG Reduction Plan

In September 2011, San Bernardino County adopted the Greenhouse Gas Emissions Reduction Plan (GHGRP), which outlines a strategy to use energy more efficiently, harness renewable energy to power buildings, enhance access to sustainable transportation modes, and recycle waste. The 2015 update of the GHG Emissions Development Review Process updates the language the performance standard bringing it up to date with the then current code. In September 2021, the County adopted its GHGRP Update. Since the adoption of the County's GHGRP in 2011 and its update in 2015, the State has enacted new climate change regulations, most notably the Senate Bill (SB) 32, which provides statewide targets to reduce GHG emissions to 40 percent below 1990 levels by 2030. To ensure conformity with the latest State climate change regulations, the County has updated its 2011 and 2015 GHGRP. The 2021 GHGRP Update serves as a comprehensive roadmap to outline strategies that the County will implement to continue achieving its GHG emissions reductions into the year 2030 and beyond, thereby ensuring sustainable and healthy growth.

The 2021 GHGRP Update summarizes the County's historic and future GHG emissions and the reduction targets the County has established; the local reduction strategies that will be implemented and benefit at the community level to meet the reduction targets; and the implementation of the measures, potential funding sources, and how the GHGRP Update will be monitored and updated over time.

However, specific requirements for mining projects to reduce emissions of GHGs have not been adopted and so the Amended Plan would not conflict with the County's Greenhouse Gas Reduction Plan.

Per CEQA guidelines, new project emissions are treated as standard emissions, and air quality impacts are evaluated for significance on an air basin. Greenhouse gas emissions are treated differently, in that the perspective is global, not local. The effects of GHG on global climate change are cumulative and extremely long-term, not short-term or local.

Mojave Desert Air Quality Management District

The MDAQMD, which covers the project site, has adopted CEQA significance thresholds, which can be found in its CEQA and Federal Conformity Guidelines, dated February 2020. MDAQMD's CEQA GHG significance threshold is 100,000 $MTCO_2e$. Any project may be considered CEQA significant if it triggers or exceeds this threshold.

The South Coast Air Quality Management (SCAQMD) has established a more conservative GHG emissions threshold of 10,000 $MTCO_2e$/year (April 2019). The project will be compared to these two thresholds.

3.0 PROJECT IMPACTS AND MITIGATION MEASURES

3.1 INTRODUCTION

Standards of Significance

To determine if a potential project may significantly impact the ambient air quality, the MDAQMD utilizes the following net daily and annual emissions increases as CEQA thresholds of significance. If the increase of potential emissions over the baseline exceed these thresholds, then the project may have a significant air quality impact and requires additional analysis and mitigation measures.

Pollutant	Daily Rates	Annual Rates
- Carbon Monoxide (CO)	548 lbs/day	100 tons/year
- Nitrogen Dioxide (NO_2)	137 lbs/day	25 tons/year
- Reactive Organic Gasses (ROG)	137 lbs/day	25 tons/year
- Sulfur Dioxide (SO_2)	137 lbs/day	25 tons/year
- Particulate Matter (PM_{10})	82 lbs/day	15 tons/year
- Particulate Matter ($PM_{2.5}$)	82 lbs/day	15 tons/year
- Greenhouse Gases (MDAQMD)	NA	100,000 $MTCO_2e$/year
- Greenhouse Gases (SCAQMD) (for industrial sites)	NA	10,000 $MTCO_2e$/year

Sources: MDAQMD CEQA and Federal Conformity Guidelines, February 2020.

3.2 OPERATIONS EMISSIONS

The impact of the proposed Amended Plan on air quality is based on estimating the air pollutant emissions potentially caused by the existing or baseline operations and ore production of approximately 150,000 tons/year and overburden production of 50,000 tons/year (total of 200,000 tons/year); and comparing them to the estimated emissions from the future production. Since the future production levels will remain the same as existing, there will be no net increase in emissions associated with the proposed project; and therefore, no significant impacts are expected as compared to the significant emissions' thresholds and standards above.

The existing and future emissions of the project are estimated and disclosed in this report. Appendix A includes the assumptions, calculations, and emission tables. This assessment depends on the project description, the estimated production rates, and on-site equipment and vehicles. In particular, the "tier" level for the diesel engines and their related emission factors are substantially lower with higher tier levels in compliance with diesel emission standards and with CalPortland's fleet averaging requirements thereby reducing the rate of truck and equipment exhaust.

The Amended Plan was screened for emissions to be generated from mining operations and reclamation activities. Emissions were estimated using the latest emission factors from the following sources (see Appendix A):

- MDAQMD's "Emissions Inventory Guidance for Mineral Handling and Processing Industries" (April 2000);
- CARB EMFAC2017 Emission Rates;
- SCAQMD "Air Quality Handbook" as updated (2021);
- EPA's AP-42 Section 13.2.2 unpaved roads (November 2006);
- SCAQMD Particulate Matter Emission Factors (July 2010);
- CARB Carl Moyer Program Guidelines for In-Use Off-Road Diesel-Fueled Emissions (2017); and
- Haul trucks and diesel equipment compliance with California Air Resources Board's (CARB) off-road diesel vehicles regulation and CalPortland's fleet averaging requirements to reduce diesel pollutants.

Stationary Emission Sources

A portable track-mounted crusher/magnetic separator plant and diesel generator are used for ore crushing and separating. The portable processing plant is operated under MDAQMD Permit No. 12469 and the generator set under Permit No. 12473. The plant is currently within the West Deposit and will be moved to the active mining area as mining progresses. Typical annual emissions for the plant and generator are included in Table 3. There are no changes proposed for annual processing production with the Amended Plan.

Mobile Equipment Exhaust Emissions

Typical heavy off-road construction-type equipment including two loaders, three 45-ton haul trucks, a drill rig, and water truck are currently utilized for mining, hauling, and road maintenance activities on-site (see Table 6). Over time, replacement equipment may be required to optimize operations and to meet equipment emissions' standards. The replacement equipment types would not substantively change over time. Haul trucks, diesel equipment, and the processing plant meet requirements of the MDAQMD and the California Air Resources Board's (CARB) off-road diesel vehicles regulations to reduce diesel pollutants.

Mobile pollutant sources are regulated at the state level by CARB, not through the MDAQMD or local counties. CARB is responsible for developing statewide programs and strategies to reduce smog-forming pollutants, toxics, and climate changing emissions from diesel-fueled vehicles. CARB implements a comprehensive Diesel Reduction Plan to reduce particulate matter (PM) and oxides of nitrogen (NOx) emissions from in-use (existing) and new off-road and on-road heavy-duty diesel vehicles in California by the following measures:

- Imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles;
- Requires all vehicles to be monitored and reported to CARB in the online reporting system DOORS and labeled;
- Requires more stringent emission standards for new diesel fueled engines and vehicles;
- Requires low sulfur content in diesel fuel;
- Restricts the adding of older vehicles into fleets starting on January 1, 2014; and
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies, VDECS (i.e., exhaust retrofits).

Table 6
Typical Plant and Quarry Equipment for Baxter Quarry

Equipment	Typical No.	Current Days & Hrs./Year	Purpose
Front-End Loader (CAT 980 typ.)	1	250 - 300 days/ 2,500 hours	Mining & loading of excavated materials into the processing plant, loading mine trucks and on-road haul trucks.
Front-End Loader (CAT 988 typ.)	1	250 – 300 days/ 2,500 hours	Mining & loading of excavated materials into the processing plant, loading mine trucks and on-road haul trucks.
Off-Road Haul Trucks (CAT 745) (45-ton)	3	250 - 300 days/ up to 2,500 hrs. each	Transportation of ore and overburden to stockpiles.
Water Truck **(**4,000 gal. typ.)	1	250 - 300 days/ 1,250 hours	Water spray roads, active quarry and overburden areas, & general dust control.
Drill Rig (varies)	1	250 - 300 days/ 2,000 hours	Drill holes for placement of explosives.
Generator Set (286 bhp)	1	250 - 300 days/ 2,500 hours	Supplies power to trailer and plant. Permitted per MDAQMD Permit No. B012473.
Light plant	1	varies	Utilized as needed.
Crushing & magnetic separator plant (crusher, hopper, magnetic separator & and conveyors)	1	250 - 300 days/ 2,000 hours	Portable tracked crushing & magnetic separator plant (currently KPI-JCI FT4250) to process ore. Permitted per MDAQMD Permit No. B012469.
Ancillary Equip.	Varies	Varies	Maintenance vehicles, pick-ups, SUVs, etc.

Source: CalPortland 2022
No equipment changes to type or hours planned from existing baseline conditions and future operations.
List above is typical equipment used on-site. Equipment types are not expected to vary over time. Specific equipment will change during the life of the project due to replacement of aging equipment and updated equipment and fleet emission standards.

Continuing Mining Operations

The existing and future operations, the production rates, and trucking are listed below for the ongoing project. There are no changes proposed for annual future production with the Amended Plan.

- Iron ore production – 150,000 tons/year; 500 tons/day for 300 days/year (typical).

- Hours of operations – one shift; 8 hours/day, 6 days/week; equipment hours depending on active mining area and demand.
- Iron ore production - A portable track-mounted crusher/magnetic separator plant and diesel generator are used for ore crushing and separating; crushed on-site and transported to staging/loading area by off-road 45-ton capacity haul trucks; 6 days/week, average 12 truck-trips/day.
- Overburden – approx. 50,000 tons/year (varies) of OB will be excavated depending on quarry excavation location; 45-ton capacity haul trucks will move OB directly to the overburden stockpile; 45-ton trucks, 6 days/week; 4 truck-trips/day.
- Processing – 200,000 tons/year; portable track-mounted crusher/magnetic separator plant and diesel generator are used for ore crushing and separating ore from overburden. Portable processing plant is operated under MDAQMD Permit No. 12469 and the generator set under Permit No. 12473.
- Shipping – 25-ton on-road haul trucks; estimated 20 truck-trips/day to Oro Grande; approx. 170 miles round trip.

Fugitive Dust

Fugitive dust is generated by mining excavations, loading and dumping material, wind erosion of active operations areas, and unpaved road dust. Dust equations in EPA AP-42, the MDAQMD Guidance Handbook, and/or the SCAQMD guidelines were utilized to estimate dust emissions (see Table 7 and Appendix A). Dust control measures are in compliance with MDAQMD Rules 401 (limit visible emissions); 402 (avoid nuisance emissions to people or businesses or property); and 403 (updated October 2020), which requires the owner/operator of a mining facility to implement measures to reduce PM_{10} entrained in the ambient air and to meet air quality standards. The dust control requirements for mining facilities are listed in Rule 403 (C)(8) and are required to be in place and operative with approval and periodic monitoring by MDAQMD and mine personnel ensuring that the regulatory standards are met.

A 4,000-gallon water truck (typical) is used to water spray operational areas, active stockpiles, and roads as needed to control blowing dust. Water spray systems are in-place on the crusher plant per MDAQMD permit requirements. On occasion, if deemed a more effective method for road dust, approved dust suppressant is sprayed on active roads and areas.

The following measures are implemented to reduce fugitive dust:

1. *Water is sprayed on unpaved haul and access roads, active operational areas, and material stockpiles.*

2. *Roads are treated with EPA approved dust suppressants to prevent dust as needed.*

3. *Speed limits on unpaved roads are 25 mph.*

4. *All loaded trucks leaving from the site shall be properly trimmed with a 6-inch freeboard height and/or covered and sprayed with water so as to minimize dust and prevent spillage onto a public roadway per California Vehicle Code 23114.*

3.3 AIR QUALITY IMPACTS

The comparison or assessment of the potential change in air emissions between the Existing Baseline and the Future are included in Tables 7 and 8. There are no changes proposed for future annual production with the Amended Plan; therefore there is no substantial change or increase expected with air pollutant emissions as documented in this report. Table 7 summarizes the total emissions for the existing and future mining operations. There is no change in future emissions as compared to baseline or existing conditions, therefore there are no impacts as compared to the MDAQMD CEQA thresholds. However, compliance with MDAQMD rules and CARB's Off-Road Diesel Vehicle regulations would maintain limitations and further reduce future emissions.

Table 7
Baxter Quarry Amended Plan
Existing and Future Conditions
Estimated Annual Air Pollutant Emissions (tons/year)

	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
EMISSION SOURCES					
Drilling & Blasting	---	0.83	3.27	0.46	0.09
Mobile Equip., Haul Trucks (Exhaust), Drill Rig & Generator Set	0.18	1.98	6.92	0.07	0.06
Processing Plant Fugitive Dust	---	---	---	0.10	0.02
Fugitive Dust (Loading, dozing, wind erosion)	---	---	---	0.79	0.16
Unpaved roads	---	---	---	1.43	0.29
On-site Emissions Subtotals (tons/year)	**0.18**	**2.81**	**10.19**	**2.85**	**0.62**
Off-site Truck & Vehicle Emissions	**0.11**	**3.08**	**0.64**	**0.07**	**0.06**
Totals	**0.29**	**5.89**	**10.83**	**2.71**	**0.68**
Increase from Existing Conditions (no increase from baseline conditions)	**0**	**0**	**0**	**0**	**0**
MDAQMD CEQA Thresholds	25	25	100	15	12
Significant	**No**	**No**	**No**	**No**	**No**

Source: Lilburn Corporation March 2022
Totals rounded and may not add up exactly.
No changes in future production or operations planned from existing baseline conditions, therefore no new impacts expected.

These measures include the dust control measures above and the following measures to limit criteria emissions:

5. *Production is scheduled to minimize daily equipment operations;*

6. *Trucks in loading queues will have their engines turned off when not in use for more than 5 minutes to reduce idling and vehicle emissions in compliance with Title 13, California Code of Regulations, Section 2485 (Anti-Idling Policy);*

7. *All equipment used for mining and construction must be tuned and maintained to the manufacturer's specification to maximize efficient burning of vehicle fuel.*

8. *The operator shall comply with all existing and future CARB and MDAQMD regulations related to diesel-fueled trucks, which may include among others: (1) meeting more stringent emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low sulfur fuel; and (4) use of alternative fuels or equipment.*

9. *The operator shall annually renew permits to operate the plant and generator from the MDAQMD and be in compliance with such permits.*

Reclamation Emissions

Upon completion of vested mining activities, disturbed areas will be reclaimed and revegetated per SMARA and County standards as outlined in the Reclamation Plan. Reclamation activities would require minor earthmoving, soil redistribution, and other activities typically associated with final grading and revegetation. An estimated 40 days of grading and earthmoving activities are anticipated. Reclamation emissions would be substantially less than the existing vested annual mining operations and off-site trucking and would not exceed MDAQMD CEQA thresholds. Table 8 below lists the estimated emissions related to reclamation activities.

Therefore, the project's criteria and dust emissions will be less than the CEQA thresholds. Therefore, air quality impacts will be less than significant with implementation of MDAQMD rules and regulations and project design measures and no mitigation measures are required.

Tables 7 and 8 summarize the estimated total emissions for the existing baseline conditions and the future scenario (no change) and for reclamation activities. There are no net change in pollutants between existing and future activities and the reclamation emission totals are less than CEQA thresholds. Therefore, air quality impacts will be less than significant with implementation of Federal, State, and MDAQMD rules and regulations and project design measures and no mitigation measures are required.

Table 8
Baxter Quarry Amended Plan
Planned Reclamation Activities
Estimated Annual Air Pollutant Emissions (tons/year)

	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
EMISSIONS SOURCES	**Reclamation**	**Reclamation**	**Reclamation**	**Reclamation**	**Reclamation**
ONSITE					
Mobile Equip. & Haul Trucks (Exhaust)	0.02	0.10	0.81	0.003	0.003
Fugitive Dust (Reclamation)	---	---	---	0.12	0.03
Fugitive Dust haul truck travel (on-site)	---	---	---	0.22	0.04
Emission Totals Onsite	**0.02**	**0.10**	**0.81**	**0.343**	**0.073**
MDAQMD CEQA Thresholds	25	25	100	15	12
Significant	**No**	**No**	**No**	**No**	**No**

Source: Lilburn Corporation March 2022

3.4 GHG AND CLIMATE CHANGE ASSESSMENT

There are no expected changes from existing baseline conditions and the future proposed operations. The GHG emissions were calculated (*Air Quality/GHG Assessment*, Lilburn Corp. 2022) and compared to the MDAQMD's 100,000 $MTCO_2e$ and the SCAQMD's 10,000 $MTCO_2e$ screening thresholds to determine if potentially significant to anticipated global warming. GHG emissions were estimated using the following models: CARB - SCAQMD's Off-road Model - Mobile Source Emission Factors (http://www.aqmd.gov/ceqa/handbook/offroad/offroad.html); Emission Factors for On-Road Heavy-Heavy Duty Diesel Trucks (CARB EMFAC 2017); and U.S. EPA Office of Transportation and Air Quality. These factors are state-wide factors and are appropriate for the Amended Plan.

Project annual operational GHG emissions amount to approximately 3,686 $MTCO_2e$, and for reclamation activities (8 weeks only) are anticipated to result in approximately 257 $MTCO_2e$. Table 9 shows that GHG emissions associated with Amended Plan and final reclamation. The Proposed Project is not anticipated to exceed the quantitative significance CEQA thresholds of either the MDAQMD's annual 100,000 tons $MTCO_2e$ threshold or the SCAQMD's threshold of 10,000 $MTCO_2e$.. Therefore, the Proposed Project would not generate GHG emissions that may have a cumulative considerable or significant effect on the environment. Additionally, the Proposed Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Less than significant impacts are identified and are anticipated, and no mitigation measures are required.

The County of San Bernardino has adopted a Greenhouse Gas Reduction Plan that is designed to reduce emissions of GHGs by 15 percent by 2020 to meet the requirements of AB 32. However, specific requirements for mining projects to reduce emissions of GHGs have not been adopted and so the Amended Plan would not conflict with the County's Greenhouse Gas Reduction Plan.

Table 9
Greenhouse Gases Annual Emissions ($MTCO_2e$)
Baxter Quarry Amended Reclamation Plan
Existing Baseline and Future Operations
(No change in operations for Amended Plan)

	Amended Plan Operations (Existing and Future – no change)		**Reclamation**	
Sources	**CO_2**	**CH_4**	**CO_2**	**CH_4**
On-site Diesel Equipment	1,221	1.79	257	0.27
Generator	278	0.008	---	---
On-site Haul Trucks	673	0.03	---	---
Off-site Street Legal Haul Trucks and Vehicles	1,512	0.16	---	---
Total Per Year	3,684	2.0	257	0.27
Total $MTCO_2e$	**3,686**		**257.27**	
Change compared to Existing	**0**		**0**	
MDAQMD GHG Screening Threshold ($MTCO_2e$)	**100,000**		**100,000**	
Exceeds Threshold?	No		No	
SCAQMD Industrial GHG Screening Thresholds ($MTCO_2e$)	**10,000**		10,000	
Exceeds Threshold?	No		No	

Source: Baxter Quarry AQ/GHG Assessment, Lilburn Corp. 2022
CO_2e factors: CH_4 x 25

Global climate change (GCC) is inherently a cumulative issue, because no single project would be expected to result in a measurable change in global climate. The cumulative nature of GCC is considered by agencies in adopting significance thresholds and adopted significance thresholds represents levels at which a project is considered cumulatively significant. As discussed above, the Amended Plan's GHG net emissions increase as well as the overall GHG emission for operations would be below the GHG significance threshold, resulting in a less than significant impact. Therefore, the Amended Plan would not significantly contribute to cumulative GHG impacts.

The operator will be required to implement air quality measures that also reduce GHG emissions. These measures correspond to GHG reducing performance standards developed by the County in the GHG Plan and are listed below.

1. *The operator shall ensure all equipment is maintained and tuned according to manufacturer's specifications.*

2. *The operator shall comply with all existing and future CARB, EPA, and MDAQMD regulations related to diesel-fueled trucks and equipment.*

3. *During operations, trucks and vehicles in loading and unloading queues will have their engines turned off when not in use for more than five minutes to reduce idling and vehicle emissions. (Note that this reduced idling limitation measure is required under Title 13, California Code of Regulations, Section 2485 Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling. The on-site operator supervises vehicles that access the site for loading and unloading and off-road trucks and equipment to comply with this regulation).*

Level of Significance after Implementation

This Air Quality Assessment determined that there would be no change in emissions from the existing baseline conditions and proposed future operations. Reclamation activities are estimated to not exceed CEQA thresholds. Therefore, air quality impacts are considered less than significant with implementation of project design measures and Federal, State, and MDAQMD rules and regulations.

The GHG assessment determined that the GHG emissions from the existing baseline conditions and proposed future operations will not change. The estimated GHG emissions for the Amended Plan will not exceed the MDAQMD or the SCAQMD CEQA GHG emission thresholds. GHG impacts will have a less than a cumulatively considerable impact with implementation of project design measures and MDAQMD rules and regulations.

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On-Road Heavy Heavy Duty Diesel Trucks Emission Factors, Scenario Year 2015 (EMFAC 2017)

SCAQMD; Off-Road Mobile Source Emissions' Factors (CARB Model) – 2015

Western Regional Climate Center (wrcc@dri.edu). Baker Climate Data (1980 – 2010). Accessed March 2022.

APPENDIX A

AIR QUALITY AND GREENHOUSE GAS EMISSIONS INVENTORY AND ENERGY USAGE TABLES FOR AMENDED RECLAMATION PLAN 90M-02

BAXTER QUARRY
San Bernardino County
CA MINE ID # 91-36-0036

APPENDIX A

AIR QUALITY AND GREENHOUSE GAS EMISSIONS INVENTORY AND ENERGY USAGE FOR AMENDED RECLAMATION PLAN 90M-02 BAXTER QUARRY

San Bernardino County

CA MINE ID # 91-36-0036

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March 2022

AMENDED BAXTER QUARRY
AIR POLLUTANT AND GHG EMISSIONS
AND ENERGY USAGE
ASSUMPTIONS AND CALCULATIONS
March 2022

This Emissions Inventory estimates the mobile and stationary emissions related to the existing and amended Baxter Quarry. The operations for the planned amendment are not proposed to increase production over existing mining and production conditions. Therefore, this report estimates the existing and future operational emissions as a baseline and future condition with no new emissions or impacts expected greater than current operations.

Table 1
Baxter Quarry
Production and Blast Information

Activity	Existing Operations	Future Operations	Changes Expected
Iron Ore (tons/year)	150,000	150,000	No change
Overburden (25% - varies) (tons/year)	50,000	50,000	No change
Total (tons/year)	200,000	200,000	No change
Iron Ore & Overburden (tons/day) (based on 300 days/year)	675	675	No change
# of Blasts	9	9	No change
Tons/Blast (varies)	35,000	35,000	No change
# of Drill Holes	1,260	1,260	No change
Area of each blast (varies) (square feet)	15,000	15,000	No change
ANFO (est. tons)	97.5	97.5	No change

Data above is estimated based on past blasting at Baxter Quarry in 2020-21 and depends on geologic conditions and area within the quarry development.

Silt content of iron ore 0.5%; overburden 10.8%; roads 8%
Moisture Content – 4.8% ore; roads 0.5%
(worst case per MDAQMD)

PM10 = 0.489 of Total Particulate Matter
PM2.5 = 0.208 of PM 10
Source: CEIDARS List SCAQMD 2006
All tons are short tons.

Table 2
Typical Plant and Quarry Equipment for Baxter Quarry

Equipment	Typical No.	Current Days & Hrs./Year	Purpose
Front-End Loader (CAT 980 typ.)	1	250 - 300 days/ 2,500 hours	Mining & loading of excavated materials into the processing plant, loading mine trucks and on-road haul trucks.
Front-End Loader (CAT 988 typ.)	1	250 – 300 days/ 2,500 hours	Mining & loading of excavated materials into the processing plant, loading mine trucks and on-road haul trucks.
Off-Road Haul Trucks (CAT 745) (45-ton)	3	250 - 300 days/ up to 2,500 hrs. each	Transportation of ore and overburden to stockpiles.
Water Truck (4,000 gal. typ.)	1	250 - 300 days/ 1,250 hours	Water spray roads, active quarry and overburden areas, & general dust control.
Drill Rig (varies)	1	250 - 300 days/ 2,000 hours	Drill holes for placement of explosives.
Generator Set (286 bhp)	1	250 - 300 days/ 2,500 hours	Supplies power to trailer and plant. Permitted per MDAQMD Permit No. B012473.
Light plant	1	varies	Utilized as needed.
Crushing & magnetic separator plant (crusher, hopper, magnetic separator & and conveyors)	1	250 - 300 days/ 2,000 hours	Portable tracked crushing & magnetic separator plant (currently KPI-JCI FT4250) to process ore. Permitted per MDAQMD Permit No. B012469.
Ancillary Equip.	Varies	Varies	Maintenance vehicles, pick-ups, SUVs, etc.

Source: CalPortland 2022
No equipment changes to type or hours planned from existing baseline conditions and future operations.

List above is typical equipment used on-site. Equipment types are not expected to vary over time. Specific equipment will change during the life of the project due to replacement of aging equipment and updated equipment and fleet emission standards.

Table 3
Baxter Quarry
Daily Fugitive Dust Emissions (PM_{10} & $PM_{2.5}$)
Existing and Future Operations
Tons/Year (Controlled)

Source	Controlled Emission Factors (PM_{10}) ($PM_{2.5}$)	Ongoing and Future Operations *(No changes)*	
			Tons /Year
Drilling	0.64 lb/hole (PM_{10}) 0.13 lb/hole ($PM_{2.5}$)	Drill Holes 1,260	0.40 (PM_{10}) 0.08 ($PM_{2.5}$)
Blasting	12.58 lbs./blast (PM_{10}) 2.62 lbs./blast ($PM_{2.5}$)	9 blasts/yr.	0.057 (PM_{10}) 0.012 ($PM_{2.5}$)
	Lbs/Ton	**Tons**	
Loading[1]	0.002 lbs/ton 0.0004 lbs./ton	700,000 tons (load-dump)	0.7 (PM_{10}) 0.14 ($PM_{2.5}$)
		Acres	
Active Areas &Stockpiles[2]	0.14 lbs./day/ac 0.03 lbs./day/ac	4	0.084 (PM_{10}) 0.02 ($PM_{2.5}$)
Sub-Total			1.24 (PM10) 0.25 (PM2.5)
Unpaved Roads[3] **Off-Road Haul Trucks**	0.68 lbs./mi (PM_{10}) 0.14 lbs./mi ($PM_{2.5}$)	Est. 4,200 miles/yr.	1.43 tons/yr. (PM_{10}) 0.294 tons/yr. ($PM_{2.5}$)
Totals	**---**	**---**	**2.67 tons/yr. (PM_{10})** **0.55 ton/yr. ($PM_{2.5}$)**

Source: CPC & Lilburn Corporation 2022. See Appendix A.

No changes planned from existing baseline conditions and future operations.

Notes:
1. Loading includes two operations, one into off-road haul trucks and/or one drop at the process plant or overburden stockpile. Unload ore at staging area and loading to transport trucks. Assume 78.7% control based on water spraying material.
2. Active quarry areas/stockpiles at any one time (2 acres); ore stockpile (1 acre); and OB stockpiles (1 acre). Assume 61% control with water spraying
3. Unpaved roads include off-road haul truck movement to staging areas and OB stockpile area. Planned controls 83% with watering, dust palliatives, gravel, and speed limit.

Table 4
Baxter Quarry Amended Plan
Existing and Future Conditions
No changes planned from existing baseline conditions and future operations.

Estimated Annual Air Pollutant Emissions (tons/year)

	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
EMISSIONS SOURCES					
Drilling & Blasting	---	0.83	3.27	0.46	0.09
Mobile Equip., Haul Trucks (Exhaust), drill rig & Generator Set	0.18	1.98	6.92	0.07	0.06
Processing Plant Fugitive Dust	---	---	---	0.10	0.02
Fugitive Dust (Loading, wind erosion)	---	---	---	0.79	0.16
Unpaved roads	---	---	---	1.43	0.29
On-site Emission Totals (tons/year)	**0.18**	**2.81**	**10.19**	**2.85**	**0.62**
Off-site Truck & Vehicle Emissions	**0.11**	**3.08**	**0.64**	**0.07**	**0.06**
Totals	**0.29**	**5.89**	**10.83**	**2.71**	**0.68**
Increase from Existing Conditions (no increase from baseline conditions)	**0**	**0**	**0**	**0**	**0**
MDAQMD CEQA Thresholds	25	25	100	15	12
Significant	**No**	**No**	**No**	**No**	**No**

Source: Lilburn Corporation 2022
Totals rounded and may not add up exactly.
No changes planned from existing baseline conditions and future operations.

ASSUMPTIONS

Drilling and Blasting

Production/Extraction

Existing and Planned: 200,000 tons/year (ore & overburden)
9 blasts/year
140 holes /blast; 1,260 holes/year

Drilling Emission Factors: 1.3 lb/hole (TPM);
0.64 lb/hole (PM_{10});
0.13 lb/hole ($PM_{2.5)}$

Source: AP-42 (1998); Table 11.9-4
& SCAQMD Particulate Matter EF (December 2014)

Blasting Emission Factors:

EF (lbs/blast) = (0.000014*Area$^{1.5}$ * k (particulate matter-varies)

K (PM_{10}) = 0.489
$PM_{2.5}$ = 0.208 of PM10
Sources: AP-42 (1998); Table 11.9-4
& SCAQMD Particulate Matter EF (December 2014)

$EF(PM_{10})$ = $0.000014 * 15{,}000^{1.5} * 0.489$
= 12.58 lbs./blast
$EF(PM_{2.5})$ = 12.58 lbs./blast (PM10) * 0.208 = 2.62 lbs./blast (PM2.5)

Estimated 97.5 tons of ANFO used per year:
CO emission factors: 67 lbs./ton * 97.5 tons = 3.27 tons/year
NOX emission factor: 17 lbs./ton * 97.5 tons = 0.83 tons/year

Source: MDAQMD Mineral Guidance 2013 Section C

Loading

No changes planned from existing baseline conditions and future operations.

Loading Emission Factor = 0.0136 lbs/ton (PM10 uncontrolled)
Loading Emission Factor = 0.002 lbs/ton (PM10 controlled)

Loading Emission Factor = 0.0028 lbs/ton (PM2.5 uncontrolled)
Loading Emission Factor = 0.0004 lbs/ton (PM2.5 controlled)

($PM_{2.5}$ = 0.208 of PM 10)

Control factor = 85% (water spraying); Table 3, page 13 of MDAQMD (increase M from 0.5% to 2.0%)
Source: AP-42, Section 13.2.4 (1995)

$$EF\ (PM10) = k*0.0032 * \frac{(U/5)^{1.3}}{(M/2)^{1.4}}\ lbs/ton$$

k = 0.35 (for PM10)
k = 0.11 (for PM2.5)
U = mean wind speed (7.7 mph (MDAQMD default))
Moisture content (M) = 0.5%

EF (PM10) = 0.35 * 0.0032 * $(7.7/5)^{1.3}$ / $(0.5/2)^{1.4}$

EF (PM10) = 0.00112 * 1.75 / 0.0.144 = 0.0136 lbs./ton (uncontrolled)

EF (PM10) = 0.0136 lbs/ton x (100-85%) = 0.002 lbs./ton (controlled)

MINING AREAS AND STOCKPILES

<u>Active</u> Mining and Stockpile Areas assumptions:

No changes planned from existing baseline conditions and future operations.

Mining – 2 acres
Quarry stockpiles – 1 acre
Overburden stockpiles (active) - 1 acre

Source: MDAQMD Mineral Guidance 2013; Section G

EF= J * 1.7 * sl / 1.5 * (365-P) / 235 * I / 15 lb./day/ac

J = 0.5 for PM_{10}
J = 0.2 for $PM_{2.5}$
Silt loading (sl) = 0.5 for iron ore
P = ave. days of precipitation (default = 20 days) MDAQMD
I = windy hours greater than 12 mph = 13.3% (MDAQMD default)

<u>For Active Mine Areas and Stockpiles</u>

EF(PM10) =0.5 * 1.7 *0.5/1.5 * 1.47 * 0.89 = 0.37 lbs/day/ac (uncontrolled)
At 61% control (SCAQMD) with water spraying = 0.14 lbs./day/ac

For $PM_{2.5}$ = 0.14 (controlled PM10) *.0208 = 0.03 lbs./day/ac (controlled)

UNPAVED ROADS

ONSITE HAUL ROAD DUST
Off-Road Haul Truck Data
For Haul Roads from Quarry to Staging Areas and to OB Stockpile

Table 5
ON-SITE HAUL ROAD DUST
Off-Road Haul Trucks

Parameter	Existing and Planned Conditions
CAT 745 (typ) Off-Road Haul Trucks Capacity	45 tons
Truck Weight (tons) (CPC) Empty Full Ave.	 36.8 82 59.5
Iron Ore Production	150,000 tpy
Overburden Production	50,000 tpy
Truck Trips/Day (plant to staging area)	12 at 0.5 miles RT
Truck Trips/Day (to OB stockpile)	4 at 2.0 miles RT
Days/Year	300
Haul Truck miles traveled (VMT) (round trip)/day	14
Miles/Year	4,200
PM_{10} Emission Factors (controlled)	0.68 lbs./mile
$PM_{2.5}$ Emission Factors (controlled)	0.14 lbs./mile
Control Factors	83% Water spraying, speed limits, stabilizers
Daily PM10 Emissions (Controlled)	9.52 lbs./day
Annual PM10 Emissions (Controlled)	1.43 tons/yr.
Daily PM2.5 Emissions (Controlled)	1.96 lbs./day
Annual PM2.5 Emissions (Controlled)	0.294 tons/yr.

Emission Factor (PM_{10}) = K * (s/12)^a * (W/3)^b

Source: AP-42, Section 13.2.2, Unpaved Roads (11-2006 & SCAQMD)

K = 1.5 for PM_{10} (lbs/VMT)
s (silt content) = 8% for industrial haul road; AP-42 and MDAQMD)

W (ave. truck wt.) = 59.5 tons
a = 0.9
b = 0.45

EF (PM_{10}) = 1.5 * $(8/12)^{0.9}$ * $(59.5/3)^{0.45}$ = lbs/VMT
= 1.5 * 0.69 * 3.84 lbs. = 3.97 lbs/VMT

Dust Control Estimates

CPC implements water spraying, speed limits, and uses dust suppressants on haul roads with an estimated control factor of up to 83%.

Control Factors:
Water spray – 61% (SCAQMD)
15 mph speed limit – 57% (SCAQMD)
Use of approved dust suppressant on unpaved roads and work areas – 84% (SCAQMD)

Used 83% for unpaved roads and areas: (100-61% control) * (100-57% control) = 83%

3.97 lbs./VMT * (100-61% control) * (100-57%) = **0.68 lbs./VMT (PM_{10}) (controlled)**

0.68 lbs./VMT * 0.208 = **0.14 lbs/VMT (PM2.5) (controlled)**

Reclamation Emissions

Upon completion of vested mining activities, disturbed areas will be reclaimed and revegetated per SMARA and County standards as outlined in the Reclamation Plan. Reclamation activities would require minor earthmoving, soil redistribution, and other activities typically associated with final grading and revegetation. An estimated 40 days of grading and earthmoving activities are anticipated. Reclamation emissions would be substantially less than the existing vested annual mining operations and off-site trucking and would not exceed MDAQMD CEQA thresholds. Table 6 below lists the estimated emissions related to reclamation.

Therefore, the project's criteria and dust emissions will be less than the CEQA thresholds with implementation of MDAQMD rules and regulations and project design measures.

Table 6
Baxter Quarry Amended Plan
Planned Reclamation
Estimated Annual Air Pollutant Emissions (tons/year)

	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
EMISSIONS SOURCES	**Reclamation**	**Reclamation**	**Reclamation**	**Reclamation**	**Reclamation**
ONSITE					
Mobile Equip. & Haul Trucks (Exhaust)	0.02	0.10	0.81	0.003	0.003
Fugitive Dust (Reclamation)	---	---	---	0.12	0.03
Fugitive Dust haul truck travel	---	---	---	0.22	0.04
Emission Totals Onsite	**0.02**	**0.10**	**0.81**	**0.343**	**0.073**
MDAQMD CEQA Thresholds	25	25	100	15	12
Significant	**No**	**No**	**No**	**No**	**No**

Source: Lilburn Corporation March 2022

Table A1

Baxter Quarry Existing and Future Conditions (tpy) (No changes planned)

Onsite Mobile Diesel Equipment Emissions (Typical)											
			Equation Variables		Emissions						
Operation	Emission Factor	Units	1	2	PM-10 lbs/day	PM-2.5 lbs/day	ROC lbs/day	CO lbs/day	NOx lbs/day	CO2 lbs/day	CH4 lbs/day
Equipment Exhaust Emissions			Equipment #	Operating Hrs							
PM10					0.00	0.00					
PM2.5 fr 980 Loader; 393 hp;T4F	0.0028	lbs/hr	1	8.0	0.02	0.02					
988 Loader; 541 hp; T4F	0.0039	lbs/hr	1	8.0	0.03	0.03					
Gen set 286 hp; T3	0.0410	lbs/hr	1	8.0	0.33	0.30					
745 haul trks; 504 hp;T4F	0.0038	lbs/hr	3	6.0	0.07	0.06					
Water truck; 425 hp; T4F	0.0032	lbs/hr	1	4.0	0.01	0.01					
Drill 539hp; T4F	0.0053	bs/hr	1	4.0	0.02	0.02					
ROG		lbs/hr									
980 Loader; 393 hp;T4F	0.0160	lbs/hr	1	8.0			0.13				
988 Loader; 541 hp; T4F	0.0215	lbs/hr	1	8.0			0.17				
Gen set 286 hp; T3	0.0410	lbs/hr	1	8.0			0.33				
745 haul trks; 504 hp;T4F	0.0210	lbs/hr	3	6.0			0.38				
Water truck; 425 hp; T4	0.0178	lbs/hr	1	4.0			0.07				
Drill 539hp; T4F	0.0360	lbs/hr	1	4.0			0.14				
		lbs/hr					0.00				
CO		lbs/hr					0.00				
980 Loader; 393 hp;T4F	0.6860	lbs/hr	1	8.0				5.49			
988 Loader; 541 hp; T4F	0.9440	lbs/hr	1	8.0				7.55			
Gen set 286 hp; T3	1.0260	lbs/hr	1	8.0				8.21			
745 haul trks; 504 hp;T4F	0.9280	lbs/hr	3	6.0				16.70			
Water truck; 425 hp; T4	0.7410	lbs/hr	1	4.0				2.96			
Drill 539hp; T4F	1.3060	lbs/hr	1	4.0				5.22			
		lbs/hr						0.00			
		lbs/hr						0.00			
		lbs/hr						0.00			
NOx		lbs/hr						0.00			
980 Loader; 393 hp;T4F	0.0810	lbs/hr	1	8.0					0.65		
988 Loader; 541 hp; T4F	0.1120	lbs/hr	1	8.0					0.90		
Gen set 286 hp; T3	1.0800	lbs/hr	1	8.0					8.64		
745 haul trks; 504 hp;T4F	0.1100	lbs/hr	3	6.0					1.98		
Water truck; 425 hp; T4	0.0990	lbs/hr	1	4.0					0.40		
Drill 539hp; T4F	0.1540	lbs/hr	1	4.0					0.62		
		lbs/hr							0.00		
		lbs/hr							0.00		
		lbs/hr							0.00		
CO2		lbs/hr							0.00		
980 Loader; 393 hp;T4F	290	lbs/hr	1	8.0						2320	
988 Loader; 541 hp; T4F	528	lbs/hr	1	8.0						4224	
Gen set 286 hp; T3	255	lbs/hr	1	8.0						2040	
745 haul trks; 504 hp;T4F	274	lbs/hr	3	6.0						4932	
Water truck; 425 hp; T4	245	lbs/hr	1	4.0						980	
Drill 539hp; T4F	358	lbs/hr	1	4.0						1432	
		lbs/hr								0	
		lbs/hr								0	
		lbs/hr								0	
CH4		lbs/hr									0.000
980 Loader; 393 hp;T4F	0.0095	lbs/hr	1	8.0							0.076
988 Loader; 541 hp; T4F	0.0142	lbs/hr	1	8.0							0.114
Gen set 286 hp; T3	0.0064	lbs/hr	1	8.0							0.051
745 haul trks; 504 hp;T4F	0.0124	lbs/hr	3	6.0							0.223
Water truck; 425 hp; T4	0.0108	lbs/hr	1	4.0							0.043
Drill 539hp; T4F	0.0071	lbs/hr	1	4.0							0.028
		lbs/hr									0.000
		lbs/hr									0.000
		lbs/hr									0.000
				Total Daily	0.48	0.43	1.22	46.14	13.18	15,928	0.536
				Annual (tons)	0.07	0.06	0.18	6.92	1.98	2,172	1.83

300 days/year; 1 - 8 hour shift/day (typical). 150,000 tons of iron ore /year; 50,000 tons of OB/year. MTCO2e MTCO2e

Equipment information and operatonal hours based on existing and future production rates (CPC 2021)

PM2.5 fraction of PM10 Exhaust is 0.92 (CEIDARS List)

Emission Source and Load Factors: CARB Carl Moyer Program Guidelines 2017 Revisions; SCAQMD Emission Factors (2022 year)

MTCO2e = metric tons of CO2 equivalent

Scenario Year - 2022

No changes to future production and equipment usage planned.

Table A2

Baxter Quarry Crushing/Magnetic Separations Plant (Portable) (MDAQMD Permit No. B012469)

Stationary Source Emissions from Onsite Portable Plant - Existing & Future Daily & Annual Emissions (no changes planned)

Operation		Emission Factor	Units	Equation Variables 1	2	3	Emissions PM-10 lbs/day	Particulate Control Efficiency	PM-10 lbs/day with control	PM-2.5 lbs/day with control	CO lbs/day	NOX lbs/day	SOX lbs/day
Portable Crusher/Magnetic Separations Plant (portable)				Tons/hr	Operating Hours			included					
PM10						----	0.00		0.00	0.00	NA	NA	NA
	Hopper/feeder/screen	0.0007	lbs/ton	100	8	----							
	Crusher	0.0005	lbs/ton	100	8	----	0.400		0.400	0.000			
	Conveyor 1	0.0001	lbs/ton	100	8	----	0.080		0.080	0.083			
	Conveyor 2	0.0001	lbs/ton	100	8	----	0.080		0.080	0.017			
	Conveyor 3	0.0001	lbs/ton	100	8	----	0.080		0.080	0.017			
	Conveyor 4	0.0001	lbs/ton	75	8	----	0.030		0.030	0.017			
	Conveyor 5	0.0001	lbs/ton	25	8	----	0.010		0.010	0.006			
						----	0.000		0.000	0.002			

						Daily total	0.68	----	0.68	0.14	----	----	----
PROPOSED 300 DAYS/YEAR						Total Annual (tons) 300 days/yr	0.10	----	0.10	0.02	0.0	0.0	0.0

No change in production from existing.
Notes: Portable crushing / magnetic separations plant based on up to 8 hrs/day at 100 tph or 700 tpd; 300 days/year proposed.
MDAQMD Permit No. B012469
Sources: AP-42, SCAQMD
AP-42, Section 11.19 - Crushed Stone Processing and Sand and Gravel Processing: EPA August 2004

Dust related PM2.5 = 0.208 of PM10 (CEIDARS List).
Particulate Control Efficiencies are included in Emission Factors.
Crusher, hopper, and conveyors include water sprays.

Table A3
Baxter Quarry Amended Reclamation Plan
On-Road Haul Truck & Vehicle Exhaust Emissions Off-Site (no changes planned)

Operation		Emission Factor	Units	Equation Variables		Emissions							
				1	2	PM-10 lbs/day	PM-2.5 lbs/day	ROC lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day	CO2 lbs/day	CH4 lbs/day
Truck Emissions Onsite				# of trips per day	vmt						Negl		
PM-10	Haul Trucks	0.0001	lbs/mile	20	170	0.374	0.344						
PM-2.5	Employee trips	0.0001	lbs/mile	5	100	0.050	0.046						
	Maint. Vehicles	0.0001	lbs/mile	1	170	0.019	0.017						
			lbs/mile										
ROG	Haul Trucks	0.0001	lbs/mile	20	170			0.4					
	Employee trips	0.0005	lbs/mile	5	100			0.26					
	Maint. Vehicles	0.0001	lbs/mile	1	170			0.02					
			lbs/mile					0.00					
CO	Haul Trucks	0.0006	lbs/mile	20	170				2.14				
	Employee trips	0.0040	lbs/mile	5	100				2.00				
	Maint. Vehicles	0.0006	lbs/mile	1	170				0.11				
			lbs/mile						0.00				
NOX	Haul Trucks	0.0057	lbs/mile	20	170					19.38			
	Employee trips	0.0004	lbs/mile	5	100					0.18			
	Maint. Vehicles	0.0057	lbs/mile	1	170					0.97			
			lbs/mile							0.00			
CO2	Haul Trucks	2.9500	lbs/mile	20	170							10,030	
	Employee trips	1.1100	lbs/mile	5	100							555	
	Maint. Vehicles	2.9500	lbs/mile	1	170							502	
			lbs/mile									0	
CH4	Haul Trucks	0.00001	lbs/mile	20	170								0.0204
	Employee trips	0.00004	lbs/mile	5	100								0.0215
	Maint. Vehicles	0.00001	lbs/mile	1	170								0.0010
			lbs/mile										
					Total	0.44	0.41	0.72	4.25	20.52	Negl	11,087	0.0429
				Total Tons/Year (2021)		0.07	0.06	0.11	0.64	3.08	Negl	1,512	0.16
												mtCO2e	mtCO2e

Emission Factors Source: EMFAC2017 On-Road Heavy Heavy Duty Diesel Trucks and On-Road Passenger Vehicles & Delivery Truck
Scenario Year 2022
PM2.5 fraction of PM10 Exhaust is 0.92 (CEIDARS List)
vmt = miles driven off-site
500 tons/day for 300 days/year; 150,000 tons/year of iron ore
20 truck trips/day for 300 days/year = 500 tpd transported off-site
170 miles round trip (average)
Maint./fuel Vehicles - 1 per day at 170 miles RT to Oro Grande Plant
Annual CO2 and CH4 in metric tons CO2 equivalent (mtCO2e)
Employee vehicles est at 5 trips at average distance of 100 miles round trip
No changes planned.

Table A4

Baxter Quarry Reclamation Activities (No changes proposed)

Onsite Mobile Diesel Equipment Emissions (Typical)													
				Equation Variables		Emissions							
Operation		Emission Factor	Units	1	2	PM-10 lbs/day	PM-2.5 lbs/day	ROC lbs/day	CO lbs/day	NOx lbs/day	CO2 lbs/day	CH4 lbs/day
Equipment Exhaust Emissions				Equipment #	Operating Hrs							
PM10						0.00	0.00					
PM2.5.	Backhoe; 100 hp; T4F	0.0030	lbs/hr	1	8.0	0.02	0.02					
	988 Loader; 541 hp; T4F	0.0039	lbs/hr	1	8.0	0.03	0.03					
	Grader 140M; 268 hp; T4	0.0020	lbs/hr	1	8.0	0.02	0.01					
	Dozer; 347 hp; T4F	0.0030	lbs/hr	1	8.0	0.02	0.02					
	Water truck; 425 hp; T4F	0.0032	lbs/hr	1	4.0	0.01	0.01					
	Haul trucks; 504 hp; T4F	0.0038	bs/hr	2	8.0	0.06	0.06					
ROG			lbs/hr									
	Backhoe; 100 hp; T4F	0.0150	lbs/hr	1	8.0			0.12				
	988 Loader; 541 hp; T4F	0.0215	lbs/hr	1	8.0			0.17				
	Grader 140M; 268 hp;T4	0.0120	lbs/hr	1	8.0			0.10				
	Dozer; 347 hp; T4F	0.0160	lbs/hr	1	8.0			0.13				
	Water truck; 425 hp; T4F	0.0178	lbs/hr	1	4.0			0.07				
	Haul trucks; 504 hp; T4F	0.0210	lbs/hr	2	8.0			0.34				
			lbs/hr					0.00				
CO			lbs/hr					0.00				
	Backhoe; 100 hp; T4F	0.6430	lbs/hr	1	8.0				5.14			
	988 Loader; 541 hp; T4F	0.9440	lbs/hr	1	8.0				7.55			
	Grader 140M; 268 hp;T4	0.5330	lbs/hr	1	8.0				4.26			
	Dozer; 347 hp; T4F	0.7190	lbs/hr	1	8.0				5.75			
	Water truck; 425 hp; T4F	0.7410	lbs/hr	1	4.0				2.96			
	Haul trucks; 504 hp; T4F	0.9280	lbs/hr	2	8.0				14.85			
			lbs/hr						0.00			
			lbs/hr						0.00			
			lbs/hr						0.00			
NOx			lbs/hr						0.00			
	Backhoe; 100 hp; T4F	0.0760	lbs/hr	1	8.0					0.61		
	988 Loader; 541 hp; T4F	0.1120	lbs/hr	1	8.0					0.90		
	Grader 140M; 268 hp;T4	0.0630	lbs/hr	1	8.0					0.50		
	Dozer; 347 hp; T4F	0.0850	lbs/hr	1	8.0					0.68		
	Water truck; 425 hp; T4F	0.0990	lbs/hr	1	4.0					0.40		
	Haul trucks; 504 hp; T4F	0.1100	lbs/hr	2	8.0					1.76		
			lbs/hr							0.00		
			lbs/hr							0.00		
			lbs/hr							0.00		
CO2			lbs/hr							0.00		
	Backhoe; 100 hp; T4F	191	lbs/hr	1	8.0						1528	
	988 Loader; 541 hp; T4F	528	lbs/hr	1	8.0						4224	
	Grader 140M; 268 hp;T4	175	lbs/hr	1	8.0						1400	
	Dozer; 347 hp; T4F	203	lbs/hr	1	8.0						1624	
	Water truck; 425 hp; T4F	245	lbs/hr	1	4.0						980	
	Haul trucks; 504 hp; T4F	274	lbs/hr	2	8.0						4384	
			lbs/hr								0	
			lbs/hr								0	
			lbs/hr								0	
CH4			lbs/hr									0.000
	Backhoe; 100 hp; T4F	0.0095	lbs/hr	1	8.0							0.076
	988 Loader; 541 hp; T4F	0.0142	lbs/hr	1	8.0							0.114
	Grader 140M; 268 hp;T4	0.0090	lbs/hr	1	8.0							0.072
	Dozer; 347 hp; T4F	0.0124	lbs/hr	1	8.0							0.099
	Water truck; 425 hp; T4F	0.0108	lbs/hr	1	4.0							0.043
	Haul trucks; 504 hp; T4F	0.0124	lbs/hr	2	8.0							0.198
			lbs/hr									0.000
			lbs/hr									0.000
			lbs/hr									0.000
					Total Daily	0.17	0.16	0.92	40.52	4.84	14,140	0.602
					Annual (tons)	0.003	0.003	0.02	0.81	0.10	257	0.27

40 days; one time only; 1 - 8 hour shift/day (typical). MTCO2e MTCO2e

Equipment information and operatonal hours based on existing and future production rates (CPC 2021)

PM2.5 fraction of PM10 Exhaust is 0.92 (CEIDARS List)

Emission Source and Load Factors: CARB Carl Moyer Program Guidelines 2017 Revisions; SCAQMD Emission Factors (2022 year)

MTCO2e = metric tons of CO2 equivalent

Scenario Year - 2022

No changes to future reclamation planned.

Table E1 - Baxter Quarry Operational Fuel Usage

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors **[1]**:

HP: 0 to 100	0.059	HP: Greater than 100	0.0529

Values above are expressed in gallons per horsepower-hour/BSFC.

MINING EQUIPMENT

Mining Equipment	#	Hours per Day	Horsepower	Load Factor	Fuel Used / Day (gallons)	Fuel Used / Year (gallons)
Loader	1	8	541	0.36	82	24,727
Loader	1	8	393	0.38	63	18,960
Haul Trucks	3	18	504	0.38	182	54,710
Dozer	0	0	600	0.40	0	0
Water Truck	1	4	425	0.38	34	10,252
Bore/Drill Rig	1	4	539	0.50	57	17,108
Skid Steer Loader	0	0	75	0.37	0	0
Portable Gen Set	1	8	286	0.74	100	29,867
Total Fuel					**519**	**155,623**

Operational Phase	Days of Operation
Operational	300

No change from existing.

Sources:

[1] United States Environmental Protection Agency. 2018. *Exhaust and Crankcase Emission Factors for Nonrod Compression-Ignition Engines in MOVES2014b.* July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

Table E2 - Baxter Quarry Reclamation Fuel Usage

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors **[1]**:

HP: 0 to 100	0.059	HP: Greater than 100	0.0529

Values above are expressed in gallons per horsepower-hour/BSFC.

RECLAMATION EQUIPMENT

Reclamation Equipment	#	Hours per Day	Horsepower	Load Factor	Fuel Used / Day (gallons)	Fuel Used / Year (gallons)
Backhoe	1	8	100	0.37	17	626
Loader	1	8	541	0.42	96	3,846
Grader	1	8	268	0.41	47	1,860
Dozer (D8) ripper	1	8	347	0.40	59	2,350
Water Truck	1	4	425	0.38	34	1,367
Haul Trucks	2	16	504	0.38	162	6,484
					0	0
						0
Total Fuel					415	**16,533**

Reclamation	Days of Reclamation
Reclamation	40

Sources:

[1] United States Environmental Protection Agency. 2018. *Exhaust and Crankcase Emission Factors for Nonrod Compression-Ignition Engines in MOVES2014b.* July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

[2] Federal Highway Administration. Highway Statistics 2018, Table VM-1. Accessed 02/11/20 at fhwa.dot.gov/policyinformation/statistics/2018/pdf/vm1.pdf: Worksheet available at afdc.energy.gov/data Last updated 02/11/2020

TABLE E3 - BAXTER WORKER TRIPS (Gasoline)					
Operational Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons/day)	Total (gallons/yr)
Employee Trips (operations)	24.0	5	100.0	20.83	6,250
Employee Trips (Reclamation)	24.0	5	100.0	20.83	833
			Total	41.67	**7,083**

TABLE E4 - Baxter On-Road Haul Trucks to Oro Grande					
Operational Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons/day)	Total (gallons/yr)
Haul Trucks (25-ton)	7.4	20	170.0	459.46	137,838
			Total	459.46	**137,838**

TABLE E5 - TOTAL ANNUAL FUEL CONSUMPTION (Baxter Quarry)

Phase	Days of Operation	Gas Used (gal/year)	Diesel Used (gal/year)
Operational Phase	300	6,250	293,461
Reclamation Phase (8 weeks est.)	40	833	16,533

No change from existing.

Sources:

[1] United States Environmental Protection Agency. 2018. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b.* July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

[2] Federal Highway Administration. Highway Statistics 2018, Table VM-1. Accessed 02/11/20 at fhwa.dot.gov/policyinformation/statistics/2018/pdf/vm1.pdf: Worksheet available at afdc.energy.gov/data Last updated 02/11/2020

CAT Perfomance Handbook Edition 48, June 2018.

CalEEMod Load Factors Appendix D October 2017.