APPENDIX G

AIR AND GREENHOUSE GAS EMISSIONS STUDY

CEMEX CONSTRUCTION MATERIALS PACIFIC, LLC.

CACHE CREEK MINING PERMIT AND

RECLAMATION PLAN AMENDMENT PROJECT

AIR AND GREENHOUSE GAS EMISSIONS STUDY

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COMPASS LAND GROUP

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1.0 PURPOSE AND SCOPE

Compass Land Group ("Compass") has prepared this Air and Greenhouse Gas Emissions Study ("Study") in support of the CEMEX Construction Materials Pacific, LLC. ("CEMEX") Cache Creek Mining Permit and Reclamation Plan Amendment Project in Yolo County, California ("Project"). This Study evaluates the potential air quality and greenhouse gas ("GHG") emissions from the proposed Project, as well as from CEMEX's existing operations at the Cache Creek facility. These emissions are compared to determine the net changes in emissions anticipated from the Project. Net emission changes from the Project are then compared against significance thresholds adopted by the Yolo-Solano Air Quality Management District ("YSAQMD") or recommended by Yolo County ("County"). This Study also evaluates the potential odor and energy use impacts of the Project. This Study is intended to support the County's evaluation of air quality and GHG impacts pursuant to the California Environmental Quality Act ("CEQA").

The sections that follow provide a description of the Project, methods for air quality and GHG emissions evaluation, YSAQMD significance thresholds, and emissions estimates for use in Project CEQA review.

2.0 PROJECT DESCRIPTION

2.1 Project Overview

The Project proposes to modify Long-Term Off-Channel Mining Permit No. ZF #95-093, Reclamation Plan No. ZF #95-093 and Development Agreement No. 96-287 (as subsequently amended, "Existing Entitlements") with revised mining and reclamation plans and a 20-year time extension. The Project includes a change in phasing to promote the efficient and continuous operation of the electric dredge, eliminating the need to disassemble and relocate the dredge between phases. The Project would result in an increase in lake area of ±57 acres, an increase in shoreline and other habitat of ±37 acres, and a decrease in farmland area of ±37 acres.

The Project is an extension and modification of an approved project. CEMEX proposes no change to any fundamental element of the existing operation (e.g., mining methods, maximum depth of mining, processing operations, use of settling ponds to contain and settle aggregate wash fines, water use, truck routes, or hours of operation).

Surface mining is proposed to continue on 485± acres and reclamation is proposed to occur on 837± acres of the 1,902± acre property to a maximum depth of 70 feet below ground surface in seven phases. The mine is planned to be further developed and ultimately reclaimed in seven phases, the first two of which have already been mined. Consistent with Existing Entitlements, all of the proposed mining areas are located outside the active channel of Cache Creek.

3.0 METHODS AND ASSUMPTIONS

This Study evaluates the potential air quality and GHG emissions from the proposed Project, as well as from CEMEX's existing operations at the Cache Creek facility. These emissions are compared to determine the net changes in emissions anticipated from the Project. The net emissions changes from the Project are then compared against significance thresholds adopted by YSAQMD or recommended by the County.

The CEQA baseline used for purposes of this Study is based on review of historical production information and consultation with the County. CEMEX's existing facility activities include mining, conveyor transport, aggregate processing, ready-mix concrete processing, and construction materials recycle processing, with associated off-road and on-road mobile equipment use.

For baseline for the mining operation and aggregate plant, Compass utilized the 2021 actual production rate with the applicable 2021 emissions factors to provide a representative estimate of baseline emissions during the CEQA Notice of Preparation ("NOP") year. Based on a review of historical trends, the 2021 production rate is consistent with the 10-year average production rate, within 1.5%. Compass also determined averages for both plant raw feed tons (to account for all particulate matter emissions associated with the production process) and for tons sold (to account for mobile source emissions associated with truck hauling).

For baseline for the ready-mix concrete plant and recycle plant, Compass first reviewed each plant's production for the 10-year period between 2012 and 2021. Unlike for the aggregate plant, the production years 2021 for ready-mix concrete and 2021 and 2019 for recycling had either zero or atypically low production compared to the 10-year average. The ten-years of tonnage data for each (ready-mix concrete and recycling) show that 2021 was not representative of typical production levels at either plant. Conversely, the ten-year average is a representative range and therefore better representative of actual conditions. No recycling occurred in 2021 and 2019 because CEMEX was not able to source concrete and asphalt rubble as other recycle locations were closer to the jobs that generated the source materials. There is no specific limitation in the current permit on the amount of recycling. Recycling relies on imported material and is not included in the max aggregate production tonnage numbers. The County's mining program encourages recycling. Recycling impacts are indirect impacts of the mining operation. While impacts annually are not expected to change as a result of the project, the proposal will allow for 20 more years of those impacts, and to the extent cumulative impacts are relevant, the cumulative impacts will also change.

Ready-mix production was minimal in 2021 due to the location of customer's jobs in relation to the CEMEX and other ready-mix sites. CEMEX only operated the plant a few times when the volume for a particular job warranted opening the plant for production. In general, CEMEX has indicated that it does not make economic sense to operate the plant when the quantities requested by customers are low. Overall, the 10-year averaging period represents a baseline that captures economic changes resulting from fluctuating market demand. There is no specific limitation in the current permit on production at the ready-mix plant and ready-mix production

relies on rock already included in the max allowed aggregate production tonnage. In other words the max tonnage is a "throttle" on the amount of concrete produced and importation of aggregate material does not occur. The concrete batch plant process involves adding other raw materials (cement and fly ash) to rock and sand from the mining site to make concrete which is a different product, with a different market, different customers and different trucks from the aggregate market. Ready-mix impacts are indirect impacts of the mining operation. While impacts annually are not expected to change as a result of the project, the proposal will allow for 20 more years of those impacts, and to the extent cumulative impacts are relevant, the cumulative impacts will also change.

For stripping and mining related emissions, Compass used the latest version of the California Emissions Estimator Model ("CalEEMod") version 2020.4.0. CalEEMod is a widely accepted modeling tool maintained by the California Air Pollution Control Officers Association ("CAPCOA"). CalEEMod incorporates state and locally approved emission factors and methodologies for estimating both the daily maximum and annual average emissions levels for criteria pollutants and GHG emissions associated with land development projects, including industrial activities. For processing plant and conveyor transport related emissions, Compass used U.S. Environmental Protection Agency ("EPA") AP-42 emission factors. For mobile source emissions, Compass used the California Air Resources Board's ("CARB's") 2021 EMFAC[1] model for mobile source emissions.

For both baseline and Project conditions, mobile source emissions are evaluated using estimates of VMT based on the average annual production and employee workforce. Trip distances for raw material imports to the existing ready-mix plant and finish product deliveries from the Project site to customers were provided by CEMEX. For raw material imports the actual average trip distance of 33 miles from the CEMEX cement terminal at the Port of West Sacramento was used. For finish product deliveries an average trip distance of 31 miles was used based on a full year of truck trip delivery information provided by CEMEX, which is higher than the EMFAC model estimate of 6 miles for a haul truck. On-road mobile source emissions were then estimated by multiplying the VMT estimates for each trip type by the applicable EMFAC emissions factor. For greenhouse gas emissions estimates, Compass used emission factors from *2021 The Climate Registry*, Table 3.8, for Pacific Gas & Electric (2019) for CO2 emissions and the CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH_4 and N_2O emissions.

The following CalEEMod model selection parameters were used for stripping and mining related emissions:

1. ***Project Location:*** Location is set to the County level for Yolo County. This sets windspeed and precipitation frequency assumptions for modeling. The Project site is located within the jurisdiction of the YSAQMD and part of the Sacramento Valley Air Basin ("SVAB"). The SVAB is currently designated as a nonattainment area for State and National ozone and respirable particulate matter (PM10) ambient air quality standards.

[1] EMFAC is short for "EMission FACtor."

2. ***Lot Acreage:*** The Project area subject to surface mining encompasses ±485 acres of the ±837 acre reclamation plan boundary. The model includes a more refined assumption of up to 20 acres subject to grading each year based on average aggregate yields per acre.

3. ***Urbanization:*** The land use setting for purposes of modeling is designated as rural given the general absence of adjacent developments in the unincorporated County and surrounding communities.

4. ***Climate Zone:*** The site is located within Climate Zone 2 based on the site's zip code.

5. ***Mitigated Construction:*** The "mitigated construction" results (as reported in the modeling outputs) assume that disturbed surfaces would be wetted at least two times per day for dust control. On-model mitigation assumes the use of cleaner engines based on CEMEX's actual equipment fleet. No other mitigations have been modeled or credited in CalEEMod. Based on the foregoing, the "mitigated construction" results have been presented in the emissions summary below.

The Project emissions evaluation accounts for stripping and mining related emissions, processing plant emissions, vehicle traffic, indirect GHG emissions from electricity use, off-road heavy equipment, and on-road mobile source emissions.

For evaluation of local carbon monoxide ("CO") emissions, Compass first considered YSAQMD's preliminary screening approach, which can be used to estimate whether or not a project's traffic impact would cause a potential CO hotspot at any given intersection. Section 4.1.2 of the YSAQMD's *Handbook for Assessing and Mitigating Air Quality Impacts* (July 11, 2007) ("YSAQMD Handbook") presents the following screening approach for CO emissions:

If either of the following criteria is true of any intersection affected by the project traffic, then the project can be said to have the potential to create a violation of the CO standard (in the absence of project specific modeling that suggests otherwise):

- *A traffic study for the project indicates that the peak-hour Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to an unacceptable LOS (typically LOS E or F); or*
- *A traffic study indicates that the project will substantially worsen an already existing peak-hour LOS F on one or more streets or at one or more intersections in the project vicinity. "Substantially worsen" includes situations where delay would increase by 10 seconds or more when project-generated traffic is included.*

In relation to this screening approach, the Project is not likely to adversely affect peak-hour level of service given that the Project does not propose an increase in permitted production levels and all truck traffic exits directly onto CA Highway 16 and with the exception of local deliveries merges onto Interstate 505 ("I-505"). However, since a Project traffic study was not available for review at the time of this Study, Compass was not able to definitively rule out a potential CO impact on the basis of the screening approach alone. However, if a traffic study is completed by the County

(or its consultants) as part of the CEQA process then it is anticipated that the screening criteria alone could be used rule out a potentially significant CO impact. Moreover, mining and aggregate transport related activities are not usually a significant source of CO as most equipment used in the mining process and truck transport is diesel-powered and produces much lower CO emissions than gasoline combustion engines. In fact, as presented later in this Study, the mass emissions of CO associated with the Project's net emissions are expected to be very low and in relation to much busier roadways and congestion areas CO contributions from the Project are expected to be de-minimis.

As a second step for evaluation of CO emissions, Compass reviewed data from the closest Sacramento Valley Air Basin air monitoring station (i.e., the Sacramento-Bercut Drive air monitoring station) that records CO data for CARB to show that the Project's CO contribution from operational activity would be de-minimis compared to the sum of all the sources that are monitored by that station adjacent to Interstate 5 ("I-5", a major freeway). The measured CO concentrations at the Sacramento-Bercut Drive air monitoring station at I-5 are well below the National Ambient Air Quality Standards ("NAAQS") and California Ambient Air Quality Standards ("CAAQS").

The Project would not involve or introduce new odor-generating sources aside from direct exhaust emissions associated with operation of construction and mobile equipment that generally dissipate rapidly into the atmosphere as distance increase from the source. For consideration of odors, YSAQMD recommends screening of potential odor impacts for the following two situations:

- *Projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and*
- *Residential or other sensitive receptor projects or other projects that may attract people locating near existing odor sources.*

(YSAQMD Handbook, Section 4.1.3).

For this Project neither situation applies. The Project is not located near a substantial number of existing sensitive receptors or places where people are expected to congregate, and does not propose any residential or other land uses that would introduce sensitive receptors to the existing facility.

In addition, YSAQMD presents a list of common types of facilities that are known to produce odors, such as landfills, composting facilities, rendering plants, and asphalt concrete batch plants. The YSAQMD Handbook states that if a project would locate receptors and known odor sources in proximity to each other (up to one mile) a full analysis should be undertaken. While Vulcan Materials operates an existing asphalt concrete plant on the CEMEX property, the asphalt plant operation is separately permitted and not subject to any modifications proposed by the Project. Therefore, the Project activities do not propose or fall under any of the land use categories for which odors would typically be a concern, or meet the criteria for a full site-specific analysis of

odors. Further, the YSAQMD Handbook states that for projects locating near a source of odors where there is currently no nearby development and for odor sources locating near existing receptors, the determination of significance should be based on whether odor complaints from the public have occurred in the vicinity of a similar facility at a similar distance.

Compass obtained compliance history from YSAQMD for CEMEX's existing facility as well as Vulcan's existing asphalt concrete plant located at the CEMEX facility to determine whether existing operations have resulted in any odor complaints. YSAQMD has recorded zero odor complaints at the Cache Creek facility.

Detailed estimating methods and assumptions are provided in this Study's appendices.

4.0 SIGNIFICANCE CRITERIA

4.1 Criteria Pollutants, Toxic Air Contaminants, and Odors

CARB and the EPA currently focus on the following air pollutants as indicators of ambient air quality: ozone, particulate matter (PM), nitrogen dioxide (NO_2), CO, sulfur dioxide (SO_2), and lead. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as "criteria air pollutants." These pollutants are found all over the U.S and can harm human health and the environment. Sources and health effects of the criteria air pollutants are summarized in Table 1, below.

Ambient air quality standards define clean air, and are established to protect the health of the most sensitive groups in our communities. Initially, in 1959 the California Legislature directed the State Department of Public Health to develop the CAAQS, which were in place by 1962. Later, the federal Clean Air Act required the EPA to set the NAAQS, which were in place by 1971. Today, the CAAQS are generally more restrictive than the NAAQS. Air districts, including the YSAQMD, adopt thresholds of significance in consideration of these standards.

The YSAQMD has established significance thresholds for criteria pollutants to assist Lead Agencies in determining whether a proposed project may have a significant air quality impact. These thresholds, contained within Section 3.0 of the YSAQMD Handbook are presented in Table 2, below. These thresholds apply to both construction and operational impacts.

TABLE 1

COMMON SOURCES OF HEALTH EFFECTS FOR CRITERIA AIR POLLUTANTS

Pollutants	Sources	Health Effects
Ozone	Atmospheric reaction of organic gases with nitrogen oxides in sunlight	Aggravation of respiratory and cardiovascular diseases; reduced lung function; increased cough and chest discomfort
Fine Particulate Matter (PM10 and PM2.5)	Stationary combustion of solid fuels; construction activities; industrial processes; atmospheric chemical reactions	Reduced lung function; aggravation of respiratory and cardiovascular diseases; increases in mortality rate; reduced lung function growth in children
Nitrogen Dioxide (NO2)	Motor vehicle exhaust; high temperature stationary combustion; atmospheric reactions	Aggravation of respiratory illness
Carbon Monoxide (CO)	Incomplete combustion of fuels and other carbon-containing substances, such as motor vehicle exhaust; natural events, such as decomposition of organic matter	Aggravation of some heart diseases; reduced tolerance for exercise; impairment of mental function; birth defects; death at high levels of exposure
Sulfur Dioxide (SO2)	Combination of sulfur-containing fossil fuels; smelting of sulfur-bearing metal ore; industrial processes	Aggravation of respiratory diseases; reduced lung function
Lead	Contaminated soil	Behavioral and hearing disabilities in children; nervous system impairment

Source: Bay Area Air Quality Management District 2017.

TABLE 2

YSAQMD THRESHOLDS OF SIGNIFICANCE FOR CRITERIA POLLUTANTS OF CONCERN

Pollutant	Operational / Cumulative Threshold
ROG	10 tons/year
NO_X	10 tons/year
PM_{10}	80 lbs/day
CO	Violation of a state ambient air quality standard for CO

Source: Handbook for Assessing and Mitigating Air Quality Impacts. YSAQMD July 11, 2007.

Definitions: CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ROG = reactive organic gases.

The YSAQMD has also adopted thresholds for toxic air contaminants ("TACs"), odors, and cumulative impacts. For TACs, proposed development projects that have the potential to expose the public to TACs from *stationary sources* in excess of the following thresholds would be considered to have a significant air quality impact:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) equals to 10 in one million or more.
- Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index equal to 1 for the MEI or greater.

Regarding TACs, the Project does not propose any new stationary sources or any increase in permitted production levels for the existing stationary sources. CEMEX would continue to operate the facility in accordance with its existing Permits to Operate for stationary sources issued by the YSAQMD.

Regarding odors, the YSAQMD suggests that a project may reasonably be expected to have a significant adverse odor impact where it "generates odorous emissions in such quantities as to cause detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property." (YSAQMD CEQA Handbook, Section 3.2.5).

Regarding cumulative impacts, the YSAQMD suggests that an air quality analysis should address a project's cumulative impact on ozone and localized pollutants. Any proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative impact. CO impacts are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects (i.e., background concentration) will exceed air quality standards. The cumulative impact should be evaluated using the screening criteria mentioned in the project level thresholds to determine if cumulative development could cause a violation of the CAAQS.

4.2 Greenhouse Gasses

GHGs are gasses that trap heat in the earth's atmosphere. Some GHGs occur naturally and are emitted into the atmosphere through both natural processes and human activities. Other GHGs are created and emitted only through human activities. The main GHGs of concern are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated carbons. Each of these gases can remain in the atmosphere for different amounts of time, ranging from a few years to thousands of years. All of these gases remain in the atmosphere long enough to become well mixed, meaning that the amount that is measured in the atmosphere is roughly the same all over the world, regardless of the source of the emissions. For each greenhouse gas, a Global Warming Potential ("GWP") has been calculated to reflect how long it remains in the atmosphere, on

average, and how strongly it absorbs energy. Gases with a higher GWP absorb more energy, per pound, than gases with a lower GWP, and thus contribute more to warming the earth.[2]

The YSAQMD has not adopted a GHG-related threshold of significance for use in CEQA analysis. Although YSAQMD has not adopted a formal threshold, Compass reviewed other sources to inform an appropriate threshold for use in this Study. First, the Bay Area Air Quality Management District ("BAAQMD") has published quantitative thresholds that can be applied to this Project. This approach is permissible per CEQA Guidelines Section 15064.4, which states that lead agencies are granted discretion to establish their own significance thresholds, including looking to thresholds developed by other public agencies, so long as the threshold chosen is supported by substantial evidence (CEQA Guidelines Section 15064.7(c)). This approach is also supported by the recent court case, *Center for Biological Diversity v. California Department of Fish and Wildlife and Newhall Land and Farming*, whereby the Court explained that an agency may rely on existing numerical thresholds of significance for GHG emissions developed by another air district.

BAAQMD's bright line operational threshold is 10,000 MT/year for CO2e emissions, which was adopted to achieve California Assembly Bill 32's ("AB-32's") goal of reducing GHG emissions to 1990 levels by year 2020. A project-specific threshold could be linearly scaled by applying California Senate Bill 32's ("SB-32's") reduction target of 40 percent below 1990 GHG emissions level to the 10,000 MTCO2e/year bright-line threshold, which would bring the threshold of significance for operational GHG emissions to 6,000 MTCO2e/year. Compass recognizes that this linear reduction approach oversimplifies the threshold development process and it is not the intent of this document to propose the adoption of this threshold as a mass emissions limit or CEQA GHG threshold for general use. Rather, this scaling approach can put the project-generated GHG emissions in the appropriate statewide context so that the magnitude of the Project-related emissions is understood and its relative significance may be determined.

Although a 6,000 MTCO2e/year threshold could be used to assess Project GHG impacts, Compass also consulted the County's recently certified Cache Creek Area Plan ("CCAP") Update Final EIR to consider other potential thresholds that could be applied to the Project analysis. The CCAP Update Final EIR conservatively considered *any net increase* in GHG emissions occurring a result of the CCAP to constitute a significant impact. Under this conservative approach, if the Project would result in a net increase in GHG emissions as compared to the baseline conditions, then the Project would be considered to result in a significant impact. The County has applied this approach to other mining projects, including the Teichert Shifler Mining and Reclamation Project (2021) and previously the Granite Esparto Mining and Reclamation Project (2010).

To be consistent with the CCAP Update FEIR, Compass will assume that any net increase in Project GHG emissions would be potentially significant.

[2] Overview of Greenhouse Gases (US EPA): https://www.epa.gov/ghgemissions/overview-greenhouse-gases

5.0 RESULTS AND RECOMMENDED MITIGATION

5.1 Criteria Pollutant Evaluation

Project activity would include ongoing mining (and associated stripping and grading operations), transport of mined materials by a combination of truck and conveyor, processing plant operations, and on-road passenger vehicle and truck trips. Table 4 presents the Project's criteria air pollutants and ozone precursor emissions analysis in comparison to YSAQMD's mass emissions thresholds, which support compliance with the CAAQS and NAAQS. The modeling results indicate that all Project criteria pollutant emissions are well below applicable YSAQMD thresholds of significance for CEQA. Therefore, the Project's criteria pollutant impacts and related cumulative impacts would be less-than-significant.

A more complete summary of Project emissions is found in **Appendix A**, Daily and Annual Emissions Summary. A complete report of emissions and modeling inputs is included in **Appendix B**, Baseline Models and Inputs, and **Appendix C**, Project Models and Inputs.

TABLE 3
CRITERIA AIR POLLUTANTS EMISSIONS ANALYSIS

Emissions Category	ROG (tons/year)	NO_X (tons/year)	PM_{10} (lbs/day)
Baseline			
Mining	0.41	4.90	102.98
Dredge and Aggregate Plant	0.91	8.37	94.96
Ready-Mix Plant	0.03	0.28	15.32
Recycle Plant	0.03	0.23	60.28
On-Road Mobile Sources	0.14	6.02	1.02
Total:	**1.52**	**19.8**	**274.56**
Proposed Project			
Mining	0.49	6.07	110.92
Dredge and Aggregate Plant	0.91	8.38	108.70
Ready-Mix Plant	0.03	0.28	19.41
Recycle Plant	0.02	0.15	59.41
On-Road Mobile Sources	0.13	6.57	0.74
Total:	**1.58**	**21.45**	**299.18**
Net Change (Project - Baseline)	**+0.06**	**+1.65**	**+24.62**
Threshold	10	10	80
Exceeds Threshold (Yes/No)?	**No**	**No**	**No**

1. YSAQMD thresholds from Table 2, above.
2. Minor differences in totals due to rounding. See Appendix A for additional details.

5.2 Carbon Monoxide (CO) Hotspots

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuel. The largest source of CO is vehicle engines, and the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Consequently, violations of the CO standard are generally limited to major intersections during peak-hour traffic conditions. Exposure of humans to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, fatigue, impaired central nervous system function, and angina (chest pain) in persons with serious heart disease. Very high concentrations of CO can be fatal. However, high concentrations are not expected as a result of the Project.

YSAQMD's preliminary screening approach indicates that a project would result in a potentially significant impact to localized CO concentrations if either of the following screening criteria are met:

- *A traffic study for the project indicates that the peak-hour Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to an unacceptable LOS (typically LOS E or F); or*
- *A traffic study indicates that the project will substantially worsen an already existing peak-hour LOS F on one or more streets or at one or more intersections in the project vicinity. "Substantially worsen" includes situations where delay would increase by 10 seconds or more when project-generated traffic is included.*

As previously noted, a Project traffic study was not available for review at the time of this Study. Therefore, Compass was not able to rule out a potential CO impact solely on the basis of the screening methodology. However, if a traffic study is completed by the County (or its consultants) then it is anticipated that the screening criteria alone could be used to rule out a potentially significant CO impact without the need for further analysis.

Most equipment used in the mining process and truck transport is diesel-powered and produces lower CO emissions than gasoline combustion engines. Diesel engines are compression ignition engines that usually operate at a higher compression ratio than spark-ignited gasoline engines. Deisel engines usually operate at a higher compression ratio than gasoline engines because fuel is not present during compression; hence there is no danger of premature auto-ignition. Since engine thermal efficiency rises with increasing pressure ratio (and pressure ratio varies directly with compression ratio), diesel engines are more efficient than gasoline engines. (EPA AP-42, Chapter 3.3).

Compass' modeling results summarized in **Appendix A** indicate that Project net CO emissions would *decrease* by approximately 72.85 pounds per day or 1.56 tons per year. The Project's CO impact would be less-than-significant based on a decrease in CO emissions relative to the existing 10-year historic baseline. However, these values represent mass emissions estimates and not an emissions concentration, which is the metric used in the NAAQS and CAAQS. Therefore, these emission estimates need to be put into proper context.

While a Project specific CO concentration has not been determined, CO concentrations in YSAQMD's jurisdiction and the Sacramento Valley Air Basin as a whole currently meet all NAAQS and CAAQS for CO.[3] The State standards, which have been adopted as part of YSAQMD's operational thresholds of significance, are more restrictive than the NAAQS at 9 parts per million (ppm) for the maximum 8-hour concentration and 20 ppm for the maximum 1-hour concentration. As further discussed below, there is no reason to believe that the Project, which is a continuation of an existing mining operation, would cause a significant impact that would jeopardize compliance with these standards.

To provide additional evidence in support of this conclusion, CO measurements taken at the Sacramento-Bercut Drive air monitoring station adjacent to I-5 for the full calendar year 2020 indicate a *maximum* daily CO concentration of 1.6 ppm occurring on only three days in September and October 2020.[4] The daily maximum CO concentration is well below the lowest applicable CAAQS of 9 ppm. To put these concentrations into further perspective, Caltrans reports that I-5 at Richards Blvd. next to the Sacramento-Bercut Drive air monitoring station generated 176,000 AADT while I-505 at Hwy. 16 next to the Project site generated only 16,900 AADT based on 2020 traffic counts.[5] Traffic counts next to the Project site are a full order of magnitude lower than the traffic counts adjacent to the air monitoring station. CO concentrations would therefore be markedly lower at I-505 adjacent to the Project site, especially given the general lack of congestion along this reach of I-505. In addition, the Project would generate up to approximately 308 average daily one-way truck trips (at full 1,000,000 tons per year sold production), plus approximately 56 average daily one-way employee and maintenance visit trips, which total of 356 trips (including existing baseline trips) amounts to only 0.2% of the traffic volume at the air monitoring station.

The proposed Project's impacts relating to CO would be less-than-significant based on modeling results, the nature of the Project and Sacramento-Bercut Drive air monitoring station data.

5.3 Greenhouse Gas Emissions

As described in Section 4.2 above, Compass will assume that any net increase in Project GHG emissions would be potentially significant. However, to put the Project into statewide context, GHG emissions are also presented in relation to an operational threshold of 6,000 MTCO2e/year, based on a linear scaling reduction of BAAQMD's bright-line operational threshold to account for the SB-32 reduction target of 40 percent below 1990 GHG emissions levels.

The modeling results indicate that Project GHG emissions would be well below an operational threshold of 6,000 MTCO2e/year. However, the Project's would still result in a net increase in

[3] A summary of Air Basin attainment status published by YSAQMD is available here: http://www.ysaqmd.org/wp-content/uploads/Graphics/Attainment_Status.png

[4] The Sacramento-Bercut Drive air monitoring station (ID 06-067-0015) is located at approximate GPS coordinates 38.593322, -121.503795, at 100 Bercut Drive, Sacramento, CA 95811, adjacent to Interstate 5 near the Richard Blvd. exit. Station data is available here: https://www.epa.gov/outdoor-air-quality-data/download-daily-data

[5] Source: Caltrans Traffic Census Program, https://dot.ca.gov/programs/traffic-operations/census.

GHG emissions relative to existing baseline conditions. Therefore, the Project's GHG impacts are considered potentially significant. Table 4 presents the GHG emissions analysis.

A more complete summary of Project emissions is found in **Appendix A**. A complete report of emissions and modeling inputs is included in **Appendix B** and **Appendix C**.

TABLE 4
GREENHOUSE GAS EMISSIONS ANALYSIS (MT/YEAR)[2]

Emissions Category	CO_2e
Baseline Emissions	5,668
Project Emissions	6,706
Project Net Change	**+1,038**
BAAQMD-Based Threshold (for context only)[2]	6,000
CEQA Significance Threshold[3]	0
Exceeds Threshold (Yes/No)?	**Yes**

Notes:
1. MT= metric tons. CO_2e = carbon dioxide equivalent.
2. BAAQMD's operational threshold for GHG emissions is 10,000 MTCO2e/year. This threshold could be interpolated to 6,000 MTCO2e/year to achieve the 40% reduction target of SB-32.
3. Per County guidance, Compass has assumed that any net increase in Project GHG emissions would be potentially significant.

The following mitigation measure is recommended to reduce the Project's GHG emissions to less-than-significant:

1. Prior to the August 11, 2027 (i.e., the original date of expiration of the Existing Entitlements), the Applicant shall submit for review and approval, a Greenhouse Gas Reduction Plan (GHGRP) to the Yolo County Department of Community Services. In order to demonstrate the implementation of the proposed project would not result in a net increase in GHG emissions from baseline conditions, the GHGRP shall demonstrate how operational emissions of the proposed project would be reduced by at least 1,038 MTCO2e/year. Strategies to achieve emissions reductions may include, but are not limited to, the following:
    a. Replacement of existing fossil fueled equipment with hybrid or electrically powered equipment;
    b. Purchase of an increased proportion of electricity from renewable sources;
    c. Installation of on-site renewable energy systems;
    d. Use of a blend of renewable diesel and biodiesel (80/20 mix) to power mobile equipment. CARB and the U.S. Department of Energy recognize a greater than

50% reduction in GHG/CO2e emissions from use of the 80/20 blend as compared to petroleum based diesel.[6]

e. Purchase of verified carbon credits. Credits purchased as part of this mitigation option shall be real, quantifiable, permanent, verifiable, enforceable, and consistent with the standards set forth in Health and Safety Code section 38562, subdivisions (d)(1) and (d)(2). Such credits shall be based on protocols that are consistent with the criteria set forth in subdivision (a) of Section 95972 of Title 17 of the California Code of Regulations, and shall not allow the use of offset projects originating outside of California, except to the extent that the quality of the offsets, and their sufficiency under the standards set forth herein, can be verified by the County and/or the YSAQMD. The credits must be purchased through one of the following: 1) a CARB-approved registry, such as the Climate Action Reserve, the American Carbon Registry, and the Verified Carbon Standard; 2) any registry approved by CARB to act as a registry under the California Cap and Trade Program; or 3) through the CAPCOA GHG Reduction Exchange.

With implementation of this mitigation measure, the Project's GHG emissions would be *less-than-significant*.

5.4 Odors

Project activities are not expected to introduce significant sources of odors. The Project does not involve odor-generating sources aside from direct exhaust emissions associated with operation of construction, off-road and mobile equipment that generally dissipate rapidly into the atmosphere as distance increases from the source. The Project is not located near a substantial number of existing sensitive receptors or places where people are expected to congregate, and does not propose any residential or other land uses that would introduce sensitive receptors to the existing facility.

The YSAQMD CEQA Handbook presents a list of common types of facilities that are known to produce odors, such as landfills, composting facilities, rendering plants, and asphalt concrete batch plants. While Vulcan Materials operates an existing asphalt concrete plant on the CEMEX property, the asphalt plant operation is separately permitted and not subject to any modifications proposed by the Project. Therefore, the Project activities do not propose or fall under any of the land use categories for which odors would typically be a concern. Further, the YSAQMD Handbook states that for projects locating near a source of odors where there is currently no nearby development and for odor sources locating near existing receptors, the determination of significance should be based on whether odor complaints from the public have occurred in the vicinity of a similar facility at a similar distance. YSAQMD has recorded zero odor complaints for CEMEX's or Vulcan's existing Cache Creek facilities.

[6] See *Life Cycle Analysis completed by Argonne National Laboratory*, at Figure 5-6 and 5-7, available here: https://afdc.energy.gov/vehicles/diesels_emissions.html

The Project's potential odor impacts would be less-than-significant based on the nature of the Project (i.e., the continuation of a fully permitted mining and processing facility), YSAQMD's odor screening criteria, and YSAQMD's record of zero odor complaints for the existing facilities.

5.5 Energy

CEMEX's existing facility consumes energy in the forms of fossil fuels and electricity as part of the ongoing mining and construction materials processing operations. These operations include off-road heavy equipment use, conveyor transport, truck transport, aggregate processing, and ready-mix concrete processing operations. The main sources of energy consumption are electricity and diesel fuel, as well as gasoline fuel for worker and other passenger vehicle trips.

Under existing baseline conditions, CEMEX's operations consume an estimated 3,543 megawatts of electricity, 537,084 gallons of diesel fuel, and 20,033 gallons of gasoline per year. In order to meet its existing demands for electricity, CEMEX partnered with Foundation Windpower to install a wind turbine on the property, which is fully operational. CEMEX was the first aggregate producer in Yolo County to do so. Foundation Windpower owns and operates the wind turbine and the electricity generated by the turbine is fed into the grid to off-set a portion of the electricity used by existing operations.

The Project would increase electricity, diesel, and gasoline consumption relative to the existing baseline conditions in order to achieve the currently permitted levels of mining and aggregate thruput production. This comparison is done pursuant to the analytical requirements of CEQA, but does not mean that the Project would result in the wasteful, inefficient or unnecessary consumption of energy resources. The Project does not propose any energy consumption beyond what is typical for this type of operation. Consumption of energy represents an ongoing cost to CEMEX, which creates an incentive for CEMEX to minimize the use of energy on-site through efficient means and operations. Further, while a comparison of Project to baseline conditions reflects a net increase in energy consumption, CEMEX's Existing Entitlements already allow for the consumption of energy as necessary to achieve the currently permitted 1,000,000 tons per year sold limit of aggregate production at the facility.

Table 5 summarizes the estimated energy consumption of the Project relative to the existing conditions baseline. A complete report of baseline and Project energy consumption can be found in **Appendix B-8** and **Appendix C-7**, respectively. The Project would increase diesel fuel consumption by 19%, decrease gasoline consumption by 2%, and increase electricity consumption by 47% relative to the CEQA baseline, consistent with the modeled increase in production levels up to the currently permitted limits for the facility as applicable.

TABLE 5
ENERGY CONSUMPTION SUMMARY

Energy Type	Energy Consumption	Units
Baseline		
Electricity	3,543,082	kWh / year
Diesel	537,084	Gal / year
Gasoline	20,033	Gal / year
Proposed Project		
Electricity	5,224,579	kWh / year
Diesel	638,729	Gal / year
Gasoline	19,687	Gal / year
Net Change		
Electricity	+1,681,497	kWh / year
Diesel	+101,645	Gal / year
Gasoline	-346	Gal / year

Notes:

1. kWh/year = kilowatt-hours per year; gal/year = gallons per year
2. Baseline electricity use for dredge and aggregate processing operations is based on 2021 PG&E electricity consumption data provided by CEMEX.
3. See Appendices B-8 and C-7 for calculation assumptions and details.

The Project's gasoline and diesel consumption would also be subject to State and federal regulations regarding fuel efficiency standards for on-road vehicles and off-road equipment. For example, the off-road equipment operated as part of the Project would be subject to the In-Use Off-Road Diesel Vehicle Regulations, which require strict emissions reductions into the future. Emissions reductions are often achieved through engine retrofits to a higher tier, which emit fewer emissions, partially through increased fuel efficiency. Accordingly, operational energy demand would decrease into the future as off-road equipment is upgraded to meet increasingly stringent emissions standards. The modeling performed for this Study has not taken credit for these future reductions beyond the year 2022.

Based on the foregoing, the Project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. The Project's energy impacts would be less-than-significant.

Appendix A:
Daily and Annual Emissions Summary

APPENDIX A: DAILY AND ANNUAL EMISSIONS SUMMARY

Table 1. Daily Emissions Summary (lbs/day)

Activity	ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
BASELINE							
Mining Operations[4]							
Stripping and Mining Emissions (App. B-2 - *CalEEMod*)	4.65	45.34	87.32	10.67	104.61	0.22	--
Conveyor Transport from Pit-to-Plant (App. B-3)	--	--	1.61	0.46	--	--	--
Truck Transport to Conveyor (App. B-3)	--	--	14.05	1.40	--	--	--
GHG Emissions from Conveyor Electricity Use (Indirect) (App. B-3)[3]	--	--	--	--	--	--	--
Subtotal	4.65	45.34	102.98	12.53	104.61	0.22	--
Dredge and Aggregate Plant Operations (App. B-4)							
Processing and Wind Erosion	--	--	43.51	23.74	--	--	--
On-Site Vehicle Traffic	--	--	48.57	4.86	--	--	--
GHG Emissions from Electricity Use (Indirect)[3]	--	--	--	--	--	--	--
Off-Road Heavy Equipment	6.95	64.26	2.89	2.85	33.05	0.41	--
Vehicle Idling	0.01	0.13	0.00	0.00	0.12	--	--
Subtotal	6.96	64.39	94.96	31.44	33.17	0.41	--
Ready-Mix Plant Operations (App. B-5)							
Concrete Batching	--	--	13.41	2.22	--	--	--
On-Site Vehicle Traffic	--	--	1.22	0.30	--	--	--
GHG Emissions from Electricity Use (Indirect)[3]	--	--	--	--	--	--	--
Off-Road Heavy Equipment	1.67	14.62	0.68	0.68	7.91	0.08	--
Vehicle Idling	0.00	0.03	0.00	0.00	0.03	--	--
Subtotal	1.67	14.65	15.32	3.20	7.94	0.08	--

Activity		ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
Recycle Plant Operations (App. B-6)								
Processing and Wind Erosion		--	--	9.66	3.44	--	--	--
On-Site Vehicle Traffic		--	--	48.60	4.86	--	--	--
Portable Processing Plant Engines[3]		4.01	31.99	1.52	1.52	16.38	0.05	--
Off-Road Heavy Equipment		1.13	14.77	0.50	0.46	5.80	0.02	--
	Subtotal	5.13	46.76	60.28	10.28	22.17	0.07	--
On-Road Mobile Source Emissions (App. B-7)		3.94	169.79	1.02	0.96	22.96	--	--
	Subtotal	3.94	169.79	1.02	0.96	22.96	--	--
Baseline Totals (lbs/day)		**22.36**	**340.94**	**274.56**	**58.41**	**190.85**	**0.79**	**--**
PROPOSED PROJECT								
Mining Operations[4]								
Stripping and Mining Emissions (App. C-1 - *CalEEMod*)		5.39	55.48	87.58	10.92	117.66	0.23	--
Conveyor Transport from Pit-to-Plant (App. C-2)		--	--	2.56	0.72	--	--	--
Truck Transport to Conveyor (App. C-2)		--	--	20.78	2.08	--	--	--
GHG Emissions from Conveyor Electricity Use (Indirect) (App. C-2)[3]		--	--	--	--	--	--	--
	Subtotal	5.39	55.48	110.92	13.72	117.66	0.23	--
Dredge and Aggregate Plant Operations (App. C-3)								
Processing and Wind Erosion		--	--	43.51	23.74	--	--	--
On-Site Vehicle Traffic		--	--	62.31	6.23	--	--	--
GHG Emissions from Electricity Use (Indirect)[3]		--	--	--	--	--	--	--
Off-Road Heavy Equipment		6.95	64.26	2.89	2.85	33.05	0.41	--
Vehicle Idling		0.01	0.16	0.00	0.00	0.17	--	--
	Subtotal	6.97	64.43	108.70	32.82	33.21	0.41	--
Ready-Mix Plant Operations (App. C-4)								
Concrete Batching		--	--	17.17	2.84	--	--	--
On-Site Vehicle Traffic		--	--	1.57	0.38	--	--	--
GHG Emissions from Electricity Use (Indirect)[3]		--	--	--	--	--	--	--
Off-Road Heavy Equipment		1.67	14.62	0.68	0.68	7.91	0.08	--
Vehicle Idling		0.00	0.04	0.00	0.00	0.04	--	--
	Subtotal	1.67	14.66	19.41	3.90	7.95	0.08	--

Activity		ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
Recycle Plant Operations (App. C-5)								
Processing and Wind Erosion		--	--	9.66	3.44	--	--	--
On-Site Vehicle Traffic		--	--	48.60	4.86	--	--	--
Portable Processing Plant Engines[3]		2.89	18.10	0.78	0.78	15.64	0.05	--
Off-Road Heavy Equipment		0.90	10.99	0.37	0.33	5.14	0.04	--
	Subtotal	3.80	29.09	59.41	9.41	20.77	0.09	--
On-Road Mobile Source Emissions (App. C-6)		3.02	159.71	0.74	0.67	20.24	--	--
	Subtotal	3.02	159.71	0.74	0.67	20.24	--	--
Proposed Project Totals (lbs/day)		**20.84**	**323.36**	**299.19**	**60.52**	**199.84**	**0.81**	**--**
Project Net Change (lbs/day)		**-1.51**	**-17.58**	**24.63**	**2.11**	**8.98**	**0.03**	**--**
YSAQMD CEQA Significance Thresholds								
Threshold (lbs/day)		N/A[7]	N/A[7]	80[5]	N/A[7]	CAAQS[6]	N/A[7]	N/A[7]
Exceeds Threshold?		**N/A**	**N/A**	**No**	**N/A**	**N/A**	**N/A**	**N/A**

Notes:

1. VOC results reported as ROG for summary table where applicable.
2. PM emissions represent controlled (or abated) emissions, where applicable.
3. Greenhouse gas (CO2e) emissions are only reported as annual emissions in Metric Tons per year. See Table 2, Annual Summary.
4. Mining operations emissions sourced from CalEEMod Model Runs 1 and 2, Stripping and Mining Emissions. Emissions total is reported as the higher of the Winter or Summer mitigated (on-model) modeling results. Excludes the dredge which is accounted for in processing plant emissions.
5. PM10 threshold applies to both construction and operational impacts.
6. CO threshold is violation of a state ambient air quality standard for CO, which is 9.0 ppm (8-hour average), 20.00 ppm (1-hour average). This is a concentration-based threshold that is not directly comparable to a lb/day emission estimate.
7. Yolo-Solano AQMD has no published daily CEQA thresholds for daily ROG, NOx, PM2.5, SOx, or CO_2 emissions.

APPENDIX A: DAILY AND ANNUAL EMISSIONS SUMMARY

Table 2. Annual Emissions Summary (tons/year)

Activity	ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
BASELINE							
Mining Operations[4]							
Stripping and Mining Emissions (App. B-2 - *CalEEMod*)	0.41	4.90	6.13	0.83	7.16	0.01	1,224.73
Conveyor Transport from Pit-to-Plant (App. B-3)	--	--	0.21	0.06	--	--	--
Truck Transport to Conveyor (App. B-3)	--	--	1.83	0.18	--	--	--
GHG Emissions from Conveyor Electricity Use (Indirect) (App. B-3)	--	--	--	--	--	--	1.00
Subtotal	0.41	4.90	8.17	1.07	7.16	0.01	1,225.73
Dredge and Aggregate Plant Operations (App. B-4)							
Processing and Wind Erosion	--	--	5.41	4.13	--	--	--
On-Site Vehicle Traffic	--	--	6.31	0.63	--	--	--
GHG Emissions from Electricity Use (Indirect)	--	--	--	--	--	--	6.81
Off-Road Heavy Equipment	0.90	8.35	0.38	0.37	4.30	0.05	585.43
Vehicle Idling	0.00	0.02	0.00	0.00	0.02	--	2.97
Subtotal	0.91	8.37	12.10	5.13	4.31	0.05	595.21
Ready-Mix Plant Operations (App. B-5)							
Concrete Batching	--	--	0.25	0.04	--	--	--
On-Site Vehicle Traffic	--	--	0.02	0.01	--	--	--
GHG Emissions from Electricity Use (Indirect)	--	--	--	--	--	--	0.21
Off-Road Heavy Equipment	0.03	0.28	0.01	0.01	0.15	0.00	16.39
Vehicle Idling	0.00	0.00	0.00	0.00	0.00	--	0.11
Subtotal	0.03	0.28	0.29	0.06	0.15	0.00	16.70

Activity		ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
Recycle Plant Operations (App. B-6)								
Processing and Wind Erosion		--	--	0.50	0.47	--	--	--
On-Site Vehicle Traffic		--	--	0.24	0.02	--	--	--
Portable Processing Plant Engines		0.02	0.16	0.01	0.01	0.08	0.00	24.50
Off-Road Heavy Equipment		0.01	0.07	0.00	0.00	0.03	0.00	8.58
	Subtotal	0.03	0.23	0.75	0.50	0.11	0.00	33.08
On-Road Mobile Source Emissions (App. B-7)		0.14	6.02	0.04	0.03	1.27	--	3,796.82
	Subtotal	0.14	6.02	0.04	0.03	1.27	--	3,796.82
Baseline Totals (tons/year)		**1.52**	**19.80**	**21.35**	**6.80**	**13.00**	**0.07**	**5667.54**
PROPOSED PROJECT								
Mining Operations[4]								
Stripping and Mining Emissions (App. C-1 - *CalEEMod*)		0.49	6.07	6.14	0.86	8.69	0.02	1,369.04
Conveyor Transport from Pit-to-Plant (App. C-2)		--	--	0.33	0.09	--	--	--
Truck Transport to Conveyor (App. C-2)		--	--	2.70	0.27	--	--	--
GHG Emissions from Conveyor Electricity Use (Indirect) (App. C-2)		--	--	--	--	--	--	1.48
	Subtotal	0.49	6.07	9.17	1.22	8.69	0.02	1,370.52
Dredge and Aggregate Plant Operations (App. C-3)								
Processing and Wind Erosion		--	--	6.09	4.19	--	--	--
On-Site Vehicle Traffic		--	--	8.10	0.81	--	--	--
GHG Emissions from Electricity Use (Indirect)		--	--	--	--	--	--	10.08
Off-Road Heavy Equipment		0.90	8.35	0.38	0.37	4.30	0.05	585.43
Vehicle Idling		0.00	0.02	0.00	0.00	0.02	--	3.81
	Subtotal	0.91	8.38	14.56	5.37	4.32	0.05	599.32
Ready-Mix Plant Operations (App. C-4)								
Concrete Batching		--	--	0.33	0.05	--	--	--
On-Site Vehicle Traffic		--	--	0.03	0.01	--	--	--
GHG Emissions from Electricity Use (Indirect)		--	--	--	--	--	--	0.27
Off-Road Heavy Equipment		0.03	0.28	0.01	0.01	0.15	0.00	16.39
Vehicle Idling		0.00	0.00	0.00	0.00	0.00	--	0.14
	Subtotal	0.03	0.28	0.37	0.07	0.15	0.00	16.79

Activity		ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
Recycle Plant Operations (App. C-5)								
Processing and Wind Erosion		--	--	0.50	0.47	--	--	--
On-Site Vehicle Traffic		--	--	0.24	0.02	--	--	--
Portable Processing Plant Engines		0.01	0.09	0.00	0.00	0.08	0.00	24.49
Off-Road Heavy Equipment		0.00	0.05	0.00	0.00	0.03	0.00	8.31
	Subtotal	0.02	0.15	0.75	0.50	0.10	0.00	32.80
On-Road Mobile Source Emissions (App. C-6)		0.13	6.57	0.03	0.03	1.22	--	4,686.67
	Subtotal	0.13	6.57	0.03	0.03	1.22	--	4,686.67
Proposed Project Totals (tons/year)		**1.58**	**21.44**	**24.89**	**7.20**	**14.49**	**0.08**	**6706.11**
Project Net Change (tons/year)		**0.06**	**1.65**	**3.54**	**0.39**	**1.48**	**0.01**	**1038.57**
YSAQMD CEQA Significance Thresholds								
Threshold (tons/year)		10	10	N/A[5]	N/A[5]	N/A[5]	N/A[5]	0[5,6]
Exceeds Threshold?		**No**	**No**	**N/A**	**N/A**	**N/A**	**N/A**	**Yes**

Notes:

1. VOC results reported as ROG for summary table where applicable.
2. PM emissions represent controlled (or abated) emissions, where applicable.
3. Greenhouse gas (CO2e) emissions are reported as annual emissions in Metric Tons per year.
4. Mining operations emissions sourced from CalEEMod Model Runs 1 and 2, Stripping and Mining Emissions. Excludes the dredge which is accounted for in processing plant emissions.
5. YSAQMD has no published annual CEQA threshold for PM, CO, SOx, or CO_2 emissions.
6. YSAQMD has not adopted a significance threshold for GHG emissions. To be consistent with the CCAP Update FEIR, Compass will assume that any net increase in Project GHG emissions would be potentially significant.

Appendix B:
Baseline Models and Inputs

Appendix B-1:
Baseline Production Levels

APPENDIX B: BASELINE MODELS AND INPUTS
B-1. Baseline Production Levels

Description:

Compass consulted with the County to determine appropriate baseline production information to be used in this analysis. For the aggregate plant, Compass utilized the 2021 actual production rate with the applicable 2021 emissions factors to provide a representative estimate of baseline emissions during the NOP year. Based on a review of historical trends, the 2021 production rate is consistent with the 10-year average production rate, within 1.5%. Compass also determined averages for both plant raw feed tons (to account for all particulate matter emissions associated with the production process) and for tons sold (to account for mobile source emissions associated with truck hauling).

For the ready-mix concrete plant and recycle plant, Compass first reviewed each plant's production for the 10-year period between 2012 and 2021. Unlike for the aggregate plant, the production years 2021 for ready-mix concrete and 2021 and 2019 for recycling had either zero or atypically low production levels compared to the 10-year average. The ten-years of tonnage data for each (ready-mix concrete and recycling) show that 2021 was not representative of typical production levels at either plant. Conversely, the ten-year average is a representative range and therefore better representative of actual conditions. No recycling occurred in 2021 and 2019 because CEMEX was not able to source concrete and asphalt rubble as other recycle locations were closer to the jobs that generated the source materials. Ready-mix production was minimal in 2021 due to the location of customer's jobs in relation to the CEMEX and other ready-mix sites. CEMEX only operated the plant a few times when the volume for a particular job warranted opening the plant for production. In general, CEMEX has indicated that it does not make economic sense to operate the plant when the quantities requested by customers are low. Overall, the 10-year averaging period represents a baseline that captures economic changes resulting from fluctuating market demand.

Annual production figures are considered proprietary; therefore, the period average is reported below for each plant. Year-by-year production figures can be confidentially supplied to the County and/or AQMD reviewers upon request.

Aggregate Plant:	814,418	tons plant raw feed (2021)
	779,432	tons sold (2021)
Readymix Plant:	9,101	cubic yards per year average sold (2012-2021)
Recycle Plant:	30,003	tons per year average sold (2012-2021)

Appendix B-2:
CalEEMod Modeling Results for Stripping and Mining

Cache Creek Project
Mobile Equipment Input Assumptions
Existing Conditions

Equipment	Model	Year (if known)	HP	Tier (if known)	Hours per day
Stripping Phase					
Compactor	Cat 825	2015	402	4	8
Loader	Cat 980	2013	355	4	8
Scraper	Cat 657	2016	630	4	8
Scraper	Cat 657	2016	630	4	8
Scraper	Cat 657	2017	630	4	8
Scraper	Cat 657	2017	630	4	8
Water Truck - 4,000 Gal	Peterbilt 348	2017		On highway	5
Mining Phase					
Dozer	Cat D10T	2006	580	3	0.13
Dozer	Cat D8R	1997	305	1	8
Excavator	Cat 374FL	2016	472	4F	8
Haul Truck	Volvo A40	2013	465	4I	8
Haul Truck	Volvo A40	2013	469	4I	8
Haul Truck	Cat 740B	2008	489	3	8
Motor Grader	Cat 140G	1989	150	0	0.2
Water Truck - 4,000 Gal	Peterbilt 348	2017		On highway	5

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

CEMEX Cache Creek Baseline Stripping and Mining Emissions

Yolo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Baseline equipment and utilization per CEMEX.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for full year of operation to determine maximum daily and annual emissions for CEQA analysis. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Water truck used to water exposed areas at least 2x daily.

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	NumDays	775.00	261.00
tblConstructionPhase	PhaseEndDate	11/10/2027	12/31/2021
tblConstructionPhase	PhaseStartDate	11/21/2024	1/1/2021
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	10.5884	111.9549	70.3783	0.2166	87.7979	4.1032	91.9011	10.1861	3.7750	13.9611	0.0000	20,986.1165	20,986.1165	6.6623	0.0102	21,155.6968
Maximum	**10.5884**	**111.9549**	**70.3783**	**0.2166**	**87.7979**	**4.1032**	**91.9011**	**10.1861**	**3.7750**	**13.9611**	**0.0000**	**20,986.1165**	**20,986.1165**	**6.6623**	**0.0102**	**21,155.6968**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.6459	45.3150	104.6148	0.2166	85.8638	1.4513	87.3151	9.2458	1.4206	10.6664	0.0000	20,986.1165	20,986.1165	6.6623	0.0102	21,155.6967
Maximum	**4.6459**	**45.3150**	**104.6148**	**0.2166**	**85.8638**	**1.4513**	**87.3151**	**9.2458**	**1.4206**	**10.6664**	**0.0000**	**20,986.1165**	**20,986.1165**	**6.6623**	**0.0102**	**21,155.6967**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	56.12	59.52	-48.65	0.00	2.20	64.63	4.99	9.23	62.37	23.60	0.00	0.00	0.00	0.00	0.00	0.00

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**	**0.0000**	**0.1131**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**	**0.0000**	**0.1131**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2021	12/31/2021	5	261	Sand and gravel excavation
2	Stripping	Grading	5/3/2021	7/9/2021	5	50	Topsoil and overburden removal

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Graders	1	1.00	150	0.41
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Scrapers	0	0.00	367	0.48
Mining	Excavators	1	8.00	472	0.38
Mining	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Stripping	Excavators	0	0.00	158	0.38
Stripping	Graders	0	0.00	187	0.41
Stripping	Rubber Tired Dozers	0	0.00	247	0.40
Stripping	Scrapers	4	8.00	630	0.48

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Stripping	Tractors/Loaders/Backhoes	1	8.00	355	0.37
Mining	Rubber Tired Dozers	1	1.00	305	0.40
Mining	Rubber Tired Dozers	1	3.00	580	0.40
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	5.00	300	0.38
Stripping	Rollers	1	8.00	402	0.38
Stripping	Off-Highway Trucks	1	5.00	300	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0923	0.0000	3.0923	1.6639	0.0000	1.6639			0.0000			0.0000
Off-Road	3.7836	36.7163	23.4458	0.0778		1.3482	1.3482		1.2404	1.2404		7,527.1714	7,527.1714	2.4344		7,588.0324
Total	**3.7836**	**36.7163**	**23.4458**	**0.0778**	**3.0923**	**1.3482**	**4.4405**	**1.6639**	**1.2404**	**2.9043**		**7,527.1714**	**7,527.1714**	**2.4344**		**7,588.0324**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0895	0.0538	0.8025	2.1800e-003	44.3586	1.1700e-003	44.3598	4.4613	1.0800e-003	4.4624		220.5625	220.5625	5.5100e-003	5.3400e-003	222.2916
Total	**0.0895**	**0.0538**	**0.8025**	**2.1800e-003**	**44.3586**	**1.1700e-003**	**44.3598**	**4.4613**	**1.0800e-003**	**4.4624**		**220.5625**	**220.5625**	**5.5100e-003**	**5.3400e-003**	**222.2916**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3915	0.0000	1.3915	0.7488	0.0000	0.7488			0.0000			0.0000
Off-Road	2.6917	35.6319	42.4993	0.0778		1.1360	1.1360		1.1083	1.1083	0.0000	7,527.1714	7,527.1714	2.4344		7,588.0324
Total	**2.6917**	**35.6319**	**42.4993**	**0.0778**	**1.3915**	**1.1360**	**2.5275**	**0.7488**	**1.1083**	**1.8570**	**0.0000**	**7,527.1714**	**7,527.1714**	**2.4344**		**7,588.0324**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0895	0.0538	0.8025	2.1800e-003	44.3586	1.1700e-003	44.3598	4.4613	1.0800e-003	4.4624		220.5625	220.5625	5.5100e-003	5.3400e-003	222.2916
Total	**0.0895**	**0.0538**	**0.8025**	**2.1800e-003**	**44.3586**	**1.1700e-003**	**44.3598**	**4.4613**	**1.0800e-003**	**4.4624**		**220.5625**	**220.5625**	**5.5100e-003**	**5.3400e-003**	**222.2916**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Stripping - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4242	0.0000	0.4242	0.0458	0.0000	0.0458			0.0000			0.0000
Off-Road	6.6348	75.1363	45.4078	0.1347		2.7528	2.7528		2.5326	2.5326		13,039.8764	13,039.8764	4.2174		13,145.3104
Total	**6.6348**	**75.1363**	**45.4078**	**0.1347**	**0.4242**	**2.7528**	**3.1770**	**0.0458**	**2.5326**	**2.5784**		**13,039.8764**	**13,039.8764**	**4.2174**		**13,145.3104**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0805	0.0484	0.7222	1.9600e-003	39.9228	1.0500e-003	39.9238	4.0152	9.7000e-004	4.0161		198.5063	198.5063	4.9600e-003	4.8100e-003	200.0624
Total	**0.0805**	**0.0484**	**0.7222**	**1.9600e-003**	**39.9228**	**1.0500e-003**	**39.9238**	**4.0152**	**9.7000e-004**	**4.0161**		**198.5063**	**198.5063**	**4.9600e-003**	**4.8100e-003**	**200.0624**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Stripping - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1909	0.0000	0.1909	0.0206	0.0000	0.0206			0.0000			0.0000
Off-Road	1.7842	9.5808	60.5908	0.1347		0.3131	0.3131		0.3102	0.3102	0.0000	13,039.8763	13,039.8763	4.2174		13,145.3103
Total	**1.7842**	**9.5808**	**60.5908**	**0.1347**	**0.1909**	**0.3131**	**0.5040**	**0.0206**	**0.3102**	**0.3309**	**0.0000**	**13,039.8763**	**13,039.8763**	**4.2174**		**13,145.3103**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0805	0.0484	0.7222	1.9600e-003	39.9228	1.0500e-003	39.9238	4.0152	9.7000e-004	4.0161		198.5063	198.5063	4.9600e-003	4.8100e-003	200.0624
Total	**0.0805**	**0.0484**	**0.7222**	**1.9600e-003**	**39.9228**	**1.0500e-003**	**39.9238**	**4.0152**	**9.7000e-004**	**4.0161**		**198.5063**	**198.5063**	**4.9600e-003**	**4.8100e-003**	**200.0624**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Unmitigated	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**		**0.1131**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**		**0.1131**

7.0 Water Detail

7.1 Mitigation Measures Water

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

CEMEX Cache Creek Baseline Stripping and Mining Emissions

Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Baseline equipment and utilization per CEMEX.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for full year of operation to determine maximum daily and annual emissions for CEQA analysis. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Water truck used to water exposed areas at least 2x daily.

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	NumDays	775.00	261.00
tblConstructionPhase	PhaseEndDate	11/10/2027	12/31/2021
tblConstructionPhase	PhaseStartDate	11/21/2024	1/1/2021
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	10.5775	111.9797	70.1487	0.2161	87.7979	4.1032	91.9011	10.1861	3.7750	13.9611	0.0000	20,940.9619	20,940.9619	6.6633	0.0117	21,111.0385
Maximum	**10.5775**	**111.9797**	**70.1487**	**0.2161**	**87.7979**	**4.1032**	**91.9011**	**10.1861**	**3.7750**	**13.9611**	**0.0000**	**20,940.9619**	**20,940.9619**	**6.6633**	**0.0117**	**21,111.0385**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.6349	45.3398	104.3851	0.2161	85.8638	1.4513	87.3151	9.2458	1.4206	10.6664	0.0000	20,940.9619	20,940.9619	6.6633	0.0117	21,111.0385
Maximum	**4.6349**	**45.3398**	**104.3851**	**0.2161**	**85.8638**	**1.4513**	**87.3151**	**9.2458**	**1.4206**	**10.6664**	**0.0000**	**20,940.9619**	**20,940.9619**	**6.6633**	**0.0117**	**21,111.0385**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	56.18	59.51	-48.81	0.00	2.20	64.63	4.99	9.23	62.37	23.60	0.00	0.00	0.00	0.00	0.00	0.00

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**	**0.0000**	**0.1131**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**	**0.0000**	**0.1131**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2021	12/31/2021	5	261	Sand and gravel excavation
2	Stripping	Grading	5/3/2021	7/9/2021	5	50	Topsoil and overburden removal

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Graders	1	1.00	150	0.41
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Scrapers	0	0.00	367	0.48
Mining	Excavators	1	8.00	472	0.38
Mining	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Stripping	Excavators	0	0.00	158	0.38
Stripping	Graders	0	0.00	187	0.41
Stripping	Rubber Tired Dozers	0	0.00	247	0.40
Stripping	Scrapers	4	8.00	630	0.48

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Stripping	Tractors/Loaders/Backhoes	1	8.00	355	0.37
Mining	Rubber Tired Dozers	1	1.00	305	0.40
Mining	Rubber Tired Dozers	1	3.00	580	0.40
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	5.00	300	0.38
Stripping	Rollers	1	8.00	402	0.38
Stripping	Off-Highway Trucks	1	5.00	300	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0923	0.0000	3.0923	1.6639	0.0000	1.6639			0.0000			0.0000
Off-Road	3.7836	36.7163	23.4458	0.0778		1.3482	1.3482		1.2404	1.2404		7,527.1714	7,527.1714	2.4344		7,588.0324
Total	**3.7836**	**36.7163**	**23.4458**	**0.0778**	**3.0923**	**1.3482**	**4.4405**	**1.6639**	**1.2404**	**2.9043**		**7,527.1714**	**7,527.1714**	**2.4344**		**7,588.0324**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0837	0.0669	0.6816	1.9400e-003	44.3586	1.1700e-003	44.3598	4.4613	1.0800e-003	4.4624		196.7969	196.7969	6.0500e-003	6.1700e-003	198.7873
Total	**0.0837**	**0.0669**	**0.6816**	**1.9400e-003**	**44.3586**	**1.1700e-003**	**44.3598**	**4.4613**	**1.0800e-003**	**4.4624**		**196.7969**	**196.7969**	**6.0500e-003**	**6.1700e-003**	**198.7873**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3915	0.0000	1.3915	0.7488	0.0000	0.7488			0.0000			0.0000
Off-Road	2.6917	35.6319	42.4993	0.0778		1.1360	1.1360		1.1083	1.1083	0.0000	7,527.1714	7,527.1714	2.4344		7,588.0324
Total	**2.6917**	**35.6319**	**42.4993**	**0.0778**	**1.3915**	**1.1360**	**2.5275**	**0.7488**	**1.1083**	**1.8570**	**0.0000**	**7,527.1714**	**7,527.1714**	**2.4344**		**7,588.0324**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0837	0.0669	0.6816	1.9400e-003	44.3586	1.1700e-003	44.3598	4.4613	1.0800e-003	4.4624		196.7969	196.7969	6.0500e-003	6.1700e-003	198.7873
Total	**0.0837**	**0.0669**	**0.6816**	**1.9400e-003**	**44.3586**	**1.1700e-003**	**44.3598**	**4.4613**	**1.0800e-003**	**4.4624**		**196.7969**	**196.7969**	**6.0500e-003**	**6.1700e-003**	**198.7873**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Stripping - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4242	0.0000	0.4242	0.0458	0.0000	0.0458			0.0000			0.0000
Off-Road	6.6348	75.1363	45.4078	0.1347		2.7528	2.7528		2.5326	2.5326		13,039.8764	13,039.8764	4.2174		13,145.3104
Total	**6.6348**	**75.1363**	**45.4078**	**0.1347**	**0.4242**	**2.7528**	**3.1770**	**0.0458**	**2.5326**	**2.5784**		**13,039.8764**	**13,039.8764**	**4.2174**		**13,145.3104**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0753	0.0602	0.6134	1.7500e-003	39.9228	1.0500e-003	39.9238	4.0152	9.7000e-004	4.0161		177.1172	177.1172	5.4500e-003	5.5500e-003	178.9085
Total	**0.0753**	**0.0602**	**0.6134**	**1.7500e-003**	**39.9228**	**1.0500e-003**	**39.9238**	**4.0152**	**9.7000e-004**	**4.0161**		**177.1172**	**177.1172**	**5.4500e-003**	**5.5500e-003**	**178.9085**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Stripping - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1909	0.0000	0.1909	0.0206	0.0000	0.0206			0.0000			0.0000
Off-Road	1.7842	9.5808	60.5908	0.1347		0.3131	0.3131		0.3102	0.3102	0.0000	13,039.8763	13,039.8763	4.2174		13,145.3103
Total	**1.7842**	**9.5808**	**60.5908**	**0.1347**	**0.1909**	**0.3131**	**0.5040**	**0.0206**	**0.3102**	**0.3309**	**0.0000**	**13,039.8763**	**13,039.8763**	**4.2174**		**13,145.3103**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0753	0.0602	0.6134	1.7500e-003	39.9228	1.0500e-003	39.9238	4.0152	9.7000e-004	4.0161		177.1172	177.1172	5.4500e-003	5.5500e-003	178.9085
Total	**0.0753**	**0.0602**	**0.6134**	**1.7500e-003**	**39.9228**	**1.0500e-003**	**39.9238**	**4.0152**	**9.7000e-004**	**4.0161**		**177.1172**	**177.1172**	**5.4500e-003**	**5.5500e-003**	**178.9085**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Unmitigated	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**		**0.1131**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**		**0.1131**

7.0 Water Detail

7.1 Mitigation Measures Water

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

CEMEX Cache Creek Baseline Stripping and Mining Emissions

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Baseline equipment and utilization per CEMEX.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for full year of operation to determine maximum daily and annual emissions for CEQA analysis. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Water truck used to water exposed areas at least 2x daily.

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	NumDays	775.00	261.00
tblConstructionPhase	PhaseEndDate	11/10/2027	12/31/2021
tblConstructionPhase	PhaseStartDate	11/21/2024	1/1/2021
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.6717	6.6790	4.2986	0.0138	6.2006	0.2449	6.4456	0.8009	0.2254	1.0262	0.0000	1,214.8759	1,214.8759	0.3846	7.9000e-004	1,224.7274
Maximum	**0.6717**	**6.6790**	**4.2986**	**0.0138**	**6.2006**	**0.2449**	**6.4456**	**0.8009**	**0.2254**	**1.0262**	**0.0000**	**1,214.8759**	**1,214.8759**	**0.3846**	**7.9000e-004**	**1,224.7274**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4079	4.8986	7.1647	0.0138	5.9729	0.1563	6.1291	0.6808	0.1526	0.8334	0.0000	1,214.8745	1,214.8745	0.3846	7.9000e-004	1,224.7260
Maximum	**0.4079**	**4.8986**	**7.1647**	**0.0138**	**5.9729**	**0.1563**	**6.1291**	**0.6808**	**0.1526**	**0.8334**	**0.0000**	**1,214.8745**	**1,214.8745**	**0.3846**	**7.9000e-004**	**1,224.7260**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**39.27**	**26.66**	**-66.67**	**0.00**	**3.67**	**36.21**	**4.91**	**14.99**	**32.31**	**18.79**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.1000e-004**	**4.0000e-005**	**4.4600e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2300e-003**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.1000e-004**	**4.0000e-005**	**4.4600e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2300e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2021	12/31/2021	5	261	Sand and gravel excavation
2	Stripping	Grading	5/3/2021	7/9/2021	5	50	Topsoil and overburden removal

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Graders	1	1.00	150	0.41
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Scrapers	0	0.00	367	0.48
Mining	Excavators	1	8.00	472	0.38
Mining	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Stripping	Excavators	0	0.00	158	0.38
Stripping	Graders	0	0.00	187	0.41
Stripping	Rubber Tired Dozers	0	0.00	247	0.40
Stripping	Scrapers	4	8.00	630	0.48
Stripping	Tractors/Loaders/Backhoes	1	8.00	355	0.37
Mining	Rubber Tired Dozers	1	1.00	305	0.40
Mining	Rubber Tired Dozers	1	3.00	580	0.40
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	5.00	300	0.38
Stripping	Rollers	1	8.00	402	0.38
Stripping	Off-Highway Trucks	1	5.00	300	0.38

Trips and VMT

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Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Mining - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4036	0.0000	0.4036	0.2171	0.0000	0.2171	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4938	4.7915	3.0597	0.0102		0.1759	0.1759		0.1619	0.1619	0.0000	891.1238	891.1238	0.2882	0.0000	898.3290
Total	**0.4938**	**4.7915**	**3.0597**	**0.0102**	**0.4036**	**0.1759**	**0.5795**	**0.2171**	**0.1619**	**0.3790**	**0.0000**	**891.1238**	**891.1238**	**0.2882**	**0.0000**	**898.3290**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.7500e-003	0.0885	2.6000e-004	4.9355	1.5000e-004	4.9357	0.4969	1.4000e-004	0.4971	0.0000	23.8932	23.8932	6.7000e-004	6.7000e-004	24.1108
Total	**0.0103**	**7.7500e-003**	**0.0885**	**2.6000e-004**	**4.9355**	**1.5000e-004**	**4.9357**	**0.4969**	**1.4000e-004**	**0.4971**	**0.0000**	**23.8932**	**23.8932**	**6.7000e-004**	**6.7000e-004**	**24.1108**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1816	0.0000	0.1816	0.0977	0.0000	0.0977	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3513	4.6500	5.5462	0.0102		0.1482	0.1482		0.1446	0.1446	0.0000	891.1228	891.1228	0.2882	0.0000	898.3279
Total	**0.3513**	**4.6500**	**5.5462**	**0.0102**	**0.1816**	**0.1482**	**0.3298**	**0.0977**	**0.1446**	**0.2423**	**0.0000**	**891.1228**	**891.1228**	**0.2882**	**0.0000**	**898.3279**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.7500e-003	0.0885	2.6000e-004	4.9355	1.5000e-004	4.9357	0.4969	1.4000e-004	0.4971	0.0000	23.8932	23.8932	6.7000e-004	6.7000e-004	24.1108
Total	**0.0103**	**7.7500e-003**	**0.0885**	**2.6000e-004**	**4.9355**	**1.5000e-004**	**4.9357**	**0.4969**	**1.4000e-004**	**0.4971**	**0.0000**	**23.8932**	**23.8932**	**6.7000e-004**	**6.7000e-004**	**24.1108**

3.3 Stripping - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0106	0.0000	0.0106	1.1500e-003	0.0000	1.1500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1659	1.8784	1.1352	3.3700e-003		0.0688	0.0688		0.0633	0.0633	0.0000	295.7394	295.7394	0.0957	0.0000	298.1306
Total	**0.1659**	**1.8784**	**1.1352**	**3.3700e-003**	**0.0106**	**0.0688**	**0.0794**	**1.1500e-003**	**0.0633**	**0.0645**	**0.0000**	**295.7394**	**295.7394**	**0.0957**	**0.0000**	**298.1306**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Stripping - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.3400e-003	0.0153	4.0000e-005	0.8510	3.0000e-005	0.8510	0.0857	2.0000e-005	0.0857	0.0000	4.1195	4.1195	1.1000e-004	1.2000e-004	4.1570
Total	**1.7700e-003**	**1.3400e-003**	**0.0153**	**4.0000e-005**	**0.8510**	**3.0000e-005**	**0.8510**	**0.0857**	**2.0000e-005**	**0.0857**	**0.0000**	**4.1195**	**4.1195**	**1.1000e-004**	**1.2000e-004**	**4.1570**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.7700e-003	0.0000	4.7700e-003	5.2000e-004	0.0000	5.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0446	0.2395	1.5148	3.3700e-003		7.8300e-003	7.8300e-003		7.7600e-003	7.7600e-003	0.0000	295.7391	295.7391	0.0957	0.0000	298.1303
Total	**0.0446**	**0.2395**	**1.5148**	**3.3700e-003**	**4.7700e-003**	**7.8300e-003**	**0.0126**	**5.2000e-004**	**7.7600e-003**	**8.2800e-003**	**0.0000**	**295.7391**	**295.7391**	**0.0957**	**0.0000**	**298.1303**

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3.3 Stripping - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.3400e-003	0.0153	4.0000e-005	0.8510	3.0000e-005	0.8510	0.0857	2.0000e-005	0.0857	0.0000	4.1195	4.1195	1.1000e-004	1.2000e-004	4.1570
Total	**1.7700e-003**	**1.3400e-003**	**0.0153**	**4.0000e-005**	**0.8510**	**3.0000e-005**	**0.8510**	**0.0857**	**2.0000e-005**	**0.0857**	**0.0000**	**4.1195**	**4.1195**	**1.1000e-004**	**1.2000e-004**	**4.1570**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003
Unmitigated	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003
Total	**4.1000e-004**	**4.0000e-005**	**4.4600e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2300e-003**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003
Total	**4.1000e-004**	**4.0000e-005**	**4.4600e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2300e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

CEMEX Cache Creek Baseline Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B-3:
Pit-to-Plant Material Transport Emissions

CEMEX Construction Materials Pacific, LLC.
Cache Creek Mining Permit and Reclamation Plan Amendment Project
Air and Greenhouse Gas Emissions Study

APPENDIX B: BASELINE MODELS AND INPUTS
B-3. Pit-to-Plant Material Transport Emissions

1. MINING OPERATIONS - PM EMISSIONS FROM CONVEYOR TRANSPORT FROM PIT-TO-PLANT

Description:

Fugitive dust from conveyor transport of raw materials from pit-to-plant. The controlled emission factor for PM is taken from AP-42, Table 11.19.2-2. The controlled emission factor is appropriate based on the typical moisture content of the material. From the dredge, mined materials are transferred to the aggregate processing plant via 13 conveyor transfers, comprising 6 floating conveyors (i.e., FC-1 thru FC-6), 1 floating water to land conveyor transfer, 1 jump conveyor, and 6 overland conveyor transfers (i.e., PC-1 thru PC-6).

Production Assumptions:

Annual production:	814,418	tons mined (2021)	Qty. of Conveyor Transfers:	14	from mining area to plant (existing)
% of Material Transport by Conveyor:	80%				
% of Material Transport by Truck to Conveyor:	20%		Production Days per Year:	260	days (52 weeks per year)
Tons Transported by Conveyor:	651,534	tons	Conveyed Tons per Day:	2,506	tons (average)
Tons Transported by Truck and Conveyor:	162,884	tons	Conveyed Tons per Hour:	313	tons (based on 8 hours of operation)

Conveyor PM Emissions Calculations:

Pollutant	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
PM10	4.60E-05	0.20	1.61	419.59	0.21
PM2.5	1.30E-05	0.06	0.46	118.58	0.06

APPENDIX B: BASELINE MODELS AND INPUTS

B-3. Pit-to-Plant Material Transport Emissions

2. MINING OPERATIONS - PM EMISSIONS FROM TRUCK TRANSPORT TO CONVEYOR

Description:

Fugitive dust from truck traffic. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% is used for water suppression.

Estimating Assumptions:

Tons per day:	626	tons per day (average)
Tons per year:	162,884	tons
Tons per truck:	40	tons
Average distance traveled onsite:	5,000	feet (round-trip to feed hopper)
Active days per year:	260	days (52 weeks per year)
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	98.0	tons (based on avg of 78 tons empty, 118 tons loaded)
PM control efficiency:	70%	percent

Emission Factor:

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

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	3.16	0.32

VMT Estimates:

	Daily	Annual
Haul Trucks	15	3,856

PM Emissions Estimate from Haul Truck Transport:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	46.82	12,174.4	6.1	4.68	1,217.44	0.61
Abated	14.05	3,652.31	1.83	1.40	365.23	0.18

APPENDIX B: BASELINE MODELS AND INPUTS

B-3. Pit-to-Plant Material Transport Emissions

3. MINING OPERATIONS - GREENHOUSE GAS EMISSIONS FROM CONVEYOR ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use of the existing conveyor between mining area and plant. Electricity consumption estimate per ton per CEMEX based on historical energy use. Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

Electricity Use:

Average kWh per ton:	0.68	kWh per ton
Average annual kWh:	443,043	kWh per year

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	MWh/year	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2e
443,043	443	2.68	0.033	0.004	0.54	0.007	0.001	1.00

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*

GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Notes:

Emission factor for CO2 from 2021 The Climate Registry, Table 3.8, for Pacific Gas & Electric (2019), as corroborated by PG&E 2021 climate change sustainability report.

Emission factors for CH_4 and N_20 from 2021 The Climate Registry, Tables 3.1 (for eGRID subregion for California), for Pacific Gas & Electric.

kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons

CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Appendix B-4:
Aggregate Plant Emissions

APPENDIX B: BASELINE MODELS AND INPUTS
B-4. Aggregate Plant Emissions

1. DREDGE AND AGGREGATE PLANTS - PM EMISSIONS FROM PROCESSING AND WIND EROSION

Description:

The dredge's on-vessel processing equipment list (Plant 1) per CEMEX. The aggregate plant equipment list (Plant 2) is also per CEMEX AggFlow and generally matches the YSAQMD Permit to Operate P-26-92(a3), valid thru 7/22/2022. All conveyed material passes thru scalping screen S-1 to plant surge pile at 600 tph. Plant surge tunnel feeds primary screen S-2 at 700 tph. From screen S-2, plant thruput distributed approximately 315 tph (45%) to concrete sands and wash loss to silt ponds, 280 tph (40%) to secondary screen S-4 to coarse natural aggregates, and 105 tph (15%) via crusher CR-1 and secondary screen S-3 to crushed products. Emission factors from AP-42, Table 11.19.2-2.

Production Assumptions:

Annual production:	814,418	tons	Stockpile Area (acres):	43 acres (estimated per aerial photographs)
% of Annual Production: Plant 1 (Dredge Plant):	80%			
% of Annual Production: Plant 2 (Aggregate Plant):	100%			
Annual Production: Plant 1 (Dredge Plant):	651,534	tons		
Annual Production: Plant 2 (Aggregate Plant):	814,418	tons		

PM10 EMISSIONS																
				Process Rate			Uncontrolled PM10					Controlled PM10				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Dredge On-Board Screening Plant																
Dewatering Screens - SP 1	Screening	2	50%	300	3,000	325,767	0.0087	5.22	52.20	5,668.35	2.83	7.40E-04	0.44	4.44	482.14	0.24
Dewatering Screens - SP 2	Screening	2	50%	300	3,000	325,767	0.0087	5.22	52.20	5,668.35	2.83	7.40E-04	0.44	4.44	482.14	0.24
Plant 2: Aggregate Plant																
Screen S-1 - Scalping Screen	Screening	1	100%	600	6,000	814,418	0.0087	5.22	52.20	7,085.44	3.54	7.40E-04	0.44	4.44	602.67	0.30
Screen S-2 - Primary Screen	Screening	1	100%	700	5,600	814,418	0.0087	6.09	48.72	7,085.44	3.54	7.40E-04	0.52	4.14	602.67	0.30
Crusher CR-1 - Cone Crusher	Primary crushing[1]	1	15%	105	840	122,163	0.0024	0.25	2.02	293.19	0.15	0.00054	0.0567	0.4536	65.97	0.03
Screen S-3 - Secondary Screen	Screening	1	15%	105	840	122,163	0.0087	0.91	7.31	1,062.82	0.53	7.40E-04	0.08	0.62	90.40	0.05
Screen S-4 - Secondary Screen	Screening	1	40%	280	2,240	325,767	0.0087	2.44	19.49	2,834.17	1.42	7.40E-04	0.21	1.66	241.07	0.12
Conveyor Surge to S-2	Conveyor transfers	1	100%	700	5,600	814,418	0.0011	0.77	6.16	895.86	0.45	4.60E-05	0.03	0.26	37.46	0.02
Process / Product Conveyors Set 1	Conveyor transfers	3	40%	280	2,240	325,767	0.0011	0.92	7.39	1,075.03	0.54	4.60E-05	0.04	0.31	44.96	0.02
Conveyor S-2 to S-4	Conveyor transfers	1	45%	315	2,520	366,488	0.0011	0.35	2.77	403.14	0.20	4.60E-05	0.01	0.12	16.86	0.01
Process / Product Conveyors Set 2	Conveyor transfers	4	45%	79	632	366,488	0.0011	0.35	2.78	1,612.55	0.81	4.60E-05	0.01	0.12	67.43	0.03
Process / Product Conveyors Set 3	Conveyor transfers	15	15%	105	840	122,163	0.0011	1.73	13.86	2,015.69	1.01	4.60E-05	0.07	0.58	84.29	0.04
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	3.05	73.10	26,681.50	13.34	5.10E-01	0.91	21.93	8,004.45	4.00
						TOTALS:		**32.52**	**340.20**	**62,381.51**	**31.19**		**3.28**	**43.51**	**10,822.50**	**5.41**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but emission factors for PM-10 for tertiary crushers can be used as an upper limit.
2. Tons per hour per unit of equipment.
3. Tons per day per unit of equipment. Dredge operates 10 hours per day. Aggregate plant operates 8 hours per day (starting at Screen S-2).
4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.
5. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX B: BASELINE MODELS AND INPUTS

B-4. Aggregate Plant Emissions

PM2.5 EMISSIONS																
				Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Dredge On-Board Screening Plant																
Dewatering Screens - Set 1	Screening	2	50%	300	3,000	325,767	0.0087	5.22	52.20	5,668.35	2.83	0.00005	0.03	0.30	32.58	0.02
Dewatering Screens - Set 2	Screening	2	50%	300	3,000	325,767	0.0087	5.22	52.20	5,668.35	2.83	0.00005	0.03	0.30	32.58	0.02
Plant 2: Aggregate Plant																
Screen S-1 - Scalping Screen	Screening	1	100%	600	6,000	814,418	0.0087	5.22	52.20	7,085.44	3.54	0.00005	0.03	0.30	40.72	0.02
Screen S-2 - Primary Screen	Screening	1	100%	700	5,600	814,418	0.0087	6.09	48.72	7,085.44	3.54	0.00005	0.04	0.28	40.72	0.02
Crusher CR-1 - Cone Crusher	Primary crushing[1]	1	15%	105	840	122,163	0.0024	0.25	2.02	293.19	0.15	0.0001	0.01	0.08	12.22	0.01
Screen S-3 - Secondary Screen	Screening	1	15%	105	840	122,163	0.0087	0.91	7.31	1,062.82	0.53	0.00005	0.01	0.04	6.11	0.00
Screen S-4 - Secondary Screen	Screening	1	40%	280	2,240	325,767	0.0087	2.44	19.49	2,834.17	1.42	0.00005	0.01	0.11	16.29	0.01
Conveyor Surge to S-2	Conveyor transfers	1	100%	700	5,600	814,418	0.0011	0.77	6.16	895.86	0.45	1.30E-05	0.01	0.07	10.59	0.01
Process / Product Conveyors Set 1	Conveyor transfers	3	40%	280	2,240	325,767	0.0011	0.92	7.39	1,075.03	0.54	1.30E-05	0.01	0.09	12.70	0.01
Conveyor S-2 to S-4	Conveyor transfers	1	45%	315	2,520	366,488	0.0011	0.35	2.77	403.14	0.20	1.30E-05	0.00	0.03	4.76	0.00
Process / Product Conveyors Set 2	Conveyor transfers	4	45%	79	632	366,488	0.0011	0.35	2.78	1,612.55	0.81	1.30E-05	0.00	0.03	19.06	0.01
Process / Product Conveyors Set 3	Conveyor transfers	15	15%	105	840	122,163	0.0011	1.73	13.86	2,015.69	1.01	1.30E-05	0.02	0.16	23.82	0.01
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	3.05	73.10	26,681.50	13.34	5.10E-01	0.91	21.93	8004.45	4.00
						TOTALS:		**32.52**	**340.20**	**62,381.51**	**31.19**		**1.12**	**23.74**	**8,256.59**	**4.13**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but PM10 emission factors for tertiary crushers can be used. For PM-2.5, where AP-42 indicates No Data (ND), the PM-10 emission factor is used.

2. Tons per hour per unit of equipment.

3. Tons per day per unit of equipment. Dredge operates 10 hours per day. Aggregate plant operates 8 hours per day (starting at Screen S-2).

4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.

5a. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

5b. For wind erosion, AP-42 does not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, the PM10 factor is applied.

APPENDIX B: BASELINE MODELS AND INPUTS
B-4. Aggregate Plant Emissions

2. AGGREGATE PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% will be used for water suppression.

Estimating Assumptions:

Tons per day:	2,998	tons per day (average)
Tons per year:	779,432	tons sold
Tons per truck:	25	tons
Average distance traveled onsite:	4,000	feet
Active days per year:	260	days (52 weeks per year)
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	27.5	tons (based on avg of 15 ton empty, 40 ton loaded)
PM control efficiency:	70%	percent

Emission Factor:

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

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	1.78	0.18

VMT Estimates:

	Daily	Annual
Aggregate Haul Trucks	91	23,619

PM Emissions Estimate from On-Site Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	161.89	42,092.50	21.05	16.19	4,209.25	2.10
Abated	48.57	12,627.75	6.31	4.86	1,262.77	0.63

APPENDIX B: BASELINE MODELS AND INPUTS
B-4. Aggregate Plant Emissions

3. DREDGE AND AGGREGATE PLANTS - GREENHOUSE GAS EMISSIONS FROM ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use at the dredge and aggregate plant. Electricity consumption per CEMEX based on PG&E records for 2021. Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

Electricity Use:

Average annual kWh: 3,006,196 kWh per year (2021)

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	**MWh/year**	**CO_2**	**CH_4**	**N_2O**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
3,006,196	3,006	2.68	0.033	0.004	3.65	0.04	0.01	6.81

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Notes:

Emission factor for CO2 from 2021 The Climate Registry, Table 3.8, for Pacific Gas & Electric (2019), as corroborated by PG&E 2021 climate change sustainability report.
Emission factors for CH_4 and N_20 from 2021 The Climate Registry, Tables 3.1 (for eGRID subregion for California), for Pacific Gas & Electric.
kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Appendix B-5:
Ready-Mix Concrete Plant Emissions

APPENDIX B: BASELINE MODELS AND INPUTS
B-5. Ready-Mix Concrete Plant Emissions

1. RMC PLANT - PM EMISSIONS FROM CONCRETE BATCHING

Description:

PM emissions from ready-mix concrete plant. The ready-mix plant assumptions are per CEMEX. Plant operates approximately 38 days per year. Maximum hourly thruput of approximately 150 CY/hr; however, plant rarely operates at max production capacity. Emission factors and material composition from AP-42, Table 11.12-2 and BAAQMD Permit Handbook (2021).

Production Assumptions:

Cubic yards per hour:	30	cubic yards (avg. based on 8-hour day)
Cubic yards per day:	240	cubic yards (based on 38 days per year)
Cubic yards per year:	9,101	cubic yards (baseline 10-year avg.)
Tons per hour:	60	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per day:	482	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per year:	18,311	tons (at 4,024 lbs per cubic yard per AP-42)
Stockpile Area (acres):	-	acres (no stockpiling independent of agg plant)

Material Composition:

Coarse Aggregate Percentage:	1,865	lbs per cy =	46.35%	percent
Sand Percentage:	1,428	lbs per cy =	35.49%	percent
Cement Percentage:	491	lbs per cy =	12.20%	percent
Cement Supplement Percentage:	73	lbs per cy =	1.81%	percent
Water Percentage:	167	lbs based on 20 gal. =	4.15%	percent
Total:	**4,024**		100.00%	percent

Source: AP-42, Table 11.12-2, end note "a".

PM10 EMISSIONS

	Process Rate			Uncontrolled PM10					Controlled PM10				
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	28	223	8,487	0.0033	0.09	0.74	28.01	0.01	0.00099	0.03	0.22	8.40	0.00
Sand Transfer	21	171	6,498	0.00099	0.02	0.17	6.43	0.00	0.000297	0.01	0.05	1.93	0.00
Cement Unloading	7	59	2,234	0.47	3.45	27.63	1,050.12	0.53	0.00034	0.00	0.02	0.76	0.00
Cement Supplement Unloading	1	9	332	1.1	1.20	9.62	365.41	0.18	0.0049	0.01	0.04	1.63	0.00
Weigh Hopper Loading	60	482	18,311	0.0028	0.17	1.35	51.27	0.03	0.00084	0.05	0.40	15.38	0.01
Mixer Loading (Truck Mix)	60	482	18,311	0.31	18.67	149.38	5,676.48	2.84	0.0263	1.58	12.67	481.58	0.24
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.7	-	-	-	-	0.51	-	-	-	-
			TOTALS:		**23.61**	**188.89**	**7,177.71**	**3.59**		**1.68**	**13.41**	**509.69**	**0.25**

Notes:

1. For PM-10 controlled, watering is used for dust control therefore a 70% abatement efficiency is applied (BAAQMD Permit Handbook, 2021, at p. 197).

2. Wind erosion factors from AP-42, Section 13.2.5, Industrial Wind Erosion. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX B: BASELINE MODELS AND INPUTS

B-5. Ready-Mix Concrete Plant Emissions

PM2.5 EMISSIONS													
	Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	28	223	8,487	0.0005	0.01	0.11	4.24	0.00	0.0005	0.01	0.11	4.24	0.00
Sand Transfer	21	171	6,498	0.00015	0.00	0.03	0.97	0.00	0.00015	0.00	0.03	0.97	0.00
Cement Unloading	7	59	2,234	0.07	0.51	4.12	156.40	0.08	0.00005	0.00	0.00	0.11	0.00
Cement Supplement Unloading	1	9	332	0.17	0.19	1.49	56.47	0.03	0.0007	0.00	0.01	0.23	0.00
Weigh Hopper Loading	60	482	18,311	0.0004	0.02	0.19	7.32	0.00	0.0004	0.02	0.19	7.32	0.00
Mixer Loading (Truck Mix)	60	482	18,311	0.047	2.83	22.65	860.63	0.43	0.0039	0.23	1.88	71.41	0.04
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.70	-	-	-	-	0.51	-	-	-	-
			TOTALS:		**3.57**	**28.58**	**1,086.04**	**0.54**		**0.28**	**2.22**	**84.30**	**0.04**

Notes:

1. For PM-2.5, where BAAQMD Permit Handbook (derived from AP-42) indicates No Data (ND) the corresponding uncontrolled PM-2.5 emission factor is used.

2a. Wind erosion factors from AP-42, Section 13.2.5, Industrial Wind Erosion. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

2b. For wind erosion, AP-42 and BAAQMD do not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, BAAQMD's PM10 factor is applied.

3. Emission factors obtained by referencing speciation profile in PM3431 which states PM2.5 = 15% of PM10 (BAAQMD Permit Handbook, 2021, at p. 197).

APPENDIX B: BASELINE MODELS AND INPUTS
B-5. Ready-Mix Concrete Plant Emissions

2. RMC PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic. The equation for the PM10 emission factor for fugitive dust from vehicle travel on a dry paved road is equation 1 from AP-42, Chapter 13.2.1.3. A PM10 control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport). Vehicle traffic conservatively assumed to consist of heavy trucks for caclulating emissions factor.

Estimating Assumptions:

Tons per day:	482	tons
Tons per year:	18,311	tons
Tons per truck:	18.1	tons (at 9 cubic yards per truck and 4,024 lbs per cubic yard per AP-42)
Average distance traveled onsite:	1,500	feet
Active days per year:	38	days per CEMEX
Particle Size Multiplier - PM10 (k):	0.0022	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.00054	lb/VMT (based on the average PM2.5:PM10 ratio of test runs in AP-42 Reference 30)
Road Surface Silt Loading (sL):	12	g/m^2 (silt loading for concrete batching)
Average Weight of Vehicles (W):	24.0	tons (conservatively based on avg. of 15 ton empty, 33 ton loaded)
PM_{10} control efficiency:	70%	percent

Emission Factor:

E=k(sL)^0.91x(W)^1.02

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	0.54	0.13

VMT Estimates:

	Daily	Annual
RMC Mixer (Haul) Trucks	8	287

Emissions Estimate from Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	4.08	155.09	0.08	1.00	38.07	0.02
Abated	1.22	46.53	0.02	0.30	11.42	0.01

APPENDIX B: BASELINE MODELS AND INPUTS
B-5. Ready-Mix Concrete Plant Emissions

3. RMC PLANT - GREENHOUSE GAS EMISSIONS FROM ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use at CEMEX's ready mix concrete plant. Electricity use for the existing plant provided by CEMEX (2012-2021). Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	MWh/year	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2e
93,843	94	2.68	0.033	0.004	0.11	0.00	0.00	0.21

Notes:

Emission factors from CalEEMod User Guide, Appendix D, Table 1.2, Electrical Utility Emissions Factors of Greenhous Gases, for Pacific Gas & Electric.
kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX B: BASELINE MODELS AND INPUTS
B-5. Ready-Mix Concrete Plant Emissions

4. RMC PLANT - EMISSIONS FROM OFF-ROAD HEAVY EQUIPMENT

Description:

Criteria and GHG pollutant emissions from heavy equipment operation, including aggregate feed and feed bin cleanup. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4.

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Front-end loader	1	Cat 988G	2001	475	0.37	4
Skid-steer loader (bobcat)	1	Cat 262D	2001	72	0.37	2

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Front-end loader	0.96	8.77	0.38	0.38	4.80	0.05	568.30	0.09
Skid-steer loader (bobcat)	1.58	9.03	0.78	0.78	4.16	0.06	568.30	0.14
TOTALS:								

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298
CO2e =	*1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX B: BASELINE MODELS AND INPUTS

B-5. Ready-Mix Concrete Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Front-end loader	1.48	13.56	0.59	0.59	7.42	0.08	878.93	0.14
Skid-steer loader (bobcat)	0.19	1.06	0.09	0.09	0.49	0.01	66.61	0.02
TOTALS:	**1.67**	**14.62**	**0.68**	**0.68**	**7.91**	**0.08**	**945.55**	**0.16**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Front-end loader	0.03	0.26	0.01	0.01	0.14	0.00	15.15	0.00	15.23
Skid-steer loader (bobcat)	0.00	0.02	0.00	0.00	0.01	0.00	1.15	0.00	1.16
TOTALS:	**0.03**	**0.28**	**0.01**	**0.01**	**0.15**	**0.00**	**16.29**	**0.00**	**16.39**

APPENDIX B: BASELINE MODELS AND INPUTS
B-5. Ready-Mix Concrete Plant Emissions

5. RMC PLANT - VEHICLE IDLING

Description:

On-road vehicle emissions associated with vehicle idling, assuming idling times of up to 5 minutes per vehicle (truck). Emission factors from EMFAC 2021. Production assumptions from CEMEX.

EMFAC2021 (v1.0.2) Emission Rates (Yolo County):

Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/vehicle/day for idling emission rates

	Region	Vehicle Category	Model Year	Speed	Fuel	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
	Yolo	T7 Tractor	Aggregated	Aggregated	DSL	3.393	45.099	46.093	0.082	8717.290	0.157	0.023	0.022	1.373

Notes:

LDA/LDT1 average represents the weighted average factor assuming 75% LDA and 25% LDT1 for passenger vehicle travel.
LDA = Passenger cars
LDT1 = Light-Duty Trucks (GVWR <6000 lbs. and ETW <= 3750 lbs)
MDV = Medium-Duty Trucks (GVWR 6000-8500 lbs)
T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck

Production Assumptions:

Tons per truck - haul trucks:	25	tons
Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Daily Max Production - RMC Plant:	482	tons
Annual Operating Days:	38	days

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907
5-min per 8-hr day	0.010

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX B: BASELINE MODELS AND INPUTS

B-5. Ready-Mix Concrete Plant Emissions

Annual Emissions Calculation:

On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	Greenhouse Gases CO2 (MT/yr)	CH4 (MT/yr)	N_20 (MT/yr)	C02e (MT/yr)
Haul trucks (agg import) - @0%	T7 Tractor	0	-	-	-	-	-	-	-	-	-
Haul trucks (cement / fly ash) - @14%	T7 Tractor	3	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Mixer trucks (finish product)	T7 Tractor	27	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.10
		TOTALS:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.10**	**0.00**	**0.00**	**0.11**

Daily Emissions Calculation:

On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (lb/day)	NOX (lb/day)	CO (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Haul trucks (agg import) - @0%	T7 Tractor	0	-	-	-	-	-
Haul trucks (cement / fly ash) - @14%	T7 Tractor	3	0.00	0.00	0.00	0.00	0.00
Mixer trucks (finish product)	T7 Tractor	27	0.00	0.03	0.03	0.00	0.00
		TOTALS:	**0.00**	**0.03**	**0.03**	**0.00**	**0.00**

Appendix B-6:
Recycle Plant Emissions

APPENDIX B: BASELINE MODELS AND INPUTS
B-6. Recycle Plant Emissions

1. RECYCLE PLANT - PM EMISSIONS FROM PROCESSING AND WIND EROSION

Description:
The recycle plant equipment list is based on a typical 375 ton per hour portable plant capacity. Emission factors from AP-42, Table 11.19.2-2.

Production Assumptions:

Annual production:	30,003	tons	Stockpile Area (acres):	5	acres
% of Annual Production: Plant 1 (Recycle Plant):	100%		Annual production days:	10	days at 3,000 tons per day
Annual Production: Plant 1 (Recycle Plant):	30,003	tons			

PM10 EMISSIONS																
				Process Rate			Uncontrolled PM10					Controlled PM10				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Recycle Plant																
Jaw Crusher	Primary crushing[1]	1	25%	94	750	7,501	0.0024	0.23	1.80	18.00	0.01	0.00054	0.05076	0.405	4.05	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	0.000046	0.02	0.14	1.38	0.00
Primary Screen	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	7.40E-04	0.28	2.22	22.20	0.01
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	4.60E-05	0.02	0.14	1.38	0.00
Cone Crusher	Secondary crushing[1]	1	80%	300	2,400	24,002	0.0024	0.72	5.76	57.60	0.03	0.00054	0.16	1.30	12.96	0.01
Process Conveyors	Conveyor transfers	3	100%	375	3,000	30,003	0.0011	1.24	9.90	99.01	0.05	4.60E-05	0.05	0.41	4.14	0.00
Process / Product Conveyors	Conveyor transfers	4	50%	190	1,500	15,002	0.0011	0.84	6.60	66.01	0.03	4.60E-05	0.03	0.28	2.76	0.00
Feeder / Grizzly	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	7.40E-04	0.28	2.22	22.20	0.01
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	0.35	8.50	3,102.50	1.55	5.10E-01	0.11	2.55	930.75	0.47
						TOTALS:		**10.72**	**91.36**	**3,931.18**	**1.97**		**1.00**	**9.66**	**1,001.83**	**0.50**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but emission factors for PM-10 for tertiary crushers can be used as an upper limit.

2. Tons per hour per unit of equipment.

3. Tons per day per unit of equipment.

4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.

5. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX B: BASELINE MODELS AND INPUTS

B-6. Recycle Plant Emissions

PM2.5 EMISSIONS																
				Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Recycle Plant																
Jaw Crusher	Primary crushing[1]	1	25%	94	750	7,501	0.0024	0.23	1.80	18.00	0.01	0.0001	0.01	0.08	0.75	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	1.3E-05	0.00	0.04	0.39	0.00
Primary Screens	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	0.00005	0.02	0.15	1.50	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	1.30E-05	0.00	0.04	0.39	0.00
Cone Crusher	Secondary crushing[1]	1	80%	300	2,400	24,002	0.0024	0.72	5.76	57.60	0.03	0.0001	0.03	0.24	2.40	0.00
Process Conveyors	Conveyor transfers	3	100%	375	3,000	30,003	0.0011	1.24	9.90	99.01	0.05	1.30E-05	0.01	0.12	1.17	0.00
Process / Product Conveyors	Conveyor transfers	4	50%	190	1,500	15,002	0.0011	0.84	6.60	66.01	0.03	1.30E-05	0.01	0.08	0.78	0.00
Feeder / Grizzly	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	0.00005	0.02	0.15	1.50	0.00
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	0.35	8.50	3,102.50	1.55	5.10E-01	0.11	2.55	930.75	0.47
						TOTALS:		**10.72**	**91.36**	**3,931.18**	**1.97**		**0.22**	**3.44**	**939.63**	**0.47**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but PM10 emission factors for tertiary crushers can be used. For PM-2.5, where AP-42 indicates No Data (ND), the PM-10 emission factor is used.

2. Tons per hour per unit of equipment.

3. Tons per day per unit of equipment.

4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.

5a. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

5b. For wind erosion, AP-42 does not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, the PM10 factor is applied.

APPENDIX B: BASELINE MODELS AND INPUTS
B-6. Recycle Plant Emissions

2. RECYLE PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic to support recycle operations. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport).

Estimating Assumptions:

Tons per day:	3,000	tons per day (average)
Tons per year:	30,003	tons
Tons per truck:	25	tons
Average distance traveled onsite:	4,000	feet
Active days per year:	10	days
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	27.5	tons (based on avg of 15 ton empty, 40 ton loaded)
PM control efficiency:	70%	percent

Emission Factor:

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

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	1.78	0.18

VMT Estimates:

	Daily	Annual
Aggregate Haul Trucks	91	909

PM Emissions Estimate from On-Site Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	162.01	1,620.28	0.81	16.20	162.03	0.08
Abated	48.60	486.09	0.24	4.86	48.61	0.02

APPENDIX B: BASELINE MODELS AND INPUTS
B-6. Recycle Plant Emissions

3. RECYCLE PLANT - EMISSIONS FROM PORTABLE PROCESSING PLANT ENGINES

Description:

Criteria pollutant and GHG emissions from track-mounted portable processing plant engines. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4. Engine model year 2016 used as average for 10-year baseline period (2012-2021).

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Feeder / Screen	1	Metso LT ST4.8 (75 kW)	2016	100	0.78	8
Crusher	1	Metso LT220D (310 kW)	2016	540	0.78	8
Stacker Conveyor	1	Metso LT CT3.2 (36 kW)	2016	51	0.78	8

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Feeder / Screen	0.72	4.63	0.38	0.38	3.82	0.01	568.30	0.07
Crusher	0.34	3.02	0.10	0.10	1.14	0.01	568.30	0.03
Stacker Conveyor	0.72	4.63	0.38	0.38	3.82	0.01	568.30	0.07

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*

GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX B: BASELINE MODELS AND INPUTS

B-6. Recycle Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Feeder / Screen	0.99	6.36	0.52	0.52	5.25	0.01	780.16	0.09
Crusher	2.51	22.40	0.73	0.73	8.45	0.04	4212.87	0.22
Stacker Conveyor	0.50	3.24	0.27	0.27	2.68	0.00	397.88	0.05
TOTALS:	**4.01**	**31.99**	**1.52**	**1.52**	**16.38**	**0.05**	**5390.91**	**0.36**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Feeder / Screen	0.00	0.03	0.00	0.00	0.03	0.00	3.54	0.00	3.55
Crusher	0.01	0.11	0.00	0.00	0.04	0.00	19.11	0.00	19.14
Stacker Conveyor	0.00	0.02	0.00	0.00	0.01	0.00	1.80	0.00	1.81
TOTALS:	**0.02**	**0.16**	**0.01**	**0.01**	**0.08**	**0.00**	**24.45**	**0.00**	**24.50**

APPENDIX B: BASELINE MODELS AND INPUTS
B-6. Recycle Plant Emissions

4. RECYCLE PLANT - EMISSIONS FROM OFF-ROAD HEAVY EQUIPMENT

Description:

Criteria pollutant emissions from heavy equipment operation, including raw materials feed and stockpile management. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4. Engine model year 2016 used as average for 10-year baseline period (2012-2021).

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Loader	1	Cat 980	2016	380	0.36	4
Excavator	1	Cat 330	2016	250	0.38	8
Excavator - Rock Breaker	1	Cat 330	2016	250	0.38	4

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Loader	0.39	4.63	0.17	0.16	2.16	0.01	500.43	0.15
Excavator	0.26	3.67	0.12	0.11	1.28	0.01	506.54	0.15
Excavator - Rock Breaker	0.26	3.67	0.12	0.11	1.28	0.01	506.54	0.15

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298

CO2e = *1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*

GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX B: BASELINE MODELS AND INPUTS

B-6. Recycle Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Loader	0.47	5.57	0.21	0.19	2.59	0.01	602.44	0.18
Excavator	0.44	6.13	0.19	0.18	2.14	0.01	846.94	0.26
Excavator - Rock Breaker	0.22	3.07	0.10	0.09	1.07	0.00	423.47	0.13
TOTALS:	**1.13**	**14.77**	**0.50**	**0.46**	**5.80**	**0.02**	**1872.85**	**0.57**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Loader	0.00	0.03	0.00	0.00	0.01	0.00	2.73	0.00	2.76
Excavator	0.00	0.03	0.00	0.00	0.01	0.00	3.84	0.00	3.88
Excavator - Rock Breaker	0.00	0.02	0.00	0.00	0.01	0.00	1.92	0.00	1.94
TOTALS:	**0.01**	**0.07**	**0.00**	**0.00**	**0.03**	**0.00**	**8.49**	**0.00**	**8.58**

Appendix B-7:
On-Road Mobile Source Emissions

APPENDIX B: BASELINE MODELS AND INPUTS
B-7. On-Road Mobile Source Emissions

1. ON-ROAD MOBILE SOURCE EMISSIONS

Description:

On-road vehicle emissions associated with vehicle travel. Emission factors from EMFAC 2021. Production assumptions and average customer and employee trip distances from CEMEX. Cement and fly ash supplied by CEMEX West Sacramento terminal. Aggregates used in ready-mix production are fed directly into plant feed bins by front-end loader (with no off-site imports).

EMFAC2021 (v1.0.2) Emission Rates (Yolo County):
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/mile for emission rates; miles for trip distance
Speed Selections: Average speed of 45 mph assumed for light-duty vehicle trips (gas) and 35 mph for truck trips (diesel).

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Trip Distance (one-way)	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
Yolo	2021	LDA	Aggregated	45	GAS	44.7	0.009	0.919	0.054	0.002	270.154	0.002	0.001	0.001	0.005
Yolo	2021	LDT1	Aggregated	45	GAS	44.7	0.032	1.900	0.164	0.003	318.412	0.007	0.001	0.001	0.011
Yolo	2021	LDA/LDT1	Average	45	GAS	44.7	0.015	1.164	0.082	0.002	282.219	0.003	0.001	0.001	0.007
Yolo	2021	MDV	Aggregated	35	DSL	9.7	0.014	0.225	0.064	0.003	400.220	0.001	0.006	0.006	0.063
Yolo	2021	T7 Tractor	Aggregated	35	DSL	31.2	0.057	0.250	2.500	0.015	1607.753	0.002	0.015	0.014	0.253

Notes:

LDA/LDT1 average represents the weighted average factor assuming 75% LDA and 25% LDT1 for passenger vehicle travel.

LDA = Passenger cars

LDT1 = Light-Duty Trucks (GVWR <6000 lbs. and ETW <= 3750 lbs)

MDV = Medium-Duty Trucks (GVWR 6000-8500 lbs)

T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck

Trip distance based on EMFAC reported VMT divided by trips, except for T7 Tractor trip distances adjusted for customer deliveries per CEMEX.

APPENDIX B: BASELINE MODELS AND INPUTS
B-7. On-Road Mobile Source Emissions

Production Assumptions:

Annual Production - Agg Plant:	779,432	tons sold	Tons per truck - haul trucks:	25	tons
Annual Production - RMC Plant:	18,311	tons (based on ~2 tons per CY)	Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Annual Production - Recycle Plant:	30,003	tons	Maintenance / service visits:	2	per day per plant average
Annual Operating Days - Agg Plant:	260	days (52 weeks per year)			
Annual Operating Days - RMC Plant:	38	days			
Annual Operating Days - Recycle Plant:	7	days			

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Annual Emissions Calculation:

On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/yr	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	Greenhouse Gases: CO2 (MT/yr)	CH4 (MT/yr)	N_20 (MT/yr)	C02e (MT/yr)
Aggregate Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		22	511,368	0.01	0.05	0.66	0.00	0.00	144.29	0.00	0.00	145.34
Haul trucks (finish product)	T7 Tractor			1,945,462	0.12	5.36	0.54	0.03	0.03	3,127.19	0.00	0.49	3,273.97
Maintenance / service vehicle	MDV			10,088	0.00	0.00	0.00	0.00	0.00	4.04	0.00	0.00	4.23
Ready Mix Concrete Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		2	6,794	0.00	0.00	0.01	0.00	0.00	1.92	0.00	0.00	1.93
Haul trucks (agg import) - @0%	T7 Tractor	0		-	-	-	-	-	-	-	-	-	-
Mixer trucks (finish product)	T7 Tractor	31.2		63,479	0.00	0.17	0.02	0.00	0.00	102.04	0.00	0.02	106.83
Haul trucks (cement / fly ash) - @14%	T7 Tractor	33.0		6,768	0.00	0.02	0.00	0.00	0.00	10.88	0.00	0.00	11.39
Maintenance / service vehicle	MDV			1,474	0.00	0.00	0.00	0.00	0.00	0.59	0.00	0.00	0.62
Recycle Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		2	1,252	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.36
Haul trucks (import recycle feed)	T7 Tractor			74,887	0.00	0.21	0.02	0.00	0.00	120.38	0.00	0.02	126.03
Haul trucks (finish product)	T7 Tractor			74,887	0.00	0.21	0.02	0.00	0.00	120.38	0.00	0.02	126.03
Maintenance / service vehicle	MDV			272	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.11
			TOTALS:	**2,696,732**	**0.14**	**6.02**	**1.27**	**0.04**	**0.03**	**3,632.15**	**0.01**	**0.55**	**3,796.82**

Notes:

Cement and fly ash supplement accounts for approximately 14% of ready-mix concrete.
Employee estimates per CEMEX.

APPENDIX B: BASELINE MODELS AND INPUTS

B-7. On-Road Mobile Source Emissions

Daily Emissions Calculation:

On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/day	ROG (lbs/day)	NOX (lbs/day)	CO (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Aggregate Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		22	1,967	0.06	0.35	5.05	0.00	0.00
Haul trucks (finish product)	T7 Tractor			7,483	0.94	41.24	4.12	0.25	0.23
Maintenance / service vehicle	MDV			39	0.00	0.01	0.02	0.00	0.00
Ready Mix Concrete Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		2	179	0.01	0.03	0.46	0.00	0.00
Haul trucks (agg import) - @0%	T7 Tractor	0		-	-	-	-	-	-
Mixer trucks (finish product)	T7 Tractor	31.2		1,670	0.21	9.21	0.92	0.06	0.05
Haul trucks (cement / fly ash) - @14%	T7 Tractor	33.0		178	0.02	0.98	0.10	0.01	0.01
Maintenance / service vehicle	MDV			39	0.00	0.01	0.02	0.00	0.00
Recycle Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		2	179	0.01	0.03	0.46	0.00	0.00
Haul trucks (import recycle feed)	T7 Tractor			10,698	1.34	58.96	5.90	0.35	0.33
Haul trucks (finish product)	T7 Tractor			10,698	1.34	58.96	5.90	0.35	0.33
Maintenance / service vehicle	MDV			39	0.00	0.01	0.02	0.00	0.00
			TOTALS:	**33,168**	**3.94**	**169.79**	**22.96**	**1.02**	**0.96**

Notes:

Cement and fly ash supplement accounts for approximately 14% of ready-mix concrete.

Employee estimates per CEMEX.

Appendix B-8:
Energy Use Calculations

APPENDIX B: BASELINE MODELS AND INPUTS

B-8. Energy Use Calculations

Emission Factors per Fuel Unit

Gasoline	8.78	kg CO2/gal
Diesel (Distallate No. 2)	10.21	kg CO2/gal

Source: 2021 Default Emission Factors, Table 1.1. The Climate Registry (May 2021).

Mobile Source Equipment:	Fuel	MTCO2e	kg CO2	Est. Fuel Gallons
Mining Operations				
Off-Road (App. B-2)	Diesel	1196.46	1,196,460.00	117,185.11
On-Road Worker Trips (App. B-2)	Gasoline	28.27	28,270.00	3,219.82
Dredge and Aggregate Plant Operations				
Off-Road Equipment (App. B-4)	Diesel	585.43	585,431.16	57,339.00
Vehicle Idling (App. B-4)	Diesel	2.97	2,965.07	290.41
Ready-Mix Plant Operations				
Off-Road Equipment (App. B-5)	Diesel	16.39	16,385.78	1,604.88
Vehicle Idling (App. B-5)	Diesel	0.11	106.50	10.43
Recycle Plant Operations				
Portable Processing Plant Engines (App. B-6)	Diesel	24.50	24,502.85	2,399.89
Off-Road Equipment (App. B-6)	Diesel	8.58	8,580.58	840.41
On-Road Mobile Source Emissions				
On-Road (App. B-7)	Gasoline	147.62	147,621.79	16,813.42
On-Road (App. B-7)	Diesel	3,649.19	3,649,193.53	357,413.67
TOTALS:	**Diesel**	**5,483.63**	**5,483,625.46**	**537,083.79**
TOTALS:	**Gasoline**	**175.89**	**175,891.79**	**20,033.23**

Plant and Conveyor Equipment	Power Source	kWh/year
Conveyor (App B-3)	Electricity	443,043
Dredge and Aggregate Plant (App B-4)	Electricity	3,006,196
Ready-mix Plant (App B-5)	Electricity	93,843
TOTALS:		**3,543,082**

Appendix C:
Project Models and Inputs

Appendix C-1:
CalEEMod Modeling Results for Stripping and Mining

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

CEMEX Cache Creek Project Stripping and Mining Emissions

Yolo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2050
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Equipment and utilization per CEMEX, consistent with existing conditions baseline.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for first full year of operation to determine maximum daily and annual emissions for CEQA analysis. Emissions will improve over time. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Equipment fleet emissions will improve over time. Water truck used to water exposed areas at least 2x daily.

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	260.00
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	PhaseEndDate	12/20/2024	12/30/2022
tblConstructionPhase	PhaseEndDate	12/10/2027	7/8/2022
tblConstructionPhase	PhaseStartDate	12/21/2024	5/1/2022
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	10.6493	106.2872	73.4763	0.2323	87.8098	3.9577	91.7675	10.1925	3.6411	13.8336	0.0000	22,504.5433	22,504.5433	7.1559	9.3100e-003	22,686.2167
Maximum	**10.6493**	**106.2872**	**73.4763**	**0.2323**	**87.8098**	**3.9577**	**91.7675**	**10.1925**	**3.6411**	**13.8336**	**0.0000**	**22,504.5433**	**22,504.5433**	**7.1559**	**9.3100e-003**	**22,686.2167**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	5.3924	55.4629	117.6550	0.2323	85.8692	1.7093	87.5785	9.2487	1.6757	10.9244	0.0000	22,504.5432	22,504.5432	7.1559	9.3100e-003	22,686.2167
Maximum	**5.3924**	**55.4629**	**117.6550**	**0.2323**	**85.8692**	**1.7093**	**87.5785**	**9.2487**	**1.6757**	**10.9244**	**0.0000**	**22,504.5432**	**22,504.5432**	**7.1559**	**9.3100e-003**	**22,686.2167**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**49.36**	**47.82**	**-60.13**	**0.00**	**2.21**	**56.81**	**4.56**	**9.26**	**53.98**	**21.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**	**0.0000**	**0.1130**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**	**0.0000**	**0.1130**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2022	12/30/2022	5	260	Sand and gravel excavation
2	Stripping	Grading	5/1/2022	7/8/2022	5	50	Topsoil and overburden removal

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Excavators	1	8.00	472	0.38
Mining	Graders	1	4.00	150	0.41
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	8.00	300	0.38
Mining	Rubber Tired Dozers	1	4.00	580	0.40
Mining	Rubber Tired Dozers	1	4.00	305	0.40

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mining	Scrapers	0	0.00	367	0.48
Mining	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Stripping	Excavators	0	0.00	158	0.38
Stripping	Graders	0	0.00	187	0.41
Stripping	Off-Highway Trucks	1	8.00	300	0.38
Stripping	Rollers	1	8.00	402	0.38
Stripping	Rubber Tired Dozers	0	0.00	247	0.40
Stripping	Scrapers	4	8.00	630	0.48
Stripping	Tractors/Loaders/Backhoes	1	8.00	355	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1042	0.0000	3.1042	1.6703	0.0000	1.6703			0.0000			0.0000
Off-Road	4.3602	40.4280	29.1707	0.0900		1.5434	1.5434		1.4200	1.4200		8,710.6787	8,710.6787	2.8172		8,781.1089
Total	**4.3602**	**40.4280**	**29.1707**	**0.0900**	**3.1042**	**1.5434**	**4.6476**	**1.6703**	**1.4200**	**3.0902**		**8,710.6787**	**8,710.6787**	**2.8172**		**8,781.1089**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0826	0.0471	0.7324	2.1100e-003	44.3586	1.1000e-003	44.3597	4.4613	1.0200e-003	4.4623		214.5839	214.5839	4.9200e-003	4.9000e-003	216.1677
Total	**0.0826**	**0.0471**	**0.7324**	**2.1100e-003**	**44.3586**	**1.1000e-003**	**44.3597**	**4.4613**	**1.0200e-003**	**4.4623**		**214.5839**	**214.5839**	**4.9200e-003**	**4.9000e-003**	**216.1677**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3969	0.0000	1.3969	0.7516	0.0000	0.7516			0.0000			0.0000
Off-Road	3.3522	44.5270	54.1664	0.0900		1.3468	1.3468		1.3168	1.3168	0.0000	8,710.6787	8,710.6787	2.8172		8,781.1089
Total	**3.3522**	**44.5270**	**54.1664**	**0.0900**	**1.3969**	**1.3468**	**2.7436**	**0.7516**	**1.3168**	**2.0684**	**0.0000**	**8,710.6787**	**8,710.6787**	**2.8172**		**8,781.1089**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0826	0.0471	0.7324	2.1100e-003	44.3586	1.1000e-003	44.3597	4.4613	1.0200e-003	4.4623		214.5839	214.5839	4.9200e-003	4.9000e-003	216.1677
Total	**0.0826**	**0.0471**	**0.7324**	**2.1100e-003**	**44.3586**	**1.1000e-003**	**44.3597**	**4.4613**	**1.0200e-003**	**4.4623**		**214.5839**	**214.5839**	**4.9200e-003**	**4.9000e-003**	**216.1677**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Stripping - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4242	0.0000	0.4242	0.0458	0.0000	0.0458			0.0000			0.0000
Off-Road	6.1322	65.7698	42.9141	0.1383		2.4122	2.4122		2.2192	2.2192		13,386.1552	13,386.1552	4.3294		13,494.3890
Total	**6.1322**	**65.7698**	**42.9141**	**0.1383**	**0.4242**	**2.4122**	**2.8364**	**0.0458**	**2.2192**	**2.2650**		**13,386.1552**	**13,386.1552**	**4.3294**		**13,494.3890**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0744	0.0424	0.6591	1.9000e-003	39.9228	9.9000e-004	39.9238	4.0152	9.2000e-004	4.0161		193.1255	193.1255	4.4300e-003	4.4100e-003	194.5510
Total	**0.0744**	**0.0424**	**0.6591**	**1.9000e-003**	**39.9228**	**9.9000e-004**	**39.9238**	**4.0152**	**9.2000e-004**	**4.0161**		**193.1255**	**193.1255**	**4.4300e-003**	**4.4100e-003**	**194.5510**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Stripping - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1909	0.0000	0.1909	0.0206	0.0000	0.0206			0.0000			0.0000
Off-Road	1.8832	10.8465	62.0971	0.1383		0.3605	0.3605		0.3570	0.3570	0.0000	13,386.1552	13,386.1552	4.3294		13,494.3890
Total	**1.8832**	**10.8465**	**62.0971**	**0.1383**	**0.1909**	**0.3605**	**0.5514**	**0.0206**	**0.3570**	**0.3776**	**0.0000**	**13,386.1552**	**13,386.1552**	**4.3294**		**13,494.3890**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0744	0.0424	0.6591	1.9000e-003	39.9228	9.9000e-004	39.9238	4.0152	9.2000e-004	4.0161		193.1255	193.1255	4.4300e-003	4.4100e-003	194.5510
Total	**0.0744**	**0.0424**	**0.6591**	**1.9000e-003**	**39.9228**	**9.9000e-004**	**39.9238**	**4.0152**	**9.2000e-004**	**4.0161**		**193.1255**	**193.1255**	**4.4300e-003**	**4.4100e-003**	**194.5510**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Unmitigated	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**		**0.1130**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**		**0.1130**

7.0 Water Detail

7.1 Mitigation Measures Water

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

CEMEX Cache Creek Project Stripping and Mining Emissions

Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2050
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Equipment and utilization per CEMEX, consistent with existing conditions baseline.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for first full year of operation to determine maximum daily and annual emissions for CEQA analysis. Emissions will improve over time. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Equipment fleet emissions will improve over time. Water truck used to water exposed areas at least 2x daily.

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	260.00
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	PhaseEndDate	12/20/2024	12/30/2022
tblConstructionPhase	PhaseEndDate	12/10/2027	7/8/2022
tblConstructionPhase	PhaseStartDate	12/21/2024	5/1/2022
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	10.6398	106.3088	73.2718	0.2318	87.8098	3.9577	91.7675	10.1925	3.6411	13.8336	0.0000	22,460.7325	22,460.7325	7.1569	0.0108	22,642.8599
Maximum	**10.6398**	**106.3088**	**73.2718**	**0.2318**	**87.8098**	**3.9577**	**91.7675**	**10.1925**	**3.6411**	**13.8336**	**0.0000**	**22,460.7325**	**22,460.7325**	**7.1569**	**0.0108**	**22,642.8599**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	5.3828	55.4845	117.4505	0.2318	85.8692	1.7093	87.5785	9.2487	1.6757	10.9244	0.0000	22,460.7324	22,460.7324	7.1569	0.0108	22,642.8598
Maximum	**5.3828**	**55.4845**	**117.4505**	**0.2318**	**85.8692**	**1.7093**	**87.5785**	**9.2487**	**1.6757**	**10.9244**	**0.0000**	**22,460.7324**	**22,460.7324**	**7.1569**	**0.0108**	**22,642.8598**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**49.41**	**47.81**	**-60.29**	**0.00**	**2.21**	**56.81**	**4.56**	**9.26**	**53.98**	**21.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**	**0.0000**	**0.1130**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**	**0.0000**	**0.1130**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2022	12/30/2022	5	260	Sand and gravel excavation
2	Stripping	Grading	5/1/2022	7/8/2022	5	50	Topsoil and overburden removal

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Excavators	1	8.00	472	0.38
Mining	Graders	1	4.00	150	0.41
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	8.00	300	0.38
Mining	Rubber Tired Dozers	1	4.00	580	0.40
Mining	Rubber Tired Dozers	1	4.00	305	0.40

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mining	Scrapers	0	0.00	367	0.48
Mining	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Stripping	Excavators	0	0.00	158	0.38
Stripping	Graders	0	0.00	187	0.41
Stripping	Off-Highway Trucks	1	8.00	300	0.38
Stripping	Rollers	1	8.00	402	0.38
Stripping	Rubber Tired Dozers	0	0.00	247	0.40
Stripping	Scrapers	4	8.00	630	0.48
Stripping	Tractors/Loaders/Backhoes	1	8.00	355	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1042	0.0000	3.1042	1.6703	0.0000	1.6703			0.0000			0.0000
Off-Road	4.3602	40.4280	29.1707	0.0900		1.5434	1.5434		1.4200	1.4200		8,710.6787	8,710.6787	2.8172		8,781.1089
Total	**4.3602**	**40.4280**	**29.1707**	**0.0900**	**3.1042**	**1.5434**	**4.6476**	**1.6703**	**1.4200**	**3.0902**		**8,710.6787**	**8,710.6787**	**2.8172**		**8,781.1089**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0776	0.0584	0.6248	1.8800e-003	44.3586	1.1000e-003	44.3597	4.4613	1.0200e-003	4.4623		191.5256	191.5256	5.4400e-003	5.6600e-003	193.3484
Total	**0.0776**	**0.0584**	**0.6248**	**1.8800e-003**	**44.3586**	**1.1000e-003**	**44.3597**	**4.4613**	**1.0200e-003**	**4.4623**		**191.5256**	**191.5256**	**5.4400e-003**	**5.6600e-003**	**193.3484**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3969	0.0000	1.3969	0.7516	0.0000	0.7516			0.0000			0.0000
Off-Road	3.3522	44.5270	54.1664	0.0900		1.3468	1.3468		1.3168	1.3168	0.0000	8,710.6787	8,710.6787	2.8172		8,781.1089
Total	**3.3522**	**44.5270**	**54.1664**	**0.0900**	**1.3969**	**1.3468**	**2.7436**	**0.7516**	**1.3168**	**2.0684**	**0.0000**	**8,710.6787**	**8,710.6787**	**2.8172**		**8,781.1089**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0776	0.0584	0.6248	1.8800e-003	44.3586	1.1000e-003	44.3597	4.4613	1.0200e-003	4.4623		191.5256	191.5256	5.4400e-003	5.6600e-003	193.3484
Total	**0.0776**	**0.0584**	**0.6248**	**1.8800e-003**	**44.3586**	**1.1000e-003**	**44.3597**	**4.4613**	**1.0200e-003**	**4.4623**		**191.5256**	**191.5256**	**5.4400e-003**	**5.6600e-003**	**193.3484**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Stripping - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4242	0.0000	0.4242	0.0458	0.0000	0.0458			0.0000			0.0000
Off-Road	6.1322	65.7698	42.9141	0.1383		2.4122	2.4122		2.2192	2.2192		13,386.1552	13,386.1552	4.3294		13,494.3890
Total	**6.1322**	**65.7698**	**42.9141**	**0.1383**	**0.4242**	**2.4122**	**2.8364**	**0.0458**	**2.2192**	**2.2650**		**13,386.1552**	**13,386.1552**	**4.3294**		**13,494.3890**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0698	0.0526	0.5623	1.6900e-003	39.9228	9.9000e-004	39.9238	4.0152	9.2000e-004	4.0161		172.3730	172.3730	4.8900e-003	5.0900e-003	174.0135
Total	**0.0698**	**0.0526**	**0.5623**	**1.6900e-003**	**39.9228**	**9.9000e-004**	**39.9238**	**4.0152**	**9.2000e-004**	**4.0161**		**172.3730**	**172.3730**	**4.8900e-003**	**5.0900e-003**	**174.0135**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Stripping - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1909	0.0000	0.1909	0.0206	0.0000	0.0206			0.0000			0.0000
Off-Road	1.8832	10.8465	62.0971	0.1383		0.3605	0.3605		0.3570	0.3570	0.0000	13,386.1552	13,386.1552	4.3294		13,494.3890
Total	**1.8832**	**10.8465**	**62.0971**	**0.1383**	**0.1909**	**0.3605**	**0.5514**	**0.0206**	**0.3570**	**0.3776**	**0.0000**	**13,386.1552**	**13,386.1552**	**4.3294**		**13,494.3890**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0698	0.0526	0.5623	1.6900e-003	39.9228	9.9000e-004	39.9238	4.0152	9.2000e-004	4.0161		172.3730	172.3730	4.8900e-003	5.0900e-003	174.0135
Total	**0.0698**	**0.0526**	**0.5623**	**1.6900e-003**	**39.9228**	**9.9000e-004**	**39.9238**	**4.0152**	**9.2000e-004**	**4.0161**		**172.3730**	**172.3730**	**4.8900e-003**	**5.0900e-003**	**174.0135**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Unmitigated	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**		**0.1130**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**		**0.1130**

7.0 Water Detail

7.1 Mitigation Measures Water

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

CEMEX Cache Creek Project Stripping and Mining Emissions

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2050
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Equipment and utilization per CEMEX, consistent with existing conditions baseline.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for first full year of operation to determine maximum daily and annual emissions for CEQA analysis. Emissions will improve over time. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Equipment fleet emissions will improve over time. Water truck used to water exposed areas at least 2x daily.

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	260.00
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	PhaseEndDate	12/20/2024	12/30/2022
tblConstructionPhase	PhaseEndDate	12/10/2027	7/8/2022
tblConstructionPhase	PhaseStartDate	12/21/2024	5/1/2022
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.7312	6.9078	4.9597	0.0155	6.1817	0.2611	6.4429	0.7990	0.2402	1.0392	0.0000	1,358.0497	1,358.0497	0.4311	7.2000e-004	1,369.0434
Maximum	**0.7312**	**6.9078**	**4.9597**	**0.0155**	**6.1817**	**0.2611**	**6.4429**	**0.7990**	**0.2402**	**1.0392**	**0.0000**	**1,358.0497**	**1,358.0497**	**0.4311**	**7.2000e-004**	**1,369.0434**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.4940	6.0676	8.6887	0.0155	5.9540	0.1843	6.1382	0.6789	0.1803	0.8592	0.0000	1,358.0481	1,358.0481	0.4311	7.2000e-004	1,369.0418
Maximum	**0.4940**	**6.0676**	**8.6887**	**0.0155**	**5.9540**	**0.1843**	**6.1382**	**0.6789**	**0.1803**	**0.8592**	**0.0000**	**1,358.0481**	**1,358.0481**	**0.4311**	**7.2000e-004**	**1,369.0418**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**32.45**	**12.16**	**-75.19**	**0.00**	**3.68**	**29.43**	**4.73**	**15.03**	**24.96**	**17.32**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2022	3-31-2022	1.4440	1.5433
2	4-1-2022	6-30-2022	3.0288	1.8402
3	7-1-2022	9-30-2022	1.6816	1.6141
		Highest	3.0288	1.8402

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.1000e-004**	**4.0000e-005**	**4.4300e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2200e-003**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.1000e-004**	**4.0000e-005**	**4.4300e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2200e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2022	12/30/2022	5	260	Sand and gravel excavation
2	Stripping	Grading	5/1/2022	7/8/2022	5	50	Topsoil and overburden removal

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Excavators	1	8.00	472	0.38
Mining	Graders	1	4.00	150	0.41
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	8.00	300	0.38
Mining	Rubber Tired Dozers	1	4.00	580	0.40
Mining	Rubber Tired Dozers	1	4.00	305	0.40
Mining	Scrapers	0	0.00	367	0.48
Mining	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Stripping	Excavators	0	0.00	158	0.38
Stripping	Graders	0	0.00	187	0.41
Stripping	Off-Highway Trucks	1	8.00	300	0.38
Stripping	Rollers	1	8.00	402	0.38
Stripping	Rubber Tired Dozers	0	0.00	247	0.40
Stripping	Scrapers	4	8.00	630	0.48
Stripping	Tractors/Loaders/Backhoes	1	8.00	355	0.37

Trips and VMT

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Mining - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4036	0.0000	0.4036	0.2171	0.0000	0.2171	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5668	5.2556	3.7922	0.0117		0.2006	0.2006		0.1846	0.1846	0.0000	1,027.2853	1,027.2853	0.3322	0.0000	1,035.5914
Total	**0.5668**	**5.2556**	**3.7922**	**0.0117**	**0.4036**	**0.2006**	**0.6042**	**0.2171**	**0.1846**	**0.4017**	**0.0000**	**1,027.2853**	**1,027.2853**	**0.3322**	**0.0000**	**1,035.5914**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4600e-003	6.7500e-003	0.0807	2.5000e-004	4.9166	1.4000e-004	4.9168	0.4950	1.3000e-004	0.4952	0.0000	23.1626	23.1626	5.9000e-004	6.2000e-004	23.3611
Total	**9.4600e-003**	**6.7500e-003**	**0.0807**	**2.5000e-004**	**4.9166**	**1.4000e-004**	**4.9168**	**0.4950**	**1.3000e-004**	**0.4952**	**0.0000**	**23.1626**	**23.1626**	**5.9000e-004**	**6.2000e-004**	**23.3611**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1816	0.0000	0.1816	0.0977	0.0000	0.0977	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4358	5.7885	7.0416	0.0117		0.1751	0.1751		0.1712	0.1712	0.0000	1,027.2841	1,027.2841	0.3322	0.0000	1,035.5902
Total	**0.4358**	**5.7885**	**7.0416**	**0.0117**	**0.1816**	**0.1751**	**0.3567**	**0.0977**	**0.1712**	**0.2689**	**0.0000**	**1,027.2841**	**1,027.2841**	**0.3322**	**0.0000**	**1,035.5902**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Mining - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4600e-003	6.7500e-003	0.0807	2.5000e-004	4.9166	1.4000e-004	4.9168	0.4950	1.3000e-004	0.4952	0.0000	23.1626	23.1626	5.9000e-004	6.2000e-004	23.3611
Total	**9.4600e-003**	**6.7500e-003**	**0.0807**	**2.5000e-004**	**4.9166**	**1.4000e-004**	**4.9168**	**0.4950**	**1.3000e-004**	**0.4952**	**0.0000**	**23.1626**	**23.1626**	**5.9000e-004**	**6.2000e-004**	**23.3611**

3.3 Stripping - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0106	0.0000	0.0106	1.1500e-003	0.0000	1.1500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1533	1.6443	1.0729	3.4600e-003		0.0603	0.0603		0.0555	0.0555	0.0000	303.5929	303.5929	0.0982	0.0000	306.0476
Total	**0.1533**	**1.6443**	**1.0729**	**3.4600e-003**	**0.0106**	**0.0603**	**0.0709**	**1.1500e-003**	**0.0555**	**0.0566**	**0.0000**	**303.5929**	**303.5929**	**0.0982**	**0.0000**	**306.0476**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Stripping - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6400e-003	1.1700e-003	0.0140	4.0000e-005	0.8510	2.0000e-005	0.8510	0.0857	2.0000e-005	0.0857	0.0000	4.0089	4.0089	1.0000e-004	1.1000e-004	4.0433
Total	**1.6400e-003**	**1.1700e-003**	**0.0140**	**4.0000e-005**	**0.8510**	**2.0000e-005**	**0.8510**	**0.0857**	**2.0000e-005**	**0.0857**	**0.0000**	**4.0089**	**4.0089**	**1.0000e-004**	**1.1000e-004**	**4.0433**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.7700e-003	0.0000	4.7700e-003	5.2000e-004	0.0000	5.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0471	0.2712	1.5524	3.4600e-003		9.0100e-003	9.0100e-003		8.9200e-003	8.9200e-003	0.0000	303.5925	303.5925	0.0982	0.0000	306.0472
Total	**0.0471**	**0.2712**	**1.5524**	**3.4600e-003**	**4.7700e-003**	**9.0100e-003**	**0.0138**	**5.2000e-004**	**8.9200e-003**	**9.4400e-003**	**0.0000**	**303.5925**	**303.5925**	**0.0982**	**0.0000**	**306.0472**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Stripping - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6400e-003	1.1700e-003	0.0140	4.0000e-005	0.8510	2.0000e-005	0.8510	0.0857	2.0000e-005	0.0857	0.0000	4.0089	4.0089	1.0000e-004	1.1000e-004	4.0433
Total	**1.6400e-003**	**1.1700e-003**	**0.0140**	**4.0000e-005**	**0.8510**	**2.0000e-005**	**0.8510**	**0.0857**	**2.0000e-005**	**0.0857**	**0.0000**	**4.0089**	**4.0089**	**1.0000e-004**	**1.1000e-004**	**4.0433**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003
Unmitigated	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003
Total	**4.1000e-004**	**4.0000e-005**	**4.4300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2200e-003**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003
Total	**4.1000e-004**	**4.0000e-005**	**4.4300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2200e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix C-2:
Pit-to-Plant Material Transport Emissions

APPENDIX C: PROJECT MODELS AND INPUTS
C-2. Pit-to-Plant Material Transport Emissions

1. MINING OPERATIONS - PM EMISSIONS FROM CONVEYOR TRANSPORT FROM PIT-TO-PLANT

Description:

Fugitive dust from conveyor transport of raw materials from pit-to-plant. The controlled emission factor for PM is taken from AP-42, Table 11.19.2-2. The controlled emission factor is appropriate based on the typical moisture content of the material. From the dredge, mined materials are transferred to the aggregate processing plant via 13 conveyor transfers, comprising 6 floating conveyors (i.e., FC-1 thru FC-6), 1 floating water to land conveyor transfer, 1 jump conveyor, and 6 overland conveyor transfers (i.e., PC-1 thru PC-6). One additional overland conveyor transfer may be needed for future mining.

Production Assumptions:

Annual production:	1,204,819	tons mined (max)	Qty. of Conveyor Transfers:	15	from mining area to plant (existing plus one)
% of Material Transport by Conveyor:	80%				
% of Material Transport by Truck to Conveyor:	20%		Production Days per Year:	260	days (52 weeks per year)
Tons Transported by Conveyor:	963,855	tons	Conveyed Tons per Day:	3,707	tons (average)
Tons Transported by Truck and Conveyor:	240,964	tons	Conveyed Tons per Hour:	463	tons (based on 8 hours of operation)

Conveyor PM Emissions Calculations:

Pollutant	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
PM10	4.60E-05	0.32	2.56	665.06	0.33
PM2.5	1.30E-05	0.09	0.72	187.95	0.09

APPENDIX C: PROJECT MODELS AND INPUTS

C-2. Pit-to-Plant Material Transport Emissions

2. MINING OPERATIONS - PM EMISSIONS FROM TRUCK TRANSPORT TO CONVEYOR

Description:

Fugitive dust from truck traffic. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% is used for water suppression.

Estimating Assumptions:

Tons per day:	927	tons per day
Tons per year:	240,964	tons
Tons per truck:	40	tons
Average distance traveled onsite:	5,000	feet (round-trip to feed hopper)
Active days per year:	260	days (52 weeks per year)
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	98.0	tons (based on avg of 78 tons empty, 118 tons loaded)
PM control efficiency:	70%	percent

Emission Factor:

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

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	3.16	0.32

VMT Estimates:

	Daily	Annual
Haul Trucks	22	5,705

PM Emissions Estimate from Haul Truck Transport:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	69.27	18,010.3	9.0	6.93	1,801.03	0.90
Abated	20.78	5,403.09	2.70	2.08	540.31	0.27

APPENDIX C: PROJECT MODELS AND INPUTS

C-2. Pit-to-Plant Material Transport Emissions

3. MINING OPERATIONS - GREENHOUSE GAS EMISSIONS FROM CONVEYOR ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use of the existing conveyor between mining area and plant. Electricity consumption estimate per ton per CEMEX based on historical energy use. Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

Electricity Use:

Average kWh per ton:	0.68	kWh per ton
Average annual kWh:	655,421	kWh per year

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	MWh/year	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2e
655,421	655	2.68	0.033	0.004	0.80	0.010	0.001	1.48

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Notes:

Emission factor for CO2 from 2021 The Climate Registry, Table 3.8, for Pacific Gas & Electric (2019), as corroborated by PG&E 2021 climate change sustainability report.
Emission factors for CH_4 and N_20 from 2021 The Climate Registry, Tables 3.1 (for eGRID subregion for California), for Pacific Gas & Electric.
kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Appendix C-3:
Aggregate Plant Emissions

APPENDIX C: PROJECT MODELS AND INPUTS
C-3. Aggregate Plant Emissions

1. DREDGE AND AGGREGATE PLANTS - PM EMISSIONS FROM PROCESSING AND WIND EROSION

Description:

The dredge's on-vessel processing equipment list (Plant 1) per CEMEX. The aggregate plant equipment list (Plant 2) is also per CEMEX AggFlow and generally matches the YSAQMD Permit to Operate P-26-92(a3), valid thru 7/22/2022. All conveyed material passes thru scalping screen S-1 to plant surge pile at 600 tph. Plant surge tunnel feeds primary screen S-2 at 700 tph. From screen S-2, plant thruput distributed approximately 315 tph (45%) to concrete sands and wash loss to silt ponds, 280 tph (40%) to secondary screen S-4 to coarse natural aggregates, and 105 tph (15%) via crusher CR-1 and secondary screen S-3 to crushed products. Emission factors from AP-42, Table 11.19.2-2.

Production Assumptions:

Annual production:	1,204,819	tons	Stockpile Area (acres):	43 acres (estimated per aerial photographs)
% of Annual Production: Plant 1 (Dredge Plant):	80%			
% of Annual Production: Plant 2 (Aggregate Plant):	100%			
Annual Production: Plant 1 (Dredge Plant):	963,855	tons		
Annual Production: Plant 2 (Aggregate Plant):	1,204,819	tons		

PM10 EMISSIONS																
				Process Rate			Uncontrolled PM10					Controlled PM10				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Dredge On-Board Screening Plant																
Dewatering Screens - SP 1	Screening	2	50%	300	3,000	481,928	0.0087	5.22	52.20	8,385.55	4.19	7.40E-04	0.44	4.44	713.25	0.36
Dewatering Screens - SP 2	Screening	2	50%	300	3,000	481,928	0.0087	5.22	52.20	8,385.55	4.19	7.40E-04	0.44	4.44	713.25	0.36
Plant 2: Aggregate Plant																
Screen S-1 - Scalping Screen	Screening	1	100%	600	6,000	1,204,819	0.0087	5.22	52.20	10,481.93	5.24	7.40E-04	0.44	4.44	891.57	0.45
Screen S-2 - Primary Screen	Screening	1	100%	700	5,600	1,204,819	0.0087	6.09	48.72	10,481.93	5.24	7.40E-04	0.52	4.14	891.57	0.45
Crusher CR-1 - Cone Crusher	Primary crushing[1]	1	15%	105	840	180,723	0.0024	0.25	2.02	433.74	0.22	0.00054	0.0567	0.4536	97.59	0.05
Screen S-3 - Secondary Screen	Screening	1	15%	105	840	180,723	0.0087	0.91	7.31	1,572.29	0.79	7.40E-04	0.08	0.62	133.74	0.07
Screen S-4 - Secondary Screen	Screening	1	40%	280	2,240	481,928	0.0087	2.44	19.49	4,192.77	2.10	7.40E-04	0.21	1.66	356.63	0.18
Conveyor Surge to S-2	Conveyor transfers	1	100%	700	5,600	1,204,819	0.0011	0.77	6.16	1,325.30	0.66	4.60E-05	0.03	0.26	55.42	0.03
Process / Product Conveyors Set 1	Conveyor transfers	3	40%	280	2,240	481,928	0.0011	0.92	7.39	1,590.36	0.80	4.60E-05	0.04	0.31	66.51	0.03
Conveyor S-2 to S-4	Conveyor transfers	1	45%	315	2,520	542,169	0.0011	0.35	2.77	596.39	0.30	4.60E-05	0.01	0.12	24.94	0.01
Process / Product Conveyors Set 2	Conveyor transfers	4	45%	79	632	542,169	0.0011	0.35	2.78	2,385.54	1.19	4.60E-05	0.01	0.12	99.76	0.05
Process / Product Conveyors Set 3	Conveyor transfers	15	15%	105	840	180,723	0.0011	1.73	13.86	2,981.93	1.49	4.60E-05	0.07	0.58	124.70	0.06
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	3.05	73.10	26,681.50	13.34	5.10E-01	0.91	21.93	8,004.45	4.00
						TOTALS:		**32.52**	**340.20**	**79,494.77**	**39.75**		**3.28**	**43.51**	**12,173.37**	**6.09**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but emission factors for PM-10 for tertiary crushers can be used as an upper limit.
2. Tons per hour per unit of equipment.
3. Tons per day per unit of equipment. Dredge operates 10 hours per day. Aggregate plant operates 8 hours per day (starting at Screen S-2).
4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.
5. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX C: PROJECT MODELS AND INPUTS

C-3. Aggregate Plant Emissions

PM2.5 EMISSIONS																
				Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Dredge On-Board Screening Plant																
Dewatering Screens - Set 1	Screening	2	50%	300	3,000	481,928	0.0087	5.22	52.20	8,385.55	4.19	0.00005	0.03	0.30	48.19	0.02
Dewatering Screens - Set 2	Screening	2	50%	300	3,000	481,928	0.0087	5.22	52.20	8,385.55	4.19	0.00005	0.03	0.30	48.19	0.02
Plant 2: Aggregate Plant																
Screen S-1 - Scalping Screen	Screening	1	100%	600	6,000	1,204,819	0.0087	5.22	52.20	10,481.93	5.24	0.00005	0.03	0.30	60.24	0.03
Screen S-2 - Primary Screen	Screening	1	100%	700	5,600	1,204,819	0.0087	6.09	48.72	10,481.93	5.24	0.00005	0.04	0.28	60.24	0.03
Crusher CR-1 - Cone Crusher	Primary crushing[1]	1	15%	105	840	180,723	0.0024	0.25	2.02	433.74	0.22	0.0001	0.01	0.08	18.07	0.01
Screen S-3 - Secondary Screen	Screening	1	15%	105	840	180,723	0.0087	0.91	7.31	1,572.29	0.79	0.00005	0.01	0.04	9.04	0.00
Screen S-4 - Secondary Screen	Screening	1	40%	280	2,240	481,928	0.0087	2.44	19.49	4,192.77	2.10	0.00005	0.01	0.11	24.10	0.01
Conveyor Surge to S-2	Conveyor transfers	1	100%	700	5,600	1,204,819	0.0011	0.77	6.16	1,325.30	0.66	1.30E-05	0.01	0.07	15.66	0.01
Process / Product Conveyors Set 1	Conveyor transfers	3	40%	280	2,240	481,928	0.0011	0.92	7.39	1,590.36	0.80	1.30E-05	0.01	0.09	18.80	0.01
Conveyor S-2 to S-4	Conveyor transfers	1	45%	315	2,520	542,169	0.0011	0.35	2.77	596.39	0.30	1.30E-05	0.00	0.03	7.05	0.00
Process / Product Conveyors Set 2	Conveyor transfers	4	45%	79	632	542,169	0.0011	0.35	2.78	2,385.54	1.19	1.30E-05	0.00	0.03	28.19	0.01
Process / Product Conveyors Set 3	Conveyor transfers	15	15%	105	840	180,723	0.0011	1.73	13.86	2,981.93	1.49	1.30E-05	0.02	0.16	35.24	0.02
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	3.05	73.10	26,681.50	13.34	5.10E-01	0.91	21.93	8004.45	4.00
						TOTALS:		**32.52**	**340.20**	**79,494.77**	**39.75**		**1.12**	**23.74**	**8,377.46**	**4.19**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but PM10 emission factors for tertiary crushers can be used. For PM-2.5, where AP-42 indicates No Data (ND), the PM-10 emission factor is used.

2. Tons per hour per unit of equipment.

3. Tons per day per unit of equipment. Dredge operates 10 hours per day. Aggregate plant operates 8 hours per day (starting at Screen S-2).

4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.

5a. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

5b. For wind erosion, AP-42 does not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, the PM10 factor is applied.

APPENDIX C: PROJECT MODELS AND INPUTS
C-3. Aggregate Plant Emissions

2. AGGREGATE PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport).

Estimating Assumptions:

Tons per day:	3,846	tons per day (average)
Tons per year:	1,000,000	tons sold
Tons per truck:	25	tons
Average distance traveled onsite:	4,000	feet
Active days per year:	260	days (52 weeks per year)
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	27.5	tons (based on avg of 15 ton empty, 40 ton loaded)
PM control efficiency:	70%	percent

Emission Factor:

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

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	1.78	0.18

VMT Estimates:

	Daily	Annual
Aggregate Haul Trucks	117	30,303

PM Emissions Estimate from On-Site Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	207.71	54,004.07	27.00	20.77	5,400.41	2.70
Abated	62.31	16,201.22	8.10	6.23	1,620.12	0.81

APPENDIX C: PROJECT MODELS AND INPUTS
C-3. Aggregate Plant Emissions

3. DREDGE AND AGGREGATE PLANTS - GREENHOUSE GAS EMISSIONS FROM ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use at dredge and aggregate plant. Electricity consumption assumptions per CEMEX based on PG&E records. Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

Electricity Use:

Average annual kWh: 4,449,170 kWh per year x 1.48**

Aggregate Plant Electricity Use (2021): 1297831 kWh
Dredge Electricity Use (2021): 1708365 kWh

Max Tons: 1,204,819

Scaling factor: 1.48

** Project kWh estimated to be up to 60% higher than 2021 baseline based on project max production assumptions

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	MWh/year	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2e
4,449,170	4,449	2.68	0.033	0.004	5.41	0.07	0.01	10.08

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Notes:

Emission factor for CO2 from 2021 The Climate Registry, Table 3.8, for Pacific Gas & Electric (2019), as corroborated by PG&E 2021 climate change sustainability report.
Emission factors for CH_4 and N_20 from 2021 The Climate Registry, Tables 3.1 (for eGRID subregion for California), for Pacific Gas & Electric.
kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Appendix C-4:
Ready-Mix Concrete Plant Emissions

APPENDIX C: PROJECT MODELS AND INPUTS
C-4. Ready-Mix Concrete Plant Emissions

1. RMC PLANT - PM EMISSIONS FROM CONCRETE BATCHING

Description:

PM emissions from ready-mix concrete plant. The ready-mix plant assumptions are per CEMEX. Plant operates approximately 38 days per year. Maximum hourly thruput of approximately 150 CY/hr; however, plant rarely operates at max production capacity. Annual production for project model is scaled up by 28% based on comparison of project to baseline aggregate plant production (tons sold). Emission factors and material composition from AP-42, Table 11.12-2 and BAAQMD Permit Handbook (2021).

Production Assumptions:

Cubic yards per hour:	38	cubic yards
Cubic yards per day:	307	cubic yards (based on 38 days per year)
Cubic yards per year:	11,649	cubic yards (based on 38 days per year)
Tons per hour:	77	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per day:	617	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per year:	23,438	tons (at 4,024 lbs per cubic yard per AP-42)
Stockpile Area (acres):	-	acres (no stockpiling independent of agg plant)

Material Composition:

Coarse Aggregate Percentage:	1,865	lbs per cy =	46.35%	percent
Sand Percentage:	1,428	lbs per cy =	35.49%	percent
Cement Percentage:	491	lbs per cy =	12.20%	percent
Cement Supplement Percentage:	73	lbs per cy =	1.81%	percent
Water Percentage:	167	lbs based on 20 gal. =	4.15%	percent
Total:	**4,024**		100.00%	percent

Source: AP-42, Table 11.12-2, end note "a".

PM10 EMISSIONS

	Process Rate			Uncontrolled PM10					Controlled PM10				
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	36	286	10,863	0.0033	0.12	0.94	35.85	0.02	0.00099	0.04	0.28	10.75	0.01
Sand Transfer	27	219	8,318	0.00099	0.03	0.22	8.23	0.00	0.000297	0.01	0.07	2.47	0.00
Cement Unloading	9	75	2,860	0.47	4.42	35.37	1,344.15	0.67	0.00034	0.00	0.03	0.97	0.00
Cement Supplement Unloading	1	11	425	1.1	1.54	12.31	467.72	0.23	0.0049	0.01	0.05	2.08	0.00
Weigh Hopper Loading	77	617	23,438	0.0028	0.22	1.73	65.63	0.03	0.00084	0.06	0.52	19.69	0.01
Mixer Loading (Truck Mix)	77	617	23,438	0.31	23.90	191.21	7,265.89	3.63	0.0263	2.03	16.22	616.43	0.31
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.7	-	-	-	-	0.51	-	-	-	-
			TOTALS:		**30.22**	**241.78**	**9,187.47**	**4.59**		**2.15**	**17.17**	**652.40**	**0.33**

Notes:

1. For PM-10 controlled, watering is used for dust control therefore a 70% abatement efficiency is applied (BAAQMD Permit Handbook, 2021, at p. 197).

2. Wind erosion factors from AP-42, Section 13.2.5, Industrial Wind Erosion. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX C: PROJECT MODELS AND INPUTS

C-4. Ready-Mix Concrete Plant Emissions

PM2.5 EMISSIONS													
	Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	36	286	10,863	0.0005	0.02	0.14	5.43	0.00	0.0005	0.02	0.14	5.43	0.00
Sand Transfer	27	219	8,318	0.00015	0.00	0.03	1.25	0.00	0.00015	0.00	0.03	1.25	0.00
Cement Unloading	9	75	2,860	0.07	0.66	5.27	200.19	0.10	0.00005	0.00	0.00	0.14	0.00
Cement Supplement Unloading	1	11	425	0.17	0.24	1.90	72.28	0.04	0.0007	0.00	0.01	0.30	0.00
Weigh Hopper Loading	77	617	23,438	0.0004	0.03	0.25	9.38	0.00	0.0004	0.03	0.25	9.38	0.00
Mixer Loading (Truck Mix)	77	617	23,438	0.047	3.62	28.99	1,101.60	0.55	0.0039	0.30	2.41	91.41	0.05
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.70	-	-	-	-	0.51	-	-	-	-
			TOTALS:		**4.57**	**36.58**	**1,390.13**	**0.70**		**0.35**	**2.84**	**107.90**	**0.05**

Notes:

1. For PM-2.5, where BAAQMD Permit Handbook (derived from AP-42) indicates No Data (ND) the corresponding uncontrolled PM-2.5 emission factor is used.

2a. Wind erosion factors from AP-42, Section 13.2.5, Industrial Wind Erosion. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

2b. For wind erosion, AP-42 and BAAQMD do not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, BAAQMD's PM10 factor is applied.

3. Emission factors obtained by referencing speciation profile in PM3431 which states PM2.5 = 15% of PM10 (BAAQMD Permit Handbook, 2021, at p. 197).

APPENDIX C: PROJECT MODELS AND INPUTS
C-4. Ready-Mix Concrete Plant Emissions

2. RMC PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic. The equation for the PM10 emission factor for fugitive dust from vehicle travel on a dry paved road is equation 1 from AP-42, Chapter 13.2.1.3. A PM10 control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport). Vehicle traffic conservatively assumed to consist of heavy trucks for caclulating emissions factor.

Estimating Assumptions:

Tons per day:	617	tons
Tons per year:	23,438	tons
Tons per truck:	18.1	tons (at 9 cubic yards per truck and 4,024 lbs per cubic yard per AP-42)
Average distance traveled onsite:	1,500	feet
Active days per year:	38	days per CEMEX
Particle Size Multiplier - PM10 (k):	0.0022	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.00054	lb/VMT (based on the average PM2.5:PM10 ratio of test runs in AP-42 Reference 30)
Road Surface Silt Loading (sL):	12	g/m^2 (silt loading for concrete batching)
Average Weight of Vehicles (W):	24.0	tons (conservatively based on avg. of 15 ton empty, 33 ton loaded)
PM_{10} control efficiency:	70%	percent

Emission Factor:

E=k(sL)^0.91x(W)^1.02

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	0.54	0.13

VMT Estimates:

	Daily	Annual
RMC Mixer (Haul) Trucks	10	368

Emissions Estimate from Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	5.22	198.52	0.10	1.28	48.73	0.02
Abated	1.57	59.56	0.03	0.38	14.62	0.01

APPENDIX C: PROJECT MODELS AND INPUTS
C-4. Ready-Mix Concrete Plant Emissions

3. RMC PLANT - GREENHOUSE GAS EMISSIONS FROM ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use at CEMEX's ready mix concrete plant. Electricity use for the existing plant provided by CEMEX (2012-2021). Electricity use estimated at 10.3 kWh/year/CY avg. based on baseline power consumption. Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	MWh/year	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2e
119,988	120	2.68	0.033	0.004	0.15	0.00	0.00	0.27

Notes:

Emission factors from CalEEMod User Guide, Appendix D, Table 1.2, Electrical Utility Emissions Factors of Greenhous Gases, for Pacific Gas & Electric.
kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX C: PROJECT MODELS AND INPUTS
C-4. Ready-Mix Concrete Plant Emissions

4. RMC PLANT - EMISSIONS FROM OFF-ROAD HEAVY EQUIPMENT

Description:

Criteria and GHG pollutant emissions from heavy equipment operation, including aggregate feed and feed bin cleanup. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4.

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Front-end loader	1	Cat 988G	2001	475	0.37	4
Skid-steer loader (bobcat)	1	Cat 262D	2001	72	0.37	2

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Front-end loader	0.96	8.77	0.38	0.38	4.80	0.05	568.30	0.09
Skid-steer loader (bobcat)	1.58	9.03	0.78	0.78	4.16	0.06	568.30	0.14
TOTALS:								

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298
CO2e =	*1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX C: PROJECT MODELS AND INPUTS

C-4. Ready-Mix Concrete Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Front-end loader	1.48	13.56	0.59	0.59	7.42	0.08	878.93	0.14
Skid-steer loader (bobcat)	0.19	1.06	0.09	0.09	0.49	0.01	66.61	0.02
TOTALS:	**1.67**	**14.62**	**0.68**	**0.68**	**7.91**	**0.08**	**945.55**	**0.16**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Front-end loader	0.03	0.26	0.01	0.01	0.14	0.00	15.15	0.00	15.23
Skid-steer loader (bobcat)	0.00	0.02	0.00	0.00	0.01	0.00	1.15	0.00	1.16
TOTALS:	**0.03**	**0.28**	**0.01**	**0.01**	**0.15**	**0.00**	**16.29**	**0.00**	**16.39**

APPENDIX C: PROJECT MODELS AND INPUTS
C-4. Ready-Mix Concrete Plant Emissions

5. RMC PLANT - VEHICLE IDLING

Description:

On-road vehicle emissions associated with vehicle idling, assuming idling times of up to 5 minutes per vehicle (truck). Emission factors from EMFAC 2021. Production assumptions from CEMEX.

EMFAC2021 (v1.0.2) Emission Rates (Yolo County):

Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/vehicle/day for idling emission rates

	Region	Vehicle Category	Model Year	Speed	Fuel	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
	Yolo	T7 Tractor	Aggregated	Aggregated	DSL	3.454	46.942	45.569	0.082	8738.535	0.160	0.018	0.018	1.376

Notes:

T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck

Production Assumptions:

Tons per truck - haul trucks:	25	tons
Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Daily Max Production - RMC Plant:	617	tons
Annual Operating Days:	38	days

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907
5-min per 8-hr day	0.010

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX C: PROJECT MODELS AND INPUTS

C-4. Ready-Mix Concrete Plant Emissions

Annual Emissions Calculation:

On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	Greenhouse Gases CO2 (MT/yr)	CH4 (MT/yr)	N_20 (MT/yr)	C02e (MT/yr)
Haul trucks (agg import) - @0%	T7 Tractor	0	-	-	-	-	-	-	-	-	-
Haul trucks (cement / fly ash) - @14%	T7 Tractor	3	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Mixer trucks (finish product)	T7 Tractor	34	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.12
		TOTALS:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.13**	**0.00**	**0.00**	**0.14**

Daily Emissions Calculation:

On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (lb/day)	NOX (lb/day)	CO (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Haul trucks (agg import) - @0%	T7 Tractor	0	-	-	-	-	-
Haul trucks (cement / fly ash) - @14%	T7 Tractor	3	0.00	0.00	0.00	0.00	0.00
Mixer trucks (finish product)	T7 Tractor	34	0.00	0.04	0.04	0.00	0.00
		TOTALS:	**0.00**	**0.04**	**0.04**	**0.00**	**0.00**

Appendix C-5:
Recycle Plant Emissions

APPENDIX C: PROJECT MODELS AND INPUTS
C-5. Recycle Plant Emissions

1. RECYCLE PLANT - PM EMISSIONS FROM PROCESSING AND WIND EROSION

Description:
The recycle plant equipment list is based on a typical 375 ton per hour portable plant capacity. Emission factors from AP-42, Table 11.19.2-2.

Production Assumptions:

Annual production:	30,003	tons	Stockpile Area (acres):	5	acres
% of Annual Production: Plant 1 (Recycle Plant):	100%		Annual production days:	10	days at 3,000 tons per day
Annual Production: Plant 1 (Recycle Plant):	30,003	tons			

PM10 EMISSIONS																
				Process Rate			Uncontrolled PM10					Controlled PM10				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Recycle Plant																
Jaw Crusher	Primary crushing[1]	1	25%	94	750	7,501	0.0024	0.23	1.80	18.00	0.01	0.00054	0.05076	0.405	4.05	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	0.000046	0.02	0.14	1.38	0.00
Primary Screen	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	7.40E-04	0.28	2.22	22.20	0.01
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	4.60E-05	0.02	0.14	1.38	0.00
Cone Crusher	Secondary crushing[1]	1	80%	300	2,400	24,002	0.0024	0.72	5.76	57.60	0.03	0.00054	0.16	1.30	12.96	0.01
Process Conveyors	Conveyor transfers	3	100%	375	3,000	30,003	0.0011	1.24	9.90	99.01	0.05	4.60E-05	0.05	0.41	4.14	0.00
Process / Product Conveyors	Conveyor transfers	4	50%	190	1,500	15,002	0.0011	0.84	6.60	66.01	0.03	4.60E-05	0.03	0.28	2.76	0.00
Feeder / Grizzly	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	7.40E-04	0.28	2.22	22.20	0.01
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	0.35	8.50	3,102.50	1.55	5.10E-01	0.11	2.55	930.75	0.47
						TOTALS:		**10.72**	**91.36**	**3,931.18**	**1.97**		**1.00**	**9.66**	**1,001.83**	**0.50**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but emission factors for PM-10 for tertiary crushers can be used as an upper limit.

2. Tons per hour per unit of equipment.

3. Tons per day per unit of equipment.

4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.

5. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX C: PROJECT MODELS AND INPUTS

C-5. Recycle Plant Emissions

PM2.5 EMISSIONS																
				Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Recycle Plant																
Jaw Crusher	Primary crushing[1]	1	25%	94	750	7,501	0.0024	0.23	1.80	18.00	0.01	0.0001	0.01	0.08	0.75	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	1.3E-05	0.00	0.04	0.39	0.00
Primary Screens	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	0.00005	0.02	0.15	1.50	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	1.30E-05	0.00	0.04	0.39	0.00
Cone Crusher	Secondary crushing[1]	1	80%	300	2,400	24,002	0.0024	0.72	5.76	57.60	0.03	0.0001	0.03	0.24	2.40	0.00
Process Conveyors	Conveyor transfers	3	100%	375	3,000	30,003	0.0011	1.24	9.90	99.01	0.05	1.30E-05	0.01	0.12	1.17	0.00
Process / Product Conveyors	Conveyor transfers	4	50%	190	1,500	15,002	0.0011	0.84	6.60	66.01	0.03	1.30E-05	0.01	0.08	0.78	0.00
Feeder / Grizzly	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	0.00005	0.02	0.15	1.50	0.00
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	0.35	8.50	3,102.50	1.55	5.10E-01	0.11	2.55	930.75	0.47
						TOTALS:		**10.72**	**91.36**	**3,931.18**	**1.97**		**0.22**	**3.44**	**939.63**	**0.47**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but PM10 emission factors for tertiary crushers can be used. For PM-2.5, where AP-42 indicates No Data (ND), the PM-10 emission factor is used.

2. Tons per hour per unit of equipment.

3. Tons per day per unit of equipment.

4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.

5a. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

5b. For wind erosion, AP-42 does not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, the PM10 factor is applied.

APPENDIX C: PROJECT MODELS AND INPUTS
C-5. Recycle Plant Emissions

2. RECYLE PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic to support recycle operations. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport).

Estimating Assumptions:

Tons per day:	3,000	tons per day (average)
Tons per year:	30,003	tons
Tons per truck:	25	tons
Average distance traveled onsite:	4,000	feet
Active days per year:	10	days
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	27.5	tons (based on avg of 15 ton empty, 40 ton loaded)
PM control efficiency:	70%	percent

Emission Factor:

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

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	1.78	0.18

VMT Estimates:

	Daily	Annual
Aggregate Haul Trucks	91	909

PM Emissions Estimate from On-Site Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	162.01	1,620.28	0.81	16.20	162.03	0.08
Abated	48.60	486.09	0.24	4.86	48.61	0.02

APPENDIX C: PROJECT MODELS AND INPUTS
C-5. Recycle Plant Emissions

3. RECYCLE PLANT - EMISSIONS FROM PORTABLE PROCESSING PLANT ENGINES

Description:

Criteria pollutant and GHG emissions from track-mounted portable processing plant engines. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4. Engine model year 2021 assumed for future operation.

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Feeder / Screen	1	Metso LT ST4.8 (75 kW)	2021	100	0.78	8
Crusher	1	Metso LT220D (310 kW)	2021	540	0.78	8
Stacker Conveyor	1	Metso LT CT3.2 (36 kW)	2021	51	0.78	8

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Feeder / Screen	0.44	2.99	0.18	0.18	3.71	0.01	568.30	0.04
Crusher	0.27	1.61	0.06	0.06	1.07	0.01	568.30	0.02
Stacker Conveyor	0.44	2.99	0.18	0.18	3.71	0.01	568.30	0.04

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*

GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX C: PROJECT MODELS AND INPUTS

C-5. Recycle Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Feeder / Screen	0.60	4.10	0.24	0.24	5.09	0.01	780.16	0.05
Crusher	1.99	11.91	0.41	0.41	7.95	0.04	4212.87	0.18
Stacker Conveyor	0.31	2.09	0.12	0.12	2.60	0.00	397.88	0.03
TOTALS:	**2.89**	**18.10**	**0.78**	**0.78**	**15.64**	**0.05**	**5390.91**	**0.26**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Feeder / Screen	0.00	0.02	0.00	0.00	0.03	0.00	3.54	0.00	3.55
Crusher	0.01	0.06	0.00	0.00	0.04	0.00	19.11	0.00	19.13
Stacker Conveyor	0.00	0.01	0.00	0.00	0.01	0.00	1.80	0.00	1.81
TOTALS:	**0.01**	**0.09**	**0.00**	**0.00**	**0.08**	**0.00**	**24.45**	**0.00**	**24.49**

APPENDIX C: PROJECT MODELS AND INPUTS
C-5. Recycle Plant Emissions

4. RECYCLE PLANT - EMISSIONS FROM OFF-ROAD HEAVY EQUIPMENT

Description:

Criteria pollutant emissions from heavy equipment operation, including raw materials feed and stockpile management. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4.

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Loader	1	Cat 980	2018	380	0.36	4
Excavator	1	Cat 330	2018	250	0.38	8
Excavator - Rock Breaker	1	Cat 330	2018	250	0.38	4

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Loader	0.33	3.73	0.14	0.13	1.87	0.01	484.57	0.15
Excavator	0.20	2.59	0.08	0.07	1.15	0.01	490.26	0.15
Excavator - Rock Breaker	0.20	2.59	0.08	0.07	1.15	0.01	490.26	0.15

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298

CO2e = *1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*

GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX C: PROJECT MODELS AND INPUTS

C-5. Recycle Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Loader	0.40	4.49	0.17	0.16	2.25	0.01	583.34	0.18
Excavator	0.33	4.33	0.13	0.12	1.92	0.02	819.71	0.25
Excavator - Rock Breaker	0.17	2.17	0.07	0.06	0.96	0.01	409.86	0.13
TOTALS:	**0.90**	**10.99**	**0.37**	**0.33**	**5.14**	**0.04**	**1812.92**	**0.56**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Loader	0.00	0.02	0.00	0.00	0.01	0.00	2.65	0.00	2.67
Excavator	0.00	0.02	0.00	0.00	0.01	0.00	3.72	0.00	3.76
Excavator - Rock Breaker	0.00	0.01	0.00	0.00	0.00	0.00	1.86	0.00	1.88
TOTALS:	**0.00**	**0.05**	**0.00**	**0.00**	**0.03**	**0.00**	**8.22**	**0.00**	**8.31**

Appendix C-6:
On-Road Mobile Source Emissions

APPENDIX C: PROJECT MODELS AND INPUTS
C-6. On-Road Mobile Source Emissions

1. ON-ROAD MOBILE SOURCE EMISSIONS

Description:

On-road vehicle emissions associated with vehicle travel. Emission factors from EMFAC 2021. Production assumptions and average customer and employee trip distances from CEMEX. Cement and fly ash supplied by CEMEX West Sacramento terminal. Aggregates used in ready-mix production are fed directly into plant feed bins by front-end loader (with no off-site imports).

EMFAC2021 (v1.0.2) Emission Rates (Yolo County):
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/mile for emission rates; miles for trip distance
Speed Selections: Average speed of 45 mph assumed for light-duty vehicle trips (gas) and 35 mph for truck trips (diesel).

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Trip Distance (one-way)	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
Yolo	2022	LDA	Aggregated	45	GAS	44.7	0.009	0.856	0.048	0.003	265.796	0.002	0.001	0.001	0.005
Yolo	2022	LDT1	Aggregated	45	GAS	44.7	0.029	1.761	0.150	0.003	314.820	0.006	0.002	0.002	0.011
Yolo	2022	LDA/LDT1	Average	45	GAS	44.7	0.014	1.082	0.074	0.003	278.052	0.003	0.001	0.001	0.007
Yolo	2022	MDV	Aggregated	35	DSL	9.0	0.014	0.231	0.062	0.004	398.067	0.001	0.007	0.006	0.063
Yolo	2022	T7 Tractor	Aggregated	35	DSL	31.2	0.040	0.199	2.166	0.015	1584.085	0.002	0.010	0.009	0.250

Notes:

LDA/LDT1 average represents the weighted average factor assuming 75% LDA and 25% LDT1 for passenger vehicle travel.

LDA = Passenger cars

LDT1 = Light-Duty Trucks (GVWR <6000 lbs. and ETW <= 3750 lbs)

MDV = Medium-Duty Trucks (GVWR 6000-8500 lbs)

T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck

Trip distance based on EMFAC reported VMT divided by trips, except for T7 Tractor trip distances adjusted for customer deliveries per CEMEX.

APPENDIX C: PROJECT MODELS AND INPUTS
C-6. On-Road Mobile Source Emissions

Production Assumptions:

Annual Production - Agg Plant:	1,000,000	tons sold	Tons per truck - haul trucks:	25	tons
Annual Production - RMC Plant:	23,438	tons (based on ~2 tons per CY)	Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Annual Production - Recycle Plant:	30,003	tons	Maintenance / service visits:	2	per day per plant average
Annual Operating Days - Agg Plant:	260	days (52 weeks per year)			
Annual Operating Days - RMC Plant:	38	days			
Annual Operating Days - Recycle Plant:	7	days			

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_20:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Annual Emissions Calculation:

On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/yr	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	Greenhouse Gases: CO2 (MT/yr)	CH4 (MT/yr)	N_20 (MT/yr)	C02e (MT/yr)
Aggregate Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		22	511,368	0.01	0.04	0.61	0.00	0.00	142.16	0.00	0.00	143.20
Haul trucks (finish product)	T7 Tractor			2,496,000	0.11	5.96	0.55	0.03	0.02	3,953.07	0.00	0.62	4,139.16
Maintenance / service vehicle	MDV			9,360	0.00	0.00	0.00	0.00	0.00	3.73	0.00	0.00	3.90
Ready Mix Concrete Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		2	6,794	0.00	0.00	0.01	0.00	0.00	1.89	0.00	0.00	1.90
Haul trucks (agg import) - @0%	T7 Tractor	0		-	-	-	-	-	-	-	-	-	-
Mixer trucks (finish product)	T7 Tractor	31.2		81,253	0.00	0.19	0.02	0.00	0.00	128.69	0.00	0.02	134.74
Haul trucks (cement / fly ash) - @14%	T7 Tractor	33.0		8,663	0.00	0.02	0.00	0.00	0.00	13.72	0.00	0.00	14.37
Maintenance / service vehicle	MDV			1,368	0.00	0.00	0.00	0.00	0.00	0.54	0.00	0.00	0.57
Recycle Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		2	1,252	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.35
Haul trucks (import recycle feed)	T7 Tractor			74,887	0.00	0.18	0.02	0.00	0.00	118.60	0.00	0.02	124.19
Haul trucks (finish product)	T7 Tractor			74,887	0.00	0.18	0.02	0.00	0.00	118.60	0.00	0.02	124.19
Maintenance / service vehicle	MDV			252	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.11
			TOTALS:	**3,266,085**	**0.13**	**6.57**	**1.22**	**0.03**	**0.03**	**4,481.45**	**0.01**	**0.69**	**4,686.67**

Notes:

Cement and fly ash supplement accounts for approximately 14% of ready-mix concrete.
Employee estimates per CEMEX.

APPENDIX C: PROJECT MODELS AND INPUTS

C-6. On-Road Mobile Source Emissions

Daily Emissions Calculation:

On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/day	ROG (lbs/day)	NOX (lbs/day)	CO (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Aggregate Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		22	1,967	0.06	0.32	4.69	0.01	0.01
Haul trucks (finish product)	T7 Tractor			9,600	0.85	45.84	4.21	0.21	0.19
Maintenance / service vehicle	MDV			36	0.00	0.00	0.02	0.00	0.00
Ready Mix Concrete Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		2	179	0.01	0.03	0.43	0.00	0.00
Haul trucks (agg import) - @0%	T7 Tractor	0		-	-	-	-	-	-
Mixer trucks (finish product)	T7 Tractor	31.2		2,138	0.19	10.21	0.94	0.05	0.04
Haul trucks (cement / fly ash) - @14%	T7 Tractor	33.0		228	0.02	1.09	0.10	0.01	0.00
Maintenance / service vehicle	MDV			36	0.00	0.00	0.02	0.00	0.00
Recycle Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		2	179	0.01	0.03	0.43	0.00	0.00
Haul trucks (import recycle feed)	T7 Tractor			10,698	0.94	51.09	4.69	0.24	0.21
Haul trucks (finish product)	T7 Tractor			10,698	0.94	51.09	4.69	0.24	0.21
Maintenance / service vehicle	MDV			36	0.00	0.00	0.02	0.00	0.00
			TOTALS:	**35,795**	**3.02**	**159.71**	**20.24**	**0.74**	**0.67**

Notes:

Cement and fly ash supplement accounts for approximately 14% of ready-mix concrete.

Employee estimates per CEMEX.

Appendix C-7:
Energy Use Calculations

APPENDIX C: PROJECT MODELS AND INPUTS

C-7. Energy Use Calculations

Emission Factors per Fuel Unit

Gasoline	8.78	kg CO2/gal
Diesel (Distallate No. 2)	10.21	kg CO2/gal

Source: 2021 Default Emission Factors, Table 1.1. The Climate Registry (May 2021).

Mobile Source Equipment:	Fuel	MTCO2e	kg CO2	Est. Fuel Gallons
Mining Operations				
Off-Road (App. C-1)	Diesel	1341.64	1,341,640.00	131,404.51
On-Road Worker Trips (App. C-1)	Gasoline	27.40	27,400.00	3,120.73
Dredge and Aggregate Plant Operations				
Off-Road Equipment (App. C-3)	Diesel	585.43	585,431.16	57,339.00
Vehicle Idling (App. C-3)	Diesel	3.81	3,813.40	373.50
Ready-Mix Plant Operations				
Off-Road Equipment (App. C-4)	Diesel	16.39	16,385.78	1,604.88
Vehicle Idling (App. C-4)	Diesel	0.14	136.65	13.38
Recycle Plant Operations				
Portable Processing Plant Engines (App. C-5)	Diesel	24.49	24,487.68	2,398.40
Off-Road Equipment (App. C-5)	Diesel	8.31	8,307.43	813.66
On-Road Mobile Source Emissions				
On-Road (App. C-6)	Gasoline	145.45	145,453.68	16,566.48
On-Road (App. C-6)	Diesel	4,541.22	4,541,217.68	444,781.36
TOTALS:	**Diesel**	**6,521.42**	**6,521,419.79**	**638,728.68**
TOTALS:	**Gasoline**	**172.85**	**172,853.68**	**19,687.21**

Plant and Conveyor Equipment	Power Source	kWh/year
Conveyor (App C-2)	Electricity	655,421
Dredge and Aggregate Plants (App C-3)	Electricity	4,449,170
Ready-mix Plant (App C-4)	Electricity	119,988
TOTALS:		**5,224,579**