Otay Hills Construction Aggregate and Inert Debris Engineered Fill Operation Project

Appendix M

Greenhouse Gas Emissions Analysis Report

for the

Public Review
Draft Environmental Impact Report

PDS2004-3300-04-004 (MUP);
PDS2004-3310-04-001 (RP);
PDS2010-3813-10-002 (SPA);
Log No. 04-190-04

June 2020

Prepared for:

County of San Diego
Planning & Development Services
5510 Overland Avenue, Suite 310
San Diego, California 92123

Greenhouse Gas Emissions Analysis Report

Otay Hills Construction Aggregate and Inert Debris Engineered Fill Operation Project

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June 2020

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS (cont.)

TABLE OF CONTENTS (cont.)

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

Acronyms and Abbreviations

AB	Assembly Bill
ADT	average daily trips
AEP	Association of Environmental Professionals
ANFO	ammonium nitrate/fuel oil
AQMD	Air Quality Management Districts
BACT	Best Available Control Technology
BAU	business-as-usual
BMP	best management practices
BTU	British thermal units
CAA	Clean Air Act
CAFE	Corporate Average Fuel Economy
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building
CalRecycle	California Department of Resources Recycling and Recovery
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbon
CH_4	methane
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
cy	cubic yard
^oF	Fahrenheit
EIR	Environmental Impact Report
EO	Executive Order
EPIC	Energy Policy Initiative Center
GHG	greenhouse gas
GWP	global warming potential
HFCs	hydrofluorocarbons
HMA	Hot Mix Asphalt
HVAC	heating, ventilation, and air conditioning

Acronyms and Abbreviations (cont.)

kg	kilograms
kWh	kilowatt-hours
IDEFO	Inert Debris Engineered Fill Operation
IPCC	Intergovernmental Panel on Climate Change
lb	pound
LCFS	Low Carbon Fuel Standard
MMBTU	million metric British thermal units
MMT	million metric tons
mph	miles per hour
MPOs	Metropolitan Planning Organizations
MRR	Mandatory Reporting Rule
MT	metric tons
MWh	megawatt-hours
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
OAL	Office of Administrative Law
ODS	ozone depleting substance
OPR	Office of Planning and Research
OWD	Otay Water District
PDS	Planning and Development Services (County of San Diego)
PFCs	perfluorocarbons
PM	particulate matter
ppm	parts per million
Project	Otay Hills Construction Aggregate and IDEF Operation
PSD	Prevention of Significant Deterioration
PUC	Public Utilities Commission
RAP	reclaimed asphalt pavement
RPS	Renewable Portfolios Strategy
RTAC	Regional Targets Advisory Committee

Acronyms and Abbreviations (cont.)

SANDAG	San Diego Association of Governments
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SDCWA	San Diego County Water Authority
SDG&E	San Diego Gas and Electric
SEP	2013 County Strategic Energy Plan
sf	square feet
SF_6	sulfur hexafluoride
SR	State Route
TPH	tons per hour
UNEP	United Nations Environment Program
U.S.	United States
USEPA	U.S. Environmental Protection Agency
VMT	vehicle miles traveled

EXECUTIVE SUMMARY

This report evaluates the potential greenhouse gas (GHG) emission impacts associated with the Otay Hills Construction Aggregate and Inert Debris Engineered Fill Operation (herein referred to as the "Project" or "Proposed Project"). An assessment was made to estimate the total GHG emissions that would occur as a result of construction and operation of the Proposed Project.

As the County of San Diego does not currently have any approved quantitative thresholds related to GHG emissions, this analysis relies upon the South Coast Air Quality Management District (SCAQMD) threshold for heavy industrial/stationary sources of 10,000 metric tons (MT) of carbon dioxide equivalents (CO_2e). Further, given the State of California's mandated goal of reducing statewide GHG emissions to 40 percent below 1990 levels by 2030, the incremental increase of GHG emissions resulting from operation of the Proposed Project must be evaluated for cumulatively considerable significance.

The Proposed Project would result in GHG emissions during both its construction (Phase 1) and operational phases (Phases 2, 3, and 4). Construction emissions would be associated with heavy construction equipment and workers and truck trips. All construction activities are assumed to occur in two separate stages: mass grading/backbone infrastructure and vertical building/paving; the construction stages would occur sequentially.

Operational emissions would be associated with heavy construction equipment; quarry blasting and drilling; aggregate processing; cement-treated-based (CTB) plant; hot mix asphalt (HMA) plant; and concrete batch plant (CBP); preparation and transport; workers' commutes; and haul truck trips to and from the site. All rock extraction, aggregate processing, and recycling activities are assumed to occur in an overlapping schedule in two phases (Phases 2 and 3) for approximately 120 years. Phase 2 activity would involve mostly hillside cut and Phase 3 is an open hole excavation activity with a maximum depth of 525 feet. Phase 4 (reclamation) would consist of backfilling the remainder of Phases 3a through 3d open hole with inert fill material (fill dirt) up to grade level.

The Project-related construction activities (mass grading and installation of backbone infrastructure) and secondary construction stage, including paving and vertical construction, are estimated to generate approximately 1,878 MT CO_2e over the one-year construction period. Construction emissions are amortized over the life of the project, determined to be 120 years, such that the proposed construction activities would contribute an average of 16 MT CO_2e per year. Including amortized construction emissions, Phase 2, when the aggregate mining operation would be under way, would generate approximately 9,354 MT CO_2e annually. Phase 3, including amortized construction, would generate approximately 8,211 MT CO_2e annually. Emissions during both Phase 2 and Phase 3 would be less than the threshold of 10,000 MT CO_2e. Phases 3 and 4 would overlap from years 2046 to 2110. Summing the emissions unique to Phase 4 with the Phase 3 total yields a combined 9,837 MT CO_2e annually, which is less than the 10,000 MT CO_2e threshold.

Phase 4 inert debris engineered fill operation and amortized construction would generate approximately 2,337 MT CO_2e annually, which is less than the 10,000 MT CO_2e threshold.

As a condition of building permit approval, the Proposed Project is required to achieve the 2016 Title 24 Energy Efficiency Standards for office, lab, shop, and scale stations. Verification of energy efficiencies shall be demonstrated based on a performance approach, using California Energy Commission (CEC)-approved Title 24 compliance reports provided by the Project applicant to the County prior to issuance of the building permit.

A project would have a cumulatively considerable contribution to climate change impacts if it results in a net increase of GHG emissions, either directly or indirectly, at a level exceeding 10,000 MT CO_2e per year. The Proposed Project would not generate GHG emissions in excess of this threshold; therefore, GHG emissions associated with the Project would be less than significant. Based on guidance from the California Environmental Quality Act (CEQA) Guidelines and County, the Proposed Project would not result in a significant climate change impact.

In February 2018, the County adopted a Climate Action Plan (CAP) which established a streamlined review process for proposed development projects. To determine consistency with the CAP, the Project was evaluated using the CAP Consistency Review Checklist (Checklist). The Checklist contains two steps: (1) Land Use Consistency; and (2) CAP Measures Consistency. The Project was found consistent with Checklist Step 1 and Step 2 and would therefore be consistent with the growth projections and land use assumptions utilized in the CAP and would comply with all applicable CAP Measures.

1.0 INTRODUCTION AND PROJECT DESCRIPTION

This report evaluates the significance of the Proposed Project's contribution of GHG emissions to statewide GHG emissions and GHG emissions reduction targets. To evaluate the incremental effect of the Project's development on statewide and global climate change, it is important to have a basic understanding of the nature of the global climate change problem.

1.1 Understanding Global Climate Change

Global climate change refers to changes in average climatic conditions on Earth, as a whole, including temperature, wind patterns, precipitation, and storms. Historical records show that global temperature changes have occurred naturally in the past, such as during previous Ice Ages. To measure climate change, scientists look at long-term trends. The temperature trend, including data through 2010, shows the climate has warmed by approximately 0.36 degrees Fahrenheit (°F) per decade since the late 1970s (National Aeronautics and Space Administration [NASA] 2011).

Global temperatures are moderated by naturally occurring atmospheric gases. These gases are commonly referred to as GHGs because they function like a greenhouse by letting light in but preventing heat from escaping. These gases allow solar radiation (sunlight) into the Earth's atmosphere but prevent radiative heat from escaping, thus warming the Earth's atmosphere. The resulting balance between incoming solar radiation and outgoing radiation from both the Earth's surface and the atmosphere maintains the planet's habitability. The Earth's surface temperature averages about 58°F because of the greenhouse effect. Without it, the Earth's average surface temperature would be somewhere around an uninhabitable 0°F.

GHGs are emitted by natural processes and human (anthropogenic) activities. Anthropogenic GHG emissions are primarily associated with (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, manufacturing, and other activities; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The statistical models show a "high confidence" that temperature increase caused by anthropogenic GHG emissions could be kept to less than two degrees Celsius relative to pre-industrial levels if atmospheric concentrations are stabilized at about 450 parts per million (ppm) carbon dioxide equivalent (CO_2e) by the year 2100 (IPCC 2014).

1.2 Greenhouse Gases of Primary Concern

The GHGs, as defined under California's Assembly Bill (AB) 32, include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Although water vapor is the most abundant and variable GHG in the atmosphere, it is not considered a pollutant; it maintains a climate necessary for life.

CO_2 is the most important and common anthropogenic GHG. CO_2 is an odorless, colorless GHG. Natural sources include the decomposition of dead organic matter; respiration of bacteria, plants,

animals, and fungi; evaporation from oceans; and volcanic outgassing. Anthropogenic sources of CO_2 include burning fuels, such as coal, oil, natural gas, and wood. Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. The atmospheric CO_2 concentration in 2010 was 390 ppm, 39 percent above the concentration at the start of the Industrial Revolution (about 280 ppm in 1750). As of October 2016, the CO_2 concentration exceeded 402 parts per million (ppm) (National Oceanic and Atmospheric Administration [NOAA] 2017).

CH_4 is a gas and is the main component of natural gas used in homes. A natural source of methane is from the decay of organic matter. Geological deposits known as natural gas fields contain methane, which is extracted for fuel. Other sources are from decay of organic material in landfills, fermentation of manure, and cattle digestion.

N_2O is produced by both natural and human-related sources. N_2O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic (fatty) acid production, and nitric acid production.

Fluorocarbons are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. Chlorofluorocarbons are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at Earth's surface). Chlorofluorocarbons were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone; therefore, their production was stopped as required by the Montreal Protocol.

SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semi-conductor manufacturing, and as a tracer gas for leak detection.

GHGs have long atmospheric lifetimes that range from one year to several thousand years. Long atmospheric lifetimes allow for GHGs to disperse around the globe. Because GHGs vary widely in the power of their climatic effects, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both potency and lifespan in the atmosphere as compared to CO_2. For example, because methane and N_2O are approximately 25 and 298 times more powerful than CO_2, respectively, in their ability to trap heat in the atmosphere, they have GWPs of 25 and 298, respectively (CO_2 has a GWP of 1). CO_2e is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the prevalence of that gas to produce CO_2e. The atmospheric lifetime and GWP of selected GHGs are summarized in Table 1, *Global Warming Potentials and Atmospheric Lifetimes*. As shown in the table, the GWP for common GHGs ranges from 1 (CO_2) to 22,800 (SF_6).

Table 1 GWP AND ATMOSPHERIC LIFETIMES		
Gas	**Atmospheric Lifetime (years)**	**100-year GWP[1]**
Carbon dioxide (CO_2)	50-200	1
Methane (CH_4)[2]	12	25
Nitrous oxide (N_2O)	114	298
HFC-23	270	14,800
HFC-125	29	3,500
HFC-134a	14	1,430
HFC-143a	52	4,470
HFC-152a	1.4	124
HFC-227ea	34.2	3,220
HFC-236fa	240	9,810
HFC-4310mee	15.9	1,640
CF_4	50,000	7,390
C_2F_6	10,000	12,200
SF_6	3,200	22,800

Source: IPCC 2007.

[1] GWPs used here are calculated over 100-year time horizon.

[2] The methane GWP includes the direct effects and those indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

GWP = Global Warming Potential

1.3 Project Location and Description

The Project site is located in the unincorporated community of East Otay Mesa within the Otay Subregional Plan Area in the southernmost portion of San Diego County. The Project impact footprint is located 8.5 miles east of I-805/SR 905 interchange and 0.5 mile east of the intersection of Otay Mesa Road and Alta Road. The Project impact footprint is located at the eastern extension of Otay Mesa on the southwestern flank of the San Ysidro Mountains, approximately 2.5 miles north of the U.S.-Mexico international border. Refer to Figure 1 for the regional location. Figure 2 is an aerial photograph of the Project site and surrounding vicinity.

The Project is a proposal to establish a mineral resource recovery operation and associated activities to create much needed construction aggregates and materials to serve the economy of San Diego County for an approximate 90-year period. The Project is located within a 438-acre ownership with extractive operations proposed on 105 acres of the site. The balance of the 438-acre ownership would be placed in biological open space prior to aggregate recovery activities. Depending on the rate of production, the Proposed Project would have a lifespan of approximately 120 years. Approximately 90.9 million tons (i.e., 104.5 million cubic yards [cy]) of mineral resources would be extracted from the Project footprint area and over 28 million tons (33 million cy) of inert debris would be received. Annual production amounts for the Project are anticipated to be between 0.6 and 1.6 million tons (between 0.7 and 1.8 million cy) of aggregate per year.

The Proposed Project would consist of site preparation for the processing plant equipment and a phased extraction and backfilling operation. Ongoing backfilling of the site during the open pit extraction phase of the Project will allow reclamation to progress concurrently with the extraction operation. Assuming a start date of 2020, the Project time line can be summarized as follows:

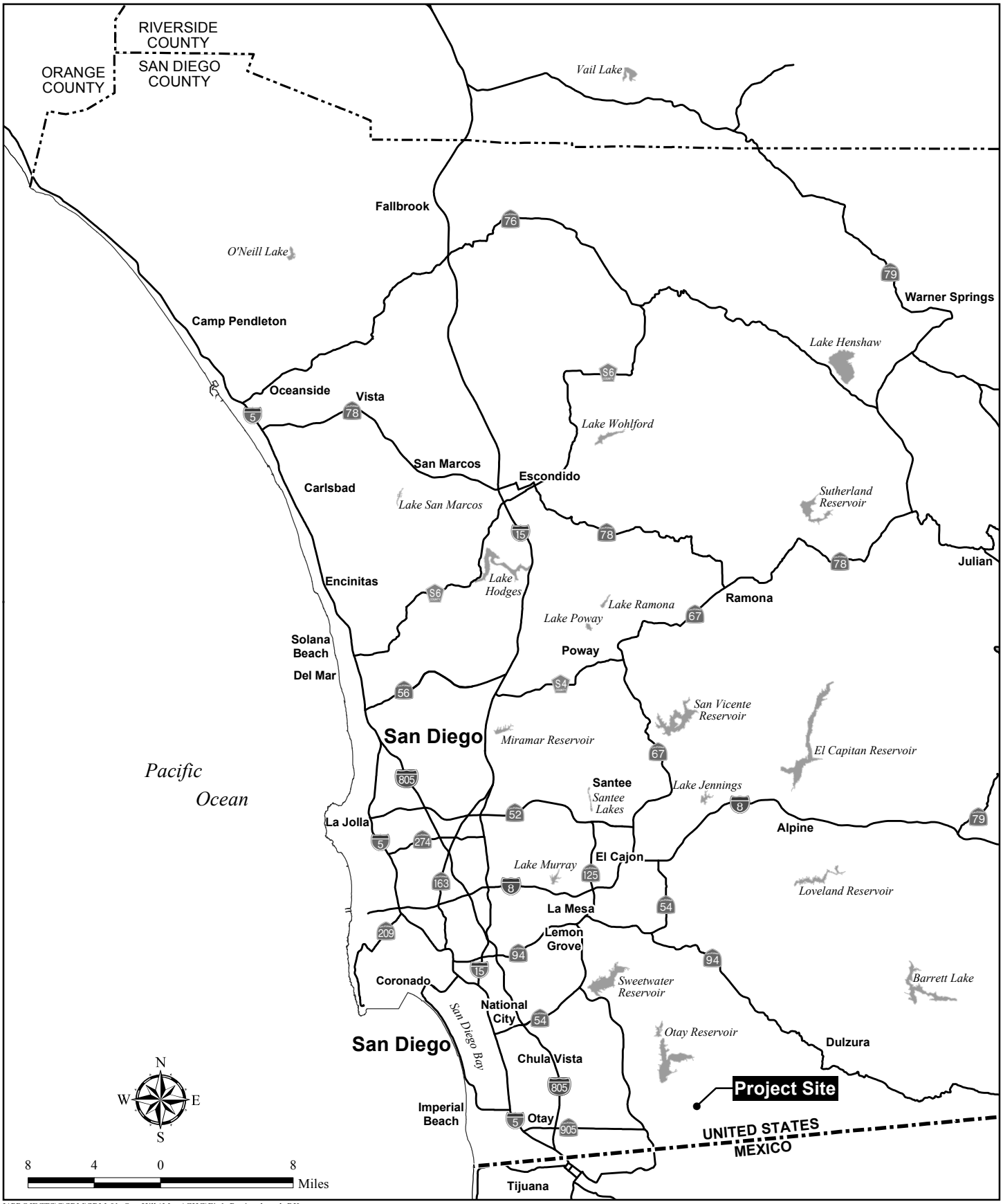
- Phase 1: Site Preparation (construction), 1 Year (2020)
- Phase 2: Extraction to Natural Grade Elevation, 21 Years (2021-2042)
- Phase 3: Open Pit Extraction, 66 Years (2043-2110)
- Phase 4: Inert Debris Engineered Fill Operation (IDEFO, or Landfill), 64 to 90 Years (2046-Post 2110)

It should be noted that the variables used to prepare the Project time line include assumptions that could change over time. This is particularly true for Phase 4, where the amount of inert debris that will be available to fill the proposed landfill is dependent upon variables that will change such as: (1) the regional economy which affects the rate of construction; (2) the level of recycling; and (3) the competition from other inert landfill sites.

Table 2 presents the summary of the quarry and reclamation plan data. A more detailed description of the activities that would occur in each Project phase is provided in Section 1.4.2, *Phasing*.

Table 2
QUARRY AND RECLAMATION PLAN DATA SUMMARY

Design/Operating Characteristics	**Description/Parameters/Assumptions[1]**
Operational Activities	
Quarrying	Quarrying Excavation through drilling, blasting, and heavy equipment operation.
Processing	Processing Aggregate processing plant, asphalt batch plant, ready-mix concrete plant, recycled materials plant, and aggregate load-out areas.
Reclamation	Grading, overburden/topsoil replacement and revegetation.
Acreages	
Total Parcel(s)	Project Acreage 105 acres
Phase 1 Site Preparation	16.1 acres
Phase 2 Extraction to Natural Grade Elevation	
Phase 2a	17.1 acres
Phase 2b	24.2 acres
Phase 2c	45.4 acres
Phase 3 – Open Pit Extraction	
Phase 3a	8.5 acres
Phase 3b	22.1 acres
Phase 3c	22.1 acres
Phase 3d	33.7 acres



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Regional Location Map

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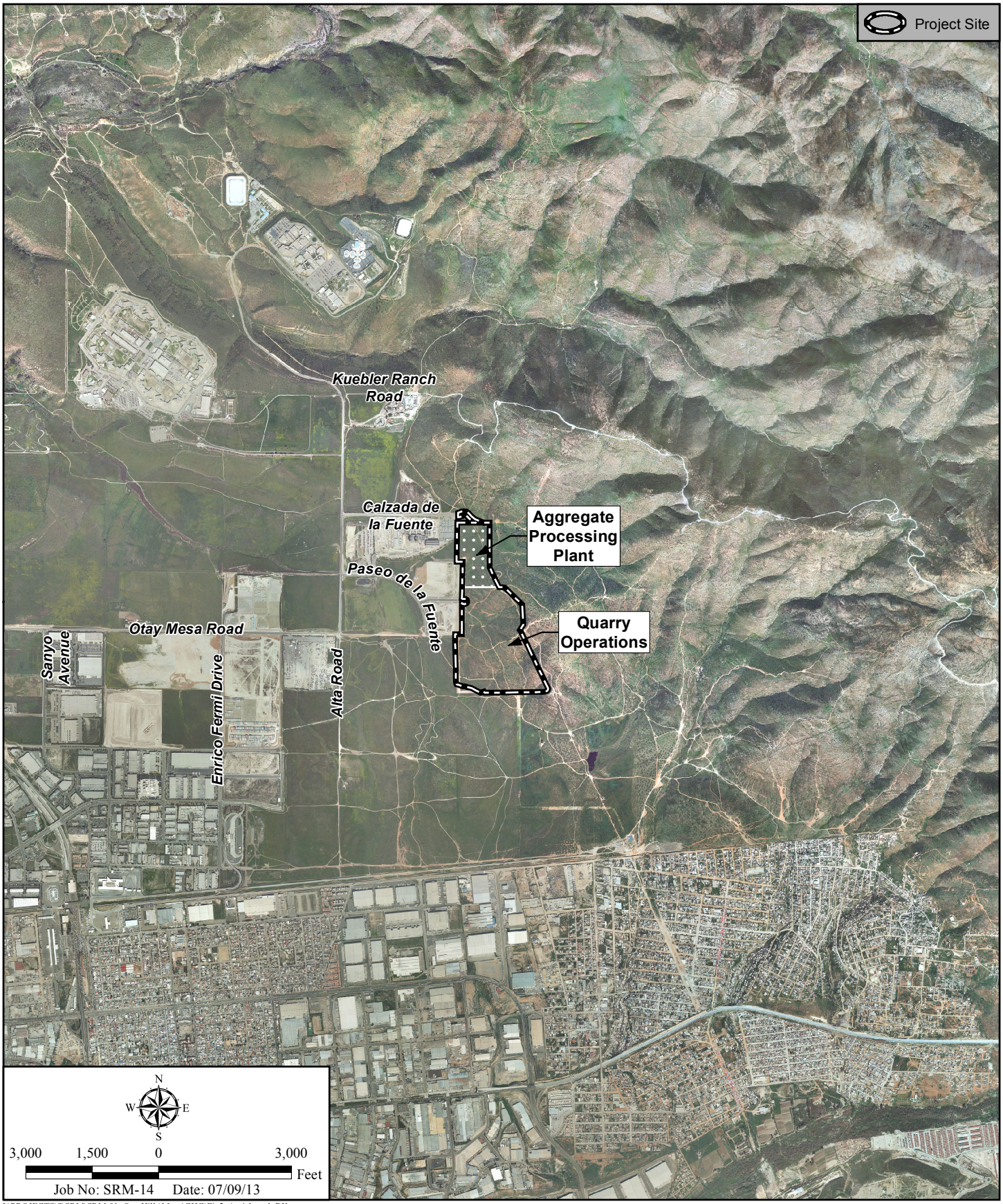
Figure 1



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Aerial Photograph

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Figure 2

Table 2 (cont.) QUARRY AND RECLAMATION PLAN DATA SUMMARY			
Design/Operating Characteristics	**Description/Parameters/Assumptions[1]**		
Acreages (cont.)			
Phase 4 Reclamation	95 acres		
Primary and Secondary Processing Plant and Loadout Area	14.8 acres		
Access and Maintenance Roads	2 acres		
Total Disturbance	**105 acres**		
Volume	**Annual Avg**	**Max Daily**	**Max Hourly**
Primary Processing Production	1,600,000 tons	8,000 tons	800 tons
Secondary Processing Production	1,400,000 tons	7,000 tons	700 tons
Recycled Material Production	420,000 tons	3,000 tons	300 tons
Sand Screen Plant	200,000 tons	2,000 tons	200 tons
Concrete Batch Plant	1,000,000 tons	10,000 tons	1,000 tons
Cement-Treated Base Plant	320,000 tons	4,000 tons	400 tons
Hot Mix Asphalt Batch Plant	600,000 tons	5,000 tons	500 tons
Operations Period[2]			
Mining	87 years		
Reclamation	64-90 years		
Quarry Excavation Area Dimensions[3]			
Approximate Maximum Length	2,800 feet		
Approximate Maximum Width	1,700 feet		
Maximum Depth	525 feet		
Operating Hours and Work Force			
Typical Operating Hours	Quarry and Primary Processing Plant: 6:00 a.m. to 4:00 p.m. Monday – Saturday Secondary and Ancillary Processing and Loadout Area, Haul Truck, loadout and hauling, and railcar loadout: 24 hours a day, 7 days a week		
Reclamation Areas			
Open Space	105 acres		

Source: Superior Ready Mix and EnviroMine 2013.

1 All values approximate.

2 Mining and reclamation may be completed within a shorter timeframe depending on market demand for the product.

3 Measured at the longest and widest point.

1.4 Project Component Parts

1.4.1 Operational Characteristics

The Proposed Project would include a hard rock extraction operation that would extract and process rock for construction aggregate purposes. Rock that has been processed for use in manufacturing other products (such as concrete or asphalt) is typically referred to as aggregate. Materials would be extracted using blasting to fracture and loosen the hard rock resources, followed by extraction and processing to size and sort the materials. Anticipated operations at the site would include the following:

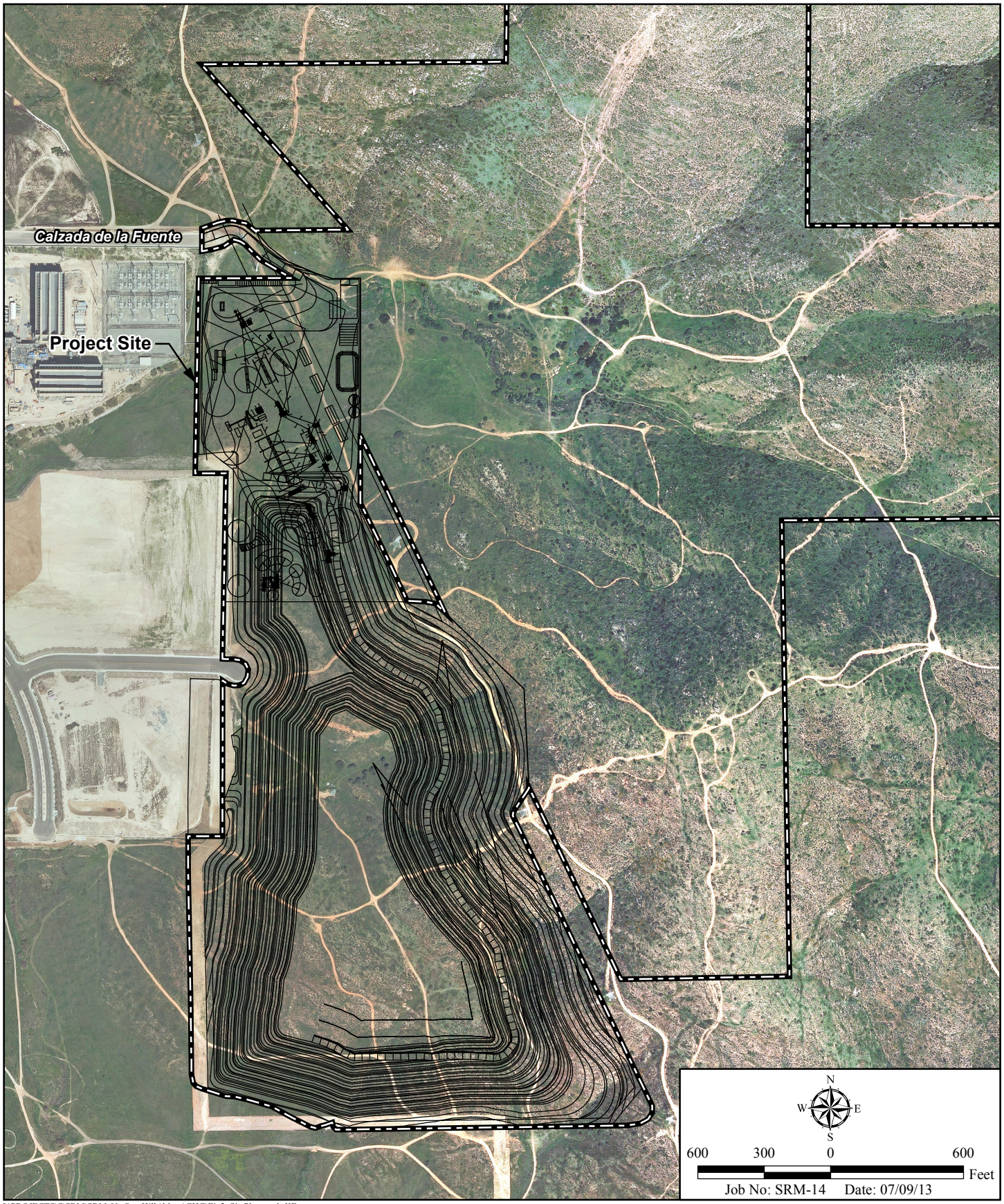
- Phased recovery of rock resources
- Materials processing (primary and secondary plants)
- Concrete ready-mix production
- Cement-treated base production
- Asphalt production
- Recycling of asphalt and concrete products
- IDEFO

The aggregate extraction operation would occur on an approximate 105-acre area while processing activities would take place on an approximate 16.1-acre pad located at the northern portion of the Project site (Figure 3). Some crushing and screening may occur in the pit area. Hours of operation for quarry and processing activities would primarily be from 6:00 a.m. to 4:00 p.m., with special operations outside these hours as early as 5:00 a.m. or late as 10:00 p.m. as needed for public health, safety, and welfare concerns. This may include California Department of Transportation (Caltrans) projects that must occur outside normal business hours. Maintenance of equipment and export of material would occur 24 hours a day.

Mineral resource recovery operations would be conducted through the use of drilling and blasting to fracture rocks. Based on anticipated production levels of 0.6 to 1.6 million tons per year, blasting would occur approximately once a week. Blasting operations would be conducted by a licensed blasting contractor, in strict compliance with pertinent federal, state, and county requirements.

As required by Department of Transportation (DOT) rules, explosive materials would be delivered in specially built vehicles marked with United Nations (UN) hazardous materials placards. Explosives and detonators are delivered in separate vehicles or they are separated in compartments meeting DOT rules within the same vehicle. Vehicles contain at least two 10-pound Class-A fire extinguishers and all sides of the vehicles display placards displaying the United Nations Standard hazard code for the onboard explosive materials. Drivers must have commercial drivers' licenses with Hazmat endorsements, and drivers must carry bill-of-lading papers detailing the exact quantities and code dates of transported explosives or detonators. Once explosives are delivered to the blasting site, the licensed blaster-in-charge is responsible for directly overseeing their security. The blaster-in-charge must have adequate experience and successfully pass a licensing test verifying their knowledge of blasting methods, rules, and safety procedures. In the State of California, Occupational Safety and Health Administration (CalOSHA) administers the testing and licensing of blasters and the California Highway Patrol establishes safe explosive transport routes and oversees all DOT rules enforcement. In the County of San Diego, a blast permit is required from the Sheriff Department.

All blasting materials would be transported to the site for each blasting sequence and no explosives would be stored at the site. A single drill rig would be used to drill a pattern of boreholes 3- to 6-inch diameter. Approximately 90 holes are drilled in a 10,800 square foot area. Typically, the pattern is laid out in a 10- by 12-foot grid, with approximately ninety 45-foot deep holes. A contractor then loads the holes with carefully metered explosives. The "shot" is timed to detonate each hole(s) in sequence. This minimizes the ground vibration and noise of the blast,



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Project Site Plan

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Figure 3

while maximizing fracture of the rock. Some dust is created as a result of the blast. The rock would be broken up to sizes less than 18 inches in diameter.

Mine Safety and Health Administration rules require the use water injection when drilling to control drilling dust. Standard blasting practices using sequential delay timing schemes to generate effective rock fragmentation and vibration control will also minimize blasting dust. Further, aggregate quarry operators will invariably remove loose overburden to prevent dilution of mined rock, which lessens the amount of fine material that can become airborne by blasting. A common method of dust control for blasting operations is to wet down the entire blasting area prior to initiating the blast. This procedure minimizes dust being entrained into the air from the blasting activity by allowing it to adhere to the wet surfaces (NIOSH 2012). Because these standard practices would be applied as control measures, it is unlikely that airborne dust from blasting would be a cause of concern.

Following blasting, the rock resource would be fractured and can be moved with conventional earthmoving equipment. A front-end loader is used to load off highway rock trucks for transport of fractured rock to the primary processing plant.

Six processing plants are proposed within the Project impact footprint: two materials processing plants (primary and secondary), a concrete ready-mix plant, a cement-treated base plant, a recycling plant, and an asphalt plant (Figure 4). The primary plant is loosely defined as the process that takes the raw material and crushes it to a size suitable for further processing and screening. Typically, a primary plant would crush the rock, screen out unusable fine material, and deposit the crushed rock in a surge pile for use by the secondary plant. The primary plant is independent of the secondary plant and can be used without operating the secondary plant. It is anticipated that the primary plant equipment would consist of a jaw crusher, a screen and a primary crusher. Depending upon distance from the primary processing plant, it may be feasible to utilize a remote jaw crusher and overland conveyor to move materials to the secondary processing plant.

The secondary plant would consist of two or four rock crushers to further reduce the size of the rock, five to seven screens to sort the material by size, and a washer to clean dirt from certain types of material to meet end product specifications. Materials washing would require construction of a pond to recycle and store water. Front-end loaders would be needed to only load trucks. Rock that has been processed for use in manufacturing other products, such as concrete, cement, and asphalt, is typically referred to as aggregate.

Finished aggregate would be stockpiled and/or stored in overhead loading bins. The stockpiles would be approximately 35 feet high. The aggregate would then be loaded onto trucks either with a front-end loader or by gates on the bottom of overhead loading bins. Prior to leaving the extraction area, loaded trucks would be top-watered to prevent roadway dust and would pass across a scale to determine the total weight of the truck and identify the type and weight of the aggregate. Dust would be controlled with a state-of-the-art dust control system, using best available control technology (BACT) and permitting by the San Diego Air Pollution Control District (SDAPCD). Dust will be controlled using an on-site water truck to water down excavation areas and unpaved and paved roads as frequently as needed. The aggregate processing plant will be equipped with a water spray system to reduce emissions produced

during the crushing and screening processes. Water used in processing will come from the Otay Water District (OWD) and on-site wells, and the water used to wash the processed material will be continuously recycled. All on-site equipment will comply with applicable permits issued by the SDAPCD.

Buildings associated with the aggregate plant would likely include an office building, a small scale office, and small maintenance shop. These facilities would be located near the secondary plant. Site operations would likely employ approximately 10 to 15 persons. For employee, an average two-way trip length of 40 miles (20 miles each way) is assumed as a conservative measure. On-site parking would be required.

The concrete ready-mix plant on site would be set up so that materials could be conveyed directly from the aggregate stockpiles to the concrete ready-mix plant. Within the concrete batch plant, appropriate quantities of aggregate of various types, cement, fly ash, and water would be weighed to make up batches of ready-mix concrete. These materials would then be discharged into a mixer drum on a ready mix concrete truck. Compliance with SDAPCD permits would require the use of BACT, such as baghouse dust collectors, which would ensure a relatively emission- and dust-free operation. Baghouse dust collectors capture the particulate matter in an airstream by forcing the airflow through filter bags.

The asphalt plant would be sited such that materials could be conveyed from the aggregate stockpiles for direct loading of the asphalt plant by conveyor. The asphalt plant would discharge various types of aggregate into a large rotating drum, where the aggregate is heated to drive off water. The heated materials would then be mixed with asphalt oil to make asphalt concrete. As in the case of the concrete batch plant, compliance with SDAPCD permits would require the use of BACT, such as fiber bed mist collectors, which would ensure a relatively emission- and dust-free operation.

A cement-treated base plant would be located at the site. Cement-treated base is a rock/sand mixture that has been mixed with cement powder to provide improved strength and stability for highway and foundation projects.

A concrete and asphalt recycling plant also would be included as part of the Proposed Project. This process involves the import of used concrete and asphalt materials, crushing, and then exporting the material for use as road base or foundation material. These materials also may be blended with rock originating from the site to improve performance characteristics.

1.4.2 Phasing

The Proposed Project would consist of site preparation for the processing plant equipment and a phased extraction and backfilling operation. Ongoing backfilling of the site during the open pit extraction phase of the Project would allow reclamation to progress concurrently with the extraction operation. Assuming a start year of 2020, the Project time line includes the following phases of development:

- Phase 1: Site Preparation (Construction)
- Phase 2: Extraction to Natural Grade Elevation

Parking

14'-Wide SDG&E
DG Access Road

Ready-Mix
Plant

Lab

Office

Parking

Pond

Recycle
Water

Asphalt
Plant

Aggregate Processing
Plant & Stockpiles

CTB Plant

Primary Crusher
& Stockpiles

Concrete & Asphalt
Recycle Plant

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Proposed Facilities Layout

OTAY HILLS

HELIX
Environmental Planning

N

0 100 Feet

Figure 4

- Phase 3: Open Pit Extraction and Reclamation
- Phase 4: IDEFO (Landfill Reclamation)

The variables used to prepare the Project time line include assumptions that could change over time. That is particularly true for Phase 4, where the amount of inert debris that would be available to fill the proposed landfill is dependent upon variables that would change: (1) regional economy, which affects the rate of construction; (2) level of recycling; and (3) competition from other inert landfill sites.

1.4.2.1 *Phase 1 – Site Preparation*

Phase 1 involves site preparation activities prior to mining including initial grading to establish access routes, extending water and power service to the site, and grading pad areas for the processing plant location. Site preparation operations would be located in the northern portion of the site. Phase 1 grading consists of minor cutting of the landform to create a relatively flat working surface for the processing plant. Construction of the processing plant, concrete batch plant, asphalt plant, cement-treated base plant, and site office would also commence. This initial phase would include approximately 14.8 acres on the Project site, plus associated activities required to construct the access road. Ultimately, the processing area would also extend into northern portion of Phase 2 and consist of approximately 16.1 acres. Activities in Phase 1 are expected to continue for about one year.

1.4.2.2 *Phase 2 – Extraction to Natural Grade Elevation*

Phase 2 would involve commencement of extractive operations within the extraction footprint. This phase is divided into three sub phases, with Phase 2a occurring in the north and with Phase 2c in the south. Phase 2 would consist of cutting the landform to the natural grade elevation that exists along the western perimeter of the site. The natural grade elevation of the mesa (west of the site) ranges between 580 and 650 feet above mean sea level (AMSL).

During Phase 2a, aggregate resources would be recovered immediately adjacent to the Phase 1 area and over an approximate 17.1-acre area of the site. Extractive operations in Phase 2a are expected to remove 4.2 million tons and would continue for approximately 4.5 years depending on the demand for aggregate resources. As aggregate resources are depleted from Phase 2a, extraction operation would transition into Phase 2b.

Phase 2b operations would include extraction of material from a 24.2-acre area and are expected to continue for approximately 5.5 years, depending on the demand for aggregate resources. This phase is expected to remove 4.7 million tons of material.

Phase 2c would consist of extracting approximately 10.5 million tons of material from the remainder of the extraction footprint (approximately 45.4 acres). Phase 2c is expected to continue for approximately 11 years, depending on the demand for aggregate resources.

As operations progress in Phase 2, slope areas within Phase 1 and Phase 2 would be seeded with a non-invasive erosion control mix. Prior to seeding, topsoil that is removed ahead of extractive operations would be reapplied to slope areas where conditions allow. A portion of the slopes that

are seeded along the eastern perimeter of the pit would be used as a biological buffer adjacent to sensitive environmental habitats proposed to be set aside by the Project to the east of the proposed extractive operations. A native seed mix would be used for these areas.

1.4.2.3 *Phase 3 – Open Pit Extraction and Reclamation*

Like Phase 2, Phase 3 is divided into sub phases. Phases 3a through 3d would also progress in a north to south direction. Extraction operations that would occur during Phases 3b through 3d would extend to a maximum depth of approximately 525 feet from the existing grade. As part of the reclamation process, the site would be utilized as an IDEFO. Backfilling is expected to continue throughout the Phase 3 operations.

The Phase 3a operations would involve additional extraction of material from an 8.5-acre area that would extend below the finished grade to form a sub-grade depression. Phase 3a extraction operations would extend below the Phase 2a area and would have a maximum depth of approximately 285 feet from the existing grade. This phase is expected to remove approximately 2.9 million tons and would continue for approximately 3 years depending on the demand for aggregate resources. As extraction operations advance in Phase 3a and space becomes available, backfilling of the Phase 3a sub-grade depression would commence. Inert fill material would be used to backfill the depression.

Phase 3b operations would consist of extracting 12.2 million tons of material from a 22.1-acre area, over approximately 18 years depending on the demand for aggregate resources.

It is anticipated that Phase 3c would extract 18.3 million tons of material from a 22.1-acre area, over approximately 18 years, depending on the demand for aggregate resources. Phase 3d operations are expected to extract 32.6-million tons from a 33.7-acre area, over approximately 31 years, depending on the demand for aggregate resources.

1.4.2.4 *Phase 4 – Inert Debris Engineered Fill Operation (Landfill Reclamation)*

As extraction operations advance in Phase 3, the pit would be backfilled with inert fill material (fill dirt). Phase 4a would consist of backfilling a portion of the Phase 3a pit area. It is anticipated that this would require approximately 1.2 million tons of imported fill material and would take approximately three years to complete. Phase 4b would involve backfilling the remainder of Phase 3a and portions of Phases 3b, 3c, and 3d. This would be followed by Phase 4c, which would backfill the remainder of Phase 3b and continue to backfill portions of Phase 3c and 3d. Phases 4d and 4e operations would include backfilling the remainder of Phases 3c and 3d.

The assumptions used above include an average annual production of one million tons. The rate of backfill is estimated at 500,000 cubic yards per year. Throughout the phased mine plan, fill material that is used for backfilling would be compacted to form pad areas. All fill material would be inspected upon arrival to ensure that contaminated soils or garbage are not present. All backfilling operations would be supervised by a geotechnical engineer to ensure that the fill materials are adequately compacted to satisfy the needs of the post-mining land use.

There are a limited number of landfills that accept fill materials in San Diego County. Inert fill material is produced from a variety of sources, but typically is a by-product of sub-grade

excavations for parking garages or development that results in export of naturally occurring soil. In addition, clean demolition materials from redevelopment projects need to be placed in an inert fill materials site.

Where inert landfills are unavailable in the local community, these fill materials must be disposed of in local sanitary landfills or hauled to locations where fill receiver sites are available. Aggregate production sites hold the greatest potential for accepting a relatively large quantity of fill materials. There are a number of mining operations throughout southern California that utilize inert fill material to backfill and compact the mining void in order to reclaim the site to useable land. Depending on the rate at which fill material is imported to the site, it is anticipated that Phase 4 activities would continue for approximately 69 years throughout the extraction operation. Phase 4 operations are anticipated to continue for approximately 18 years beyond extraction operations.

Following completion of all recovery operations, all processing and operating equipment would be removed from the Project site. Reclamation of slope areas would involve replacing topsoil in some areas. Salvaged topsoil would be stockpiled for use during revegetation. Where conditions allow, topsoil would be reapplied to some slope areas.

1.4.3 Traffic/Circulation

1.4.3.1 *Phase 1 – Construction*

During Phase 1, all truck trips would be related to the construction of the site office and plant equipment. There would be no trips related to mining or landfilling activities during Phase 1. It is anticipated that 30 average daily employee trips and 20 daily truck trips would be experienced during this time.

1.4.3.2 *Phases 2 and 3 Quarry Operation*

<u>On-site Facilities (Vendors, Employees)</u>

GHG emissions will result from mobile sources associated with the Project. These mobile source emissions will result from the typical daily operation of motor vehicles by vendors, employees, and customers. It is estimated that about 15 employees would be working in the processing plant and approximately 20 truck drivers would be employed for transporting the production of and the import for the aggregate materials. The employees would generate approximately 35 average daily trips per day. During Phase 2, truck trips would be limited to trips required for the extraction operation and materials imports for the on-site processing facilities. There would be no trips related to landfilling activities during Phase 2. Operations would produce approximately 0.6 to 1.6 million tons of aggregate annually. This level of activity would result in approximately 401 truck trips during the maximum production day, related to the extraction operation. The number of trips from material imports and recycle operations would be approximately 118 daily trips. Therefore, approximately 519 average daily truck trips should be expected when both extraction, material imports, and aggregate processing operations are occurring (Phases 2 and 3). An additional 130 truck trips per day would result from imported material and landfilling operations that would occur during Phase 4.

Primary access to the site would be from Calzada de la Fuente, a dedicated access road that connects the northern end of the site with Alta Road. The access road connects with Alta Road approximately one-half mile north of the intersection with Otay Mesa Road. A number of potential truck routes are possible. Potential access routes are listed as follows:

- Trucks leaving the site would follow Alta Road to Otay Mesa Road. Trucks would turn right (west) onto Otay Mesa Road to the intersection with State Route (SR) 905. Truck traffic would then disperse for deliveries on the Otay Mesa or extend to other areas in the region via SR 125 or Interstate 805 (I-805) and Interstate 5 (I-5).

- Trucks leaving the site would follow Alta Road to Otay Mesa Road. Trucks would turn right (west) onto Otay Mesa Road to the intersection with Sanyo Avenue. Turning south on Sanyo Avenue to the intersection with Airway Road and then turning west. Airway Road extends across Otay Mesa to the intersection with Cactus Road. Traffic would then turn north on Cactus Road to the intersection with Otay Mesa Road and then turning west to connect with I-805 and/or I-5.

Off-site Truck Trips (Vendors, Customers)

Because aggregate supply will be consumed with or without the proposed Project, the Proposed Project would not have an effect on overall demand. However, the Project has an effect on the distance that trucks delivering aggregates travel within the region. Project aggregate from the proposed facility would replace materials hauled from farther distances in the south San Diego County region. This rationale is supported by Dr. Peter Berck's ―*Working Paper No. 994 – A Note on the Environmental Costs of Aggregate"* (Department of Agricultural and Resource Economics and Policy, Division of Agricultural and Natural Resources, University of California Berkley, January 2005). Dr. Berck states that:

> *"The opening of a new quarry for aggregates will change the pattern of transportation of aggregates in the area served by the quarry. In this note, we will show that, so long as aggregate producers are cost minimizing, the new pattern of transportation requires less truck transport than the pattern of transportation that existed before the opening of the new quarry. Since the costs of providing aggregates falls, it is reasonable to assume that the price of delivered aggregates also will fall. This note also shows that the demand expansion effect is of very small magnitude. Since the demand increase from a new quarry is quite small, the dominant effect is that the quarries are on average closer to the users of aggregates and, as a result, the truck mileage for aggregate hauling decreases.*
>
> *To summarize the effects of a new quarry project:*
>
> *a) The project in itself will not significantly increase the demand for construction materials in the region through market forces, which include the downward pressure on pricing.*
>
> *b) Truck traffic (i.e. vehicle miles traveled) in the region will not increase and may decrease as a result of the project."*

The San Diego Association of Governments (SANDAG) has released their *San Diego Region Aggregate Supply Study* in January 2011, which presented information related to the average miles traveled, and associated GHG emissions produced, by vehicles delivering aggregate to project sites. The document explains that if the aggregate is transported by truck from current local mines to local project sites, the average distance between existing mines and construction sites in the region is 26 miles, which are used as vehicle miles traveled (VMT) projections in the San Diego County's 2050 RTP.

Similar to the SANDAG results, an independent market analysis conducted by EnviroMINE determined the average distance between existing mines and aggregate customers in the region is approximately 29 miles (EnviroMINE Inc. 2020). This same study concluded the average distance for aggregate deliveries from the Proposed Project would be approximately 10 miles. The difference in trip length between local and regional trips would help reduce emissions from truck trips.

1.4.3.3 *Phase 4 Landfill and Reclamation Activity*

Under the maximum production scenario, Phase 4 would generate up to 165 average daily trips (ADT) for the landfilling and reclamation activities.

1.4.4 Utilities

OWD would supply potable water. A Service Availability Letter from OWD for the Proposed Project identified adequate water resources were available for the Proposed Project with annexation into Improvement District 22. The Proposed Project design includes provision for annexation to the OWD Service Area. A connection into the existing 12-inch water line in Alta Road is proposed as part of Project design and would be located underground along the proposed access road to the processing area discussed previously. The Proposed Project would not utilize any groundwater.

The Proposed Project would not involve any uses that would discharge wastewater to the sanitary sewer or on-site wastewater system. The employees would be provided portable toilet facilities, which would be managed by the operator, and the waste would be transported off site for treatment.

Several San Diego Gas & Electric (SDG&E) electrical and natural gas connections exist within the impact footprint, and tie-ins would be constructed underground along the proposed access road to the aggregate processing area, as discussed above for water lines.

1.4.5 Summary of Project Design Features

The following is a list of project design features that would help reduce pollutants and GHG emissions:

<u>Hot Mix Asphalt Plant</u>

Compliance with SDAPCD permits would require the use of BACT, such as fiber bed mist collectors, which would ensure a relatively emission- and dust-free operation. A blue smoke

control method would apply to all plant components which would entail collecting and transporting hydrocarbon-laden air. Individual pieces of the blue smoke control system must all work together to form a scavenger system. This involves:

- Sealing all material transfer points to trap blue smoke (from dryer to silo, and from silo to hopper for haul trucks),
- Ductwork to transport smoke from collection points (from the dryer exhaust stack, silo tops, and the truck loadout zone) to the chosen disposal method,
- Utilizing separate scavenger fan to convey captured emissions through the ductwork, and
- Installing dampers within the ductwork to control airflow.

Blue smoke systems are likely to become a standard pollution control device for the hot-mix asphalt facility.

Concrete Batch Plant

Compliance with SDAPCD permits would require the use of BACT, such as baghouse dust collectors, which would ensure a relatively emission- and dust-free operation. Baghouse dust collectors capture the particulate matter in an airstream by forcing the airflow through filter bags.

All heavy-duty off-road equipment operating on the Project site should meet CARB's Off-road Vehicle Regulations with a minimum of Tier 2 engines. In addition, all off-road equipment shall be outfitted with BACT devices certified by the CARB. Any emissions control device used by the contractor and/or operator shall achieve emissions reductions that are no less than what could be achieved by a Level 2 diesel emissions control strategy for a similarly sized engine as defined by the CARB regulations.

The On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation requires diesel trucks that operate in California to be upgraded to reduce emissions. Since 2012, heavier trucks have been required to meet PM filter requirements. The replacement of older trucks began January 1, 2015. By January 1, 2023, nearly all trucks will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally owned diesel fueled trucks with a gross vehicle weight rating (GVWR) greater than 14,000 pounds.

Portable engines such as generator sets are regulated by an air toxic control measure that limits diesel particulate matter and must be registered under the Portable Equipment Registration Program (PERP) or comply with local air district permit.

2.0 ENVIRONMENTAL SETTING

2.1 Worldwide and National GHG Inventory

In 2013, total GHG emissions worldwide were estimated at 48,257 million metric tons (MMT) of CO_2e emissions (World Resource Institute [WRI] 2017). The U.S. contributed the second largest portion (13 percent) of global GHG emissions in 2013. The total U.S. GHG emissions was

6,213 MMT CO_2e in 2013, of which 82 percent was CO_2 emission (WRI 2017). On a national level, approximately 27 percent of GHG emissions were associated with transportation and about 38 percent were associated with electricity generation (WRI 2017).

2.2 State GHG Inventories

CARB performed statewide inventories for the years 1990 to 2017 (Table 3, *California Greenhouse Gas Emissions by Sector*). The inventory is divided into six broad sectors of economic activity: agriculture, commercial, electricity generation, industrial, residential, and transportation. Emissions are quantified in MMT CO_2e.

Table 3
CALIFORNIA GREENHOUSE GAS EMISSIONS BY SECTOR
(MMT CO_2e)

Sector	1990	2000	2010	2017
Agriculture and Forestry	18.9 (4%)	31.0 (7%)	33.7 (8%)	32.4 (8%)
Commercial	14.4 (3%)	14.1 (3%)	20.1 (4%)	23.3 (5%)
Electricity Generation	110.5 (26%)	105.4 (22%)	90.6 (20%)	62.6 (15%)
Industrial	105.3 (24%)	105.8 (22%)	101.8 (23%)	101.1 (24%)
Residential	29.7 (7%)	31.7 (7%)	32.1 (7%)	30.4 (7%)
Transportation	150.6 (35%)	183.2 (39%)	170.2 (38%)	174.3 (41%)
Unspecified Remaining	1.3 (<1%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
TOTAL	**430.7**	**471.1**	**448.5**	**424.1**

Source: CARB 2007d and CARB 2019

As shown in Table 3, statewide GHG source emissions totaled 431 MMT CO_2e in 1990, 471 MMT CO_2e in 2000, 449 MMT CO_2e in 2010, and 424 MMT CO_2e in 2017. Transportation-related emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions.

A San Diego regional emissions inventory that was prepared by the University of San Diego School of Law, Energy Policy Initiative Center (EPIC) took into account the unique characteristics of the region. Its 2014 emissions inventory update for San Diego is duplicated below in Table 4, *San Diego County GHG Emissions by Sector In 2014*. The sectors included in this inventory are somewhat different from those in the statewide inventory. Similar to the statewide emissions, transportation-related GHG emissions contributed the most countywide, followed by emissions associated with energy use.

Table 4 SAN DIEGO COUNTY GHG EMISSIONS BY SECTOR IN 2014	
Sector	**2010 Emissions in MMT CO_2e (% total)[1]**
On-Road Transportation	1.46 (45%)
Electricity	0.76 (24%)
Solid Waste	0.34 (11%)
Natural Gas Consumption	0.29 (9%)
Agriculture	0.16 (5%)
Water	0.13 (4%)
Off-Road Transportation	0.04 (1%)
Wastewater	0.02 (1%)
Propane	0.01 (<0.5%)
Total	**3.21**

Source: USD EPIC 2017. County of San Diego 2014 Greenhouse Gas Inventory and Projections. Prepared by the University of San Diego School of Law, Energy Policy Initiative Center (EPIC), and available online at https://www.sandiegocounty.gov/content/dam/sdc/pds/advance/cap/publicreviewdocuments/PostBOSDocs/CAP%20Appendix%20A%20%20-%202014%20Inventory%20and%20Projections.pdf.

[1] Percentages may not total 100 due to rounding.

MMT= million metric tons; CO2e = carbon dioxide equivalent

2.3 On-site GHG Inventory

The existing Project site is currently vacant. There are no current significant sources of on-site GHG emissions. Natural vegetation and soils temporarily store carbon as part of the terrestrial carbon cycle. Carbon is assimilated into plants as they grow and then dispersed back into the environment when they die. Soil carbon accumulates from inputs of plants, roots, and other living components of the soil ecosystem (i.e., bacteria, worms, etc.). Soil carbon is lost through biological respiration, erosion, and other forms of disturbance. The existing GHG emissions are likely to be negligible.

3.0 REGULATORY SETTING

3.1 Federal Greenhouse Gas Regulations

The U.S. Supreme Court ruled on April 2, 2007, in *Massachusetts v. U.S. Environmental Protection Agency*, that CO_2 is an air pollutant, as defined under the Clean Air Act (CAA), and that the USEPA has the authority to regulate emissions of GHGs. The USEPA announced that GHGs (including CO_2, CH_4, N_2O, HFC, PFC, and SF_6) threaten the public health and welfare of the American people. This action was a prerequisite to finalizing the USEPA's GHG emissions standards for light-duty vehicles, which were jointly proposed by the USEPA and the United States Department of Transportation's National Highway Traffic Safety Administration (NHTSA). The standards were established on April 1, 2010 for 2012 through 2016 model year vehicles and on October 15, 2012 for 2017 through 2025 model year vehicles (USEPA 2011; USEPA and NHTSA 2012).

3.1.1 Mandatory Reporting Rule (MRR) of GHGs

On January 1, 2010, the USEPA began requiring large emitters of heat-trapping emissions to begin collecting GHG data under a new reporting system. This program covers approximately 85 percent of the nation's GHG emissions and applies to roughly 10,000 facilities. Fossil fuel and industrial GHG suppliers, motor vehicle and engine manufacturers, and facilities that emit 25,000 metric tons or more of CO_2e per year are required to report GHG emissions data to the USEPA annually. This reporting threshold is equivalent to the annual GHG emissions from approximately 4,600 passenger vehicles.

3.1.2 Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards

The USEPA and the NHTSA have been working together on developing a national program of regulations to reduce GHG emissions and to improve fuel economy of light-duty vehicles. The USEPA established the first-ever national GHG emissions standards under the CAA, and the NHTSA established Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act. On April 1, 2010, the USEPA and NHTSA announced a joint Final Rulemaking that established standards for 2012 through 2016 model year vehicles. This was followed up on October 15, 2012, when the agencies issued a Final Rulemaking with standards for model years 2017 through 2025. On August 2, 2018, the agencies released a notice of proposed rulemaking—the Safer Affordable Fuel-Efficient Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (SAFE Vehicles Rule). The purpose of the SAFE Vehicles Rule is "to correct the national automobile fuel economy and greenhouse gas emissions standards to give the American people greater access to safer, more affordable vehicles that are cleaner for the environment." The direct effect of the rule is to eliminate the standards that were put in place to gradually raise average fuel economy for passenger cars and light trucks under test conditions from 37 miles per gallon in 2020 to 50 miles per gallon in 2025. By contrast, the new SAFE Vehicles Rule freezes the average fuel economy level standards indefinitely at the 2020 levels. The new SAFE Vehicles Rule also results in the withdraw of the waiver previously provided to California for that State's GHG and zero emissions vehicle (ZEV) programs under section 209 of the CAA. The combined USEPA GHG standards and NHTSA CAFE standards resolve previously conflicting requirements under both federal programs and the standards of the State of California and other states that have adopted the California standards.

3.1.3 Prevention of Significant Deterioration/Title V GHG Tailoring Rule

GHG emissions from the largest stationary sources were, for the first time, covered by the Prevention of Significant Deterioration (PSD) and Title V Operating Permit Programs beginning on January 2, 2011. USEPA's GHG Tailoring Rule, issued in May 2010, established a common sense approach to permitting GHG emissions under PSD and Title V. The rule set initial emission thresholds, known as Steps 1 and 2 of the Tailoring Rule, for PSD and Title V permitting based on CO_2e emissions. Step 3 of the GHG Tailoring Rule, issued on June 29, 2012, continued to focus GHG permitting on the largest emitters by retaining the permitting thresholds that were established in Steps 1 and 2. In addition, the Step 3 rule improved the usefulness of plantwide applicability limitations (PALs) by allowing GHG PALs to be established on CO_2e emissions, in addition to the already available mass emissions PALs, and to use the CO_2e-based

applicability thresholds for GHGs provided in the "subject to regulation" definition in setting the PAL on a CO_2e basis. The rule also revised the PAL regulations to allow a source that emits or has the potential to emit at least 100,000 tons per year of CO_2e, but that has minor source emissions of all other regulated New Source Review (NSR) pollutants, to apply for a GHG PAL while still maintaining its minor source status.

3.2 California Greenhouse Gas Regulations

3.2.1 California Code of Regulations, Title 24, Part 6

California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels.

The Title 24 standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 update to the standards went into effect in January 1, 2020. The Building Energy Efficiency Standards focus on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. The most significant efficiency improvements to the residential standards include improvements for attics, walls, water heating, and lighting. The standards are divided into three basic sets. First, there is a basic set of mandatory requirements that apply to all buildings. Second, there is a set of performance standards – the energy budgets – that vary by climate zone (of which there are 16 in California) and building type; thus, the standards are tailored to local conditions. Finally, the third set constitutes an alternative to the performance standards, which is a set of prescriptive packages that are basically a recipe or a checklist compliance approach.

3.2.2 California Code of Regulations, Title 24, Part 11

The California Green Building Standards Code (CALGreen Code; 24 CCR, Part 11) is a code with mandatory requirements for new residential and nonresidential buildings (including buildings for retail, office, public schools, and hospitals) throughout California. The current version of the code went into effect on January 1, 2017. The code is Part 11 of the California Building Standards Code in Title 24 of the CCR. Workshops are currently being held for the next triennial update of the CALGreen Code.

The development of the CALGreen Code is intended to (1) cause a reduction in GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction.

3.2.3 Executive Order S-3-05

On June 1, 2005, Executive Order (EO) S-3-05 proclaimed that California is vulnerable to climate change impacts. It declared that increased temperatures could reduce snowpack in the Sierra Nevada, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. In an effort to avoid or reduce climate change impacts, EO S-3-05 calls for a reduction in GHG emissions to the year 2000 level by 2010, to year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

3.2.4 Assembly Bill 32 – Global Warming Solution Act of 2006

The California Global Warming Solutions Act of 2006, widely known as AB 32, requires that the CARB develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

3.2.5 Executive Order B-30-15

On April 29, 2015, EO B-30-15 established a California GHG reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG reduction targets with those of leading international governments, including the 28 nation European Union. California is on track to meet or exceed the target of reducing greenhouse gas emissions to 1990 levels by 2020, as established in AB 32. California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal established by EO S-3-05 of reducing emissions 80 percent under 1990 levels by 2050.

3.2.6 Senate Bill 32

As a follow up to AB 32 and in response to EO B-30-15, SB 32 was passed by the California legislature in August 2016 and signed by Governor Brown in September 2016 to codify the EO's California GHG reduction target of 40 percent below 1990 levels by 2030.

3.2.7 Assembly Bill 197

A condition of approval for SB 32 was the passage of AB 197. AB 197 requires that CARB consider the social costs of GHG emissions and prioritize direct reductions in GHG emissions at mobile sources and large stationary sources. AB 197 also gives the California legislature more oversight over CARB through the addition of two legislatively appointed members to the CARB Board and the establishment a legislative committee to make recommendations about CARB programs to the legislature.

3.2.8 Assembly Bill 1493 – Vehicular Emissions of GHGs

AB 1493 (Pavley) requires that CARB develop and adopt regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty truck and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State." On September 24, 2009, CARB adopted amendments to the

Pavley regulations that intend to reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments bind California's enforcement of AB 1493 (starting in 2009), while providing vehicle manufacturers with new compliance flexibility. The amendments also prepare California to merge its rules with the federal CAFE rules for passenger vehicles. In January 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single packet of standards called Advanced Clean Cars.

3.2.9 Assembly Bill 75

AB 75 was passed in 1999 and mandates state agencies to develop and implement an integrated waste management plan to reduce GHG emissions related to solid waste disposal. In addition, the bill mandates that community service districts providing solid waste services report the disposal and diversion information to the appropriate city, county, or regional jurisdiction. The bill requires diversion of at least 50 percent of the solid waste from landfills and transformation facilities, and submission to the California Department of Resources Recycling and Recovery (CalRecycle; formerly known as California Integrated Waste Management Board) of an annual report describing the diversion rates.

3.2.10 Assembly Bill 341

In 2011, the State legislature enacted AB 341, increasing the diversion target to 75 percent statewide. AB 341 also requires the provision of recycling service to commercial and residential facilities that generate four cubic yards or more of solid waste per week. In addition, multi-family apartments with five or more units are also required to implement a recycling program. The final regulation was approved by the Office of Administrative Law on May 7, 2012, and went into effect on July 1, 2012.

3.2.11 Executive Order S-01-07

Executive Order S-01-07 was signed by Governor Schwarzenegger on January 18, 2007 and directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. It orders that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California, and directs CARB to determine whether an LCFS can be adopted as a discrete early action measure pursuant to AB 32. The CARB approved the LCFS as a discrete early action item with a regulation adopted and implemented in 2010. It was expected to result in a reduction of 15 MMT CO_2e by 2020 (based on the original 2008 Scoping Plan estimates). On December 29, 2011, District Judge Lawrence O'Neill in the Eastern District of California issued a preliminary injunction blocking CARB from implementing LCFS for the remainder of the *Rocky Mountain Farmers Union* litigation. Plaintiffs argued that the LCFS is unconstitutional because it violates the interstate commerce clause, which was intended to stop states from introducing laws that would discriminate against businesses located in other states.

In January 2012, however, the CARB appealed that decision to the Ninth Circuit Court of Appeals (Ninth Circuit), and then moved to stay the injunction pending resolution of the appeal.

On April 23, 2012, the Ninth Circuit granted the CARB's motion for a stay of the injunction while it continues to consider CARB's appeal of the lower court's decision. On September 18, 2013, the Ninth Circuit reversed the District Court's opinion and rejected arguments that implementing LCFS violates the interstate commerce clause. Therefore, the LCFS enforcement injunction has been removed, and CARB is continuing to implement the LCFS statewide.

3.2.12 Senate Bill 350

Approved by Governor Brown on October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard eligible resources, including solar, wind, biomass, and geothermal. In addition, large utilities are required to develop and submit Integrated Resource Plans to detail how each entity will meet their customers resource needs, reduce greenhouse gas emissions, and increase the use of clean energy.

3.2.13 Senate Bill 97 – CEQA: Greenhouse Gas Emissions

SB 97 required the OPR to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, including but not limited to, effects associated with transportation or energy consumption. The Resources Agency certified and adopted the guidelines on December 31, 2009. The OPR guidance states that the lead agency can rely on qualitative or other performance-based standards for estimating the significance of GHG emissions, although the new CEQA Guidelines did not establish a threshold of significance.

3.2.14 Senate Bill 375

SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPOs) are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the MPOs' Regional Transportation Plan (RTP). Qualified projects consistent with an approved SCS or Alternative Planning Strategy categorized as "transit priority projects" would receive incentives to streamline CEQA processing.

3.3 California Greenhouse Gas Programs and Plans

3.3.1 California Air Resources Board: Scoping Plan

On December 11, 2008, CARB adopted a Scoping Plan (CARB 2008b), as directed by AB 32. The Scoping Plan proposes a set of actions designed to reduce overall GHG emissions in California to the levels required by AB 32. Measures applicable to development projects include those related to energy-efficiency building and appliance standards, the use of renewable sources for electricity generation, regional transportation targets, and green building strategy. Relative to transportation, the Scoping Plan includes nine measures or recommended actions related to reducing vehicle miles traveled and vehicle GHGs through fuel and efficiency measures. These measures would be implemented statewide rather than on a project-by-project basis.

The CARB released the First Update to the Climate Change Scoping Plan in May 2014 to provide information on the development of measure-specific regulations and to adjust projections in consideration of the economic recession (CARB 2014a). To determine the amount of GHG emission reductions needed to achieve the goal of AB 32 (i.e., 1990 levels by 2020) CARB developed a forecast of the AB 32 Baseline 2020 emissions, which is an estimate of the emissions expected to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. CARB estimated the AB 32 Baseline 2020 to be 509 MMT CO_2e. The Scoping Plan's current estimate of the necessary GHG emission reductions is 78 MMT CO_2e (CARB 2014b). This represents an approximately 15.32 percent reduction. The CARB is forecasting that this would be achieved through the following reductions by sector: 25 MMT CO_2e for energy; 23 MMT CO_2e for transportation; 5 MMT CO_2e for high-GWP GHGs, and 2 MMT CO_2e for waste. The remaining 23 MMT CO_2e would be achieved through Cap-and-Trade Program reductions. This reduction is flexible; if CARB receives new information and changes the other sectors' reductions to be less than expected, the agency can increase the Cap-and-Trade reduction (and vice versa).

In response to EO B-30-15 and SB 32, all state agencies with jurisdiction over sources of GHG emissions were directed to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 targets. CARB was directed to update the Scoping Plan to reflect the 2030 target and, therefore, is moving forward with the update process. The mid-term target is critical to help frame the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure needed to continue driving down emissions. CARB is moving forward with a second update to the Scoping Plan to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The 2017 Climate Change Scoping Plan Update, Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target, was released in proposed final form on November 30, 2017 and approved on December 14, 2017.

3.4 Local Policies and Plans: County of San Diego

3.4.1 County of San Diego General Plan

The County's General Plan, adopted in 2011, provides guiding principles designed to balance future growth, conservation, and sustainability. The General Plan aims to balance the need for infrastructure, housing and economic vitality, while maintaining and preserving unique community, agricultural areas, and extensive open space (County 2011). The General Plan contains goals and policies specific to reducing GHG emissions, including: efficient and compact growth and development; increasing energy efficiency and use of renewable energy sources; increasing recycling; and improving access to sustainable transportation (County 2018).

The General Plan addresses AB 32 and climate change and provides an extensive list of policies designed to reduce GHG emissions and adapt to current climate change related impacts. Strategies listed to mitigate and reduce GHG emissions include: reduce vehicle trips, gasoline and energy consumption; improve energy efficiency by decreasing non-renewable energy consumption and generation; increase generation and use of renewable energy sources; reduce water consumption and waste generation; improve solid waste reuse and recycle and composting programs; promote landscapes designed to sequester CO2; and preserve open space and agricultural lands. Adaptive strategies designed to prevent, and mitigate current climate change

impacts, include the following: reduce wildfire and flood risk; conserve water during water shortages; promote agricultural lands to support local food production; and provide education and leadership (County 2018).

3.4.2 County of San Diego Climate Action Plan

In February 2018, the County adopted a long-term programmatic CAP that outlines the actions the County will undertake to achieve its proportional share of state GHG emission reductions to be compliant with AB 32 and EO S-3-05 (County 2018). The CAP will ensure that new developments incorporate more sustainable design standards and applicable GHG reduction measures (County 2018).

Appendix A of the CAP includes a project-level CAP Consistency Review Checklist (Checklist) that may be used to demonstrate a project's consistency with the General Plan growth projections, land use assumptions, and applicable CAP measures. The purpose of the Checklist is to, in conjunction with the CAP, provide a streamlined review process for proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to CEQA.

The Checklist contains GHG reduction measures that are required to be implemented on a project-by project basis to ensure that GHG reduction activities identified in the CAP that are applicable to new developments are appropriate applied. The inclusion of these GHG reduction measures in new developments would assist the County in meeting its GHG emissions reduction targets. Implementation of the measures would ensure that new development is consistent with the CAP strategies identified to achieve GHG reduction targets. Projects that are consistent with the CAP, as determined through use of the Checklist, may rely on the CAP for the cumulative impacts analysis of GHG emissions. Projects that are not consistent with the CAP must prepare a comprehensive project-specific analysis of GHG emissions, including quantification of existing and projected GHG emissions and incorporation of the measures in the Checklist to the extent feasible. Cumulative GHG impacts would be significant for any project that is not consistent with the CAP.

3.4.3 County of San Diego Construction and Demolition Recycling Ordinance

The County has a construction and demolition recycling ordinance that is designed to divert debris from construction and demolition projects away from landfill disposal in the unincorporated County of San Diego. The ordinance requires that 90 percent of inerts and 70 percent of all other construction materials from a project be recycled. In order to comply with the ordinance, applicants must submit a Construction and Demolition Debris Management Plan and a fully refundable Performance Guarantee prior to building permit issuance.

3.4.4 San Diego Association of Governments: San Diego Forward: The Regional Plan

The Regional Plan (SANDAG 2015) is the long-range planning document developed to address the region's housing, economic, transportation, environmental, and overall quality-of-life needs. The Regional Plan establishes a planning framework and implementation actions that increase the region's sustainability and encourage "smart growth while preserving natural resources and limiting urban sprawl." The Regional Plan encourages the regions and the County to increase

residential and employment concentrations in areas with the best existing and future transit connections, and to preserve important open spaces. The focus is on implementation of basic smart growth principles designed to strengthen the integration of land use and transportation.

4.0 GUIDELINES FOR DETERMINING SIGNIFICANCE

Given the relatively small levels of emissions generated by a typical development in relationship to the total amount of GHG emissions generated on a national or global basis, individual development projects are not expected to result in significant, direct impacts with respect to climate change. However, given the magnitude of the impact of GHG emissions on the global climate, GHG emissions from new development could result in significant, cumulative impacts with respect to climate change. Thus, the potential for a significant GHG impact is limited to cumulative impacts. A Checklist was prepared for the project (Appendix B). As described in Section 3.4.2, the purpose of the Checklist is to provide a streamlined review process for proposed new development projects pursuant to CEQA. However, additional analysis is provided in this report further justify the impacts identified.

According to Appendix G of the CEQA Guidelines, a project would have a significant environmental impact if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

As the County of San Diego does not currently have any approved quantitative thresholds related to GHG emissions, this analysis relies upon the South Coast Air Quality Management District (SCAQMD) adopted threshold for heavy industrial projects of 10,000 MT CO_2e/year (SCAQMD 2008).

On December 5, 2008, the South Coast Air Quality Management District (SCAQMD) Governing Board adopted their *Interim CEQA Greenhouse Gas Significance Threshold*. The policy objective of the SCAQMD's recommended threshold is to achieve an emission capture rate of 90 percent of all new or modified stationary source projects. A GHG significance threshold based on a 90 percent emission capture rate may be more appropriate to address the long-term adverse impacts associated with global climate change because most projects will be required to implement GHG reduction measures. Further, a 90 percent emission capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions. This assertion is based on the fact that SCAQMD staff estimates that these GHG emissions would account for slightly less than one percent of the future 2050 statewide GHG emissions target.

Direct and cumulative impacts would be potentially significant and require further analysis if the Project results in emissions that exceed 10,000 MT CO_2e beyond current baseline emissions.

5.0 IMPACT ANALYSIS

Emission estimates were calculated for the three GHGs of primary concern (CO_2, CH_4, and N_2O) that would be emitted from Project construction and from the Project's sources of operational GHG emissions, including the use of off-road equipment and on-road vehicles at the facility as well as the GHG emissions from the quarry blasting and drilling operation, and HMA aggregate supplies and processing. All other equipment utilized electricity for mechanical power and water for cement, concrete, and asphalt production as well as fugitive dust controls.

5.1 Methodology and Assumptions

Emission estimates have been prepared for the Proposed Project activities to evaluate the maximum annual GHG emissions during construction and operation of the facility.

The Proposed Project's air pollutant emissions result from construction (mobile equipment on site and off site); on-site operations for the duration of the Project (mobile equipment for excavations and process plant loading, stationary process plants, and fuel tanks); and off-site operations (haul or delivery trucks). Table 5 presents a summary of the emission sources and analysis methodologies. Figure 4 shows the operational emission sources and locations on and off site.

Table 5
EMISSION SOURCES AND ANALYSIS METHODOLOGIES

Activity or Process	Source of Emissions	Types of GHG Emissions	Calculation Methodology
Mining	Drilling, Blasting, and Excavation	Direct CO_2, CH_4, and N_2O	Emission factors from USEPA (AP-42) and CARB (OFFROAD)
Aggregate Processing	Crushers, screens, radial stackers, conveyors	Indirect CO_2, CH_4, and N_2O	SDG&E emission factors
Cement–Based Plant	Storage silos, conveyors, truck loading	Indirect CO_2, CH_4, and N_2O	SDG&E emission factors
Hot Mix Asphalt Plant	Dryer, storage silos, truck loading, screen, conveyors	Direct and Indirect CO_2, CH_4, and N_2O	Emission factors, equipment vendor specification and emission warrantees
Ready Mix Concrete Batch Plant	Storage silos, conveyors, truck loading	Indirect CO_2, CH_4, and N_2O	SDG&E emission factors
Recycling Plant	Rock crushing, conveyors, storage piles	Indirect CO_2, CH_4, and N_2O	SDG&E emission factors
Product Delivery, Employee Travel	Tailpipe emissions from trucks, delivery and employee vehicles	Direct CO_2, CH_4, and N_2O	EMFAC2017 emission model
General material handling, truck loading/ unloading, fuel storage	Unloading/loading of trucks, storage piles, travel on unpaved roads, refueling operations, truck idling	Direct CO_2, CH_4, and N_2O	Emission factors from USEPA (AP-42 and Tanks), CARB (OFFROAD)
Reclamation	Material handling, dozer operation, grading	Direct CO_2, CH_4, and N_2O	Emission factors from USEPA (AP-42)

Table 6, *Typical Site Equipment*, identifies the types of processing plant and mobile equipment that may be used in Project operations.

Table 6
TYPICAL SITE EQUIPMENT

Equipment	Fuel	Uses
Mining Operations		
Dozers	Diesel	Stripping, reclamation and surge feed to shovels/loaders
Drill Rigs – Blast holes	Diesel	Drilling holes for placement of explosives
Bulk emulsion distribution truck	Diesel	Load bulk explosives into drill holes
Loaders – Front-end or Hydraulic shovels	Diesel	Uses to load haul trucks at quarry face
Excavator	Diesel	Breaking down oversized rocks
Haul trucks	Diesel	Haul raw aggregate material from quarry face to primary crushing area
Water trucks	Diesel	Water haul road and access roads
Rock Processing Plant Operations		
Primary Crusher	Electricity	Reducing oversized rocks to approximate size for conveyor transport
Pit Conveyor	Electricity	Conveying raw materials to raw material stockpiles at primary processing plant
Secondary cone crusher	Electricity	Reducing rock to products specification sizes
Dry Screens	Electricity	Sort rock to specified sizes
Wet Screens	Electricity	Wash and sort rock to specified sizes
Plant Conveyors	Electricity	Transfer material between processes
Stockpile Conveyors	Electricity	Stockpile finished aggregate for load-out
Overland and Underground Conveyors	Electricity	Convey aggregate material to secondary and ancillary processing and load-out areas
Load-out silos	Electricity	Load processed aggregate materials onto trucks for delivery off-site.
Front-end Loaders	Diesel	Load processed aggregate materials onto trucks for delivery off-site.
Water Truck	Diesel	Water stockpile area and access roads.
Hot-Mix Asphalt Plant	Electricity and Natural Gas	Used to manufacture asphaltic concrete from rock products produced on-site and from asphalt oil delivered and stored on-site.
Ready Mix Concrete Plant	Electricity	Manufacturing of ready-mix concrete using rock products produced on-site, and Portland cement and fly ash delivered and stored on-site.
Cement Treated-Base Plant	Electricity	Manufacturing of cement using rock/sand products produced on-site and mixed with cement powder. Water is added off-site.
Recycled Materials Plant	Electricity	Manufacturing of recycled products using asphalt and concrete delivered from off-site.
Portable Diesel Generator	Diesel	Provide power to temporary and/or portable processing plant.

Table 6 (cont.) TYPICAL SITE EQUIPMENT		
Equipment	**Fuel**	**Uses**
Administrative Equipment		
Scales	Electricity	Weighing trucks for sales tonnage
Office	Electricity	Mine offices
Shop	Electricity	Equipment Maintenance Shops
Pickups/Mechanics Trucks	Gas/Diesel	Maintenance and administrative vehicles
Storage Tanks		
Above-ground Diesel Fuel Storage Tank (10,000 gallon capacity)	N/A	Storage of fuel for mobile and stationary equipment.
Fuel Pump	Electricity	Transfer of fuel from storage tank
Cement Storage Silos	N/A	Storage of cement
Fly Ash Storage Tank	N/A	Storage of fly ash
Above-ground Asphalt Oil Storage Tank	N/A	Storage of asphalt oil for use in manufacturing of asphaltic concrete.
Ready-Mix Concrete Storage Silo	N/A	Storage of cement.

5.2 Construction Emissions – Phase 1 Site Development

Construction activities emit GHGs primarily through the combustion of fuels (mostly diesel) in the engines of off-road construction equipment and through the combustion of diesel and gasoline in the on-road construction vehicles and in the commuter vehicles of the construction workers. Smaller amounts of GHGs are also emitted through the energy use embodied in any water use (for fugitive dust control) and lighting for the construction activity. Every phase of the construction process, including grading, building, and paving, emits GHG emissions in volumes proportional to the quantity and type of construction equipment used. The heavier equipment typically emits more GHGs per hour of use than the lighter equipment because of their greater fuel consumption and engine design.

Emissions associated with the construction of the Proposed Project were calculated using the CARB's OFFROAD Model, assuming that construction duration period would begin in 2019 and last approximately one year.

Phase 1 Site Development activities are assumed to occur in two separate stages (a and b) because the specific tasks to be completed daily during each stage will not be exactly comparable. The worst-case construction day for each stage has been chosen for the purpose of this analysis and include the two major stages: (a) site grading and utility lines installations, and (b) vertical building construction activities.

Phase 1a would involve the mass grading and utility installation at the aggregate processing area of the Project site. Once the mass grading and utility backbone infrastructure construction efforts are completed, the installations of the aggregate processing equipment, including the cement treated-based plant, hot mix asphalt plant, concrete batch plant, and fuel tank; and other vertical construction activities, such as the office buildings, shops, pond, water tank, etc. could begin during Phase 1b. Phase 1 is anticipated to take one year to complete.

Tables 7 and 8 present a summary of the assumed equipment that would be involved in construction.

Table 7
PHASE 1 - CONSTRUCTION EQUIPMENT REQUIREMENTS
(BACKBONE INFRASTRUCTURE AND GRADING)

Off-road Equipment Type	Horsepower (hp)	Load Factors	Output (hp)	Grading			Backbone Infrastructure		
				Pieces	Hrs/Day	Hrs/Yr	Pieces	Hrs/Day	Hrs/Yr
Bore/Drill Rigs	221	0.50	110.50	-	-	-	1	8	120
Crawler Tractors	212	0.43	91.16	2	8	160	-	-	-
Dumpers/Tenders	16	0.38	6.08	4	4	80	-	-	-
Excavators	158	0.38	60.04	-	-	-	1	8	120
Forklifts	89	0.20	17.80	-	-	-	1	8	120
Graders	187	0.41	76.67	2	8	160	-	-	-
Off-highway Tractors	124	0.44	54.56	1	8	160	1	8	120
Off-highway Trucks	402	0.38	152.76	4	8	160	2	8	120
Other Construction Equipment	172	0.42	72.24	2	4	80	2	4	60
Other General Industrial Equipment	88	0.34	29.92	1	4	80	1	4	60
Rollers	80	0.38	30.40	2	8	160	-	-	-
Rubber Tired Dozers	247	0.40	98.80	4	4	80	-	-	-
Rubber Tired Loaders	203	0.36	73.08	2	8	160	-	-	-
Scrapers	367	0.48	176.16	4	8	160	-	-	-
Skid Steer Loaders	65	0.37	24.05	2	8	160	-	-	-
Tractors/Loaders/Backhoes	97	0.37	35.89	2	8	160	2	8	120
Trenchers	78	0.50	39.00	-	-	-	1	8	120

Table 8
PHASE 1 - CONSTRUCTION EQUIPMENT REQUIREMENTS
(BUILDING CONSTRUCTION AND PAVING)

Off-road Equipment Type	Horsepower	Load Factors	Output (hp)	Building Construction			Paving		
				Pieces	Hrs/day	Hrs/Yr	Pieces	Hrs/day	Hrs/Yr
Aerial Lift	63	0.31	19.53	2	8	208	-	-	-
Air Compressors	78	0.48	37.44	2	8	208	-	-	-
Cement and Mortar Mixers	9	0.56	5.04	2	8	208	1	8	80
Cranes	231	0.29	66.99	2	4	104	-	-	-
Crawler Tractors	212	0.43	91.16	-	-	-	4	8	80
Dumpers/Tenders	16	0.38	6.08	-	-	-	2	4	40
Excavators	158	0.38	60.04	1	4	104	-	-	-
Forklifts	89	0.20	17.80	4	8	208	-	-	-
Generator Sets	84	0.74	62.16	3	8	208	-	-	-
Graders	187	0.41	76.67	-	-	-	1	8	80
Off-highway Tractors	124	0.44	54.56	1	8	208	1	4	40
Off-highway Trucks	402	0.38	152.76	-	-	-	1	4	40
Other Construction Equipment	172	0.42	72.24	2	4	104	2	4	40
Other General Industrial Equipment	88	0.34	29.92	4	4	104	-	-	-
Pavers	130	0.42	54.60	-	-	-	1	8	80
Paving Equipment	132	0.36	47.52	-	-	-	2	8	80
Plate Compactors	8	0.43	3.44	2	8	208	1	8	80
Pressure Washers	13	0.30	3.90	2	8	208	-	-	-
Pumps	84	0.74	62.16	1	8	208	-	-	-
Rollers	80	0.38	30.40	-	-	-	1	8	80
Rough Terrain Forklifts	100	0.40	40.00	2	8	208	-	-	-
Rubber Tired Dozers	247	0.40	98.80	-	-	-	1	4	40
Rubber Tired Loaders	203	0.36	73.08	-	-	-	1	8	80
Skid Steer Loaders	65	0.37	24.05	1	8	208	-	-	-
Sweepers/Scrubbers	64	0.46	29.44	1	4	104	-	-	-
Tractors/Loaders/Backhoes	97	0.37	35.89	2	8	208	-	-	-
Welders	46	0.45	20.7	8	8	208	-	-	-

Table 9, *Estimated Total Construction GHG Emissions Phase 1 (2020)*, presents a summary of the GHG emissions resulting from construction activities. Mass grading and the installation of backbone infrastructure would occur before, and would not overlap with, building construction and paving. As these activities would never occur on the same day during Phase 1 (construction), emissions related to these separate stages of construction are subtotaled in the tables below. Appendix A contains the spreadsheet file for the Proposed Project construction, and provides a detailed breakdown of the calculations.

Table 9
ESTIMATED TOTAL CONSTRUCTION GHG EMISSIONS
PHASE 1 (2020)

Source	CO_2e (MT/year)
Grading	178
Backbone Infrastructure	43
Building Construction	119
Paving	36
Employees and Trucks Trips	1,503
Total MT CO_2e	**1,878**
Amortized Construction Emissions	16

CO_2e = carbon dioxide equivalent; MT = metric tons

It is mandatory for all construction equipment to comply with CARB emission standards for implementing best management practices (BMPs) to minimize impacts:

- Control Measure 1 – All construction equipment operating on the Project site should meet CARB's Off-road Vehicle Regulations. In addition, all construction equipment shall be outfitted with BACT devices certified by the CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 2 diesel emissions control strategy for a similarly sized engine as defined by the CARB regulations.

The Project-related construction activities are estimated to generate approximately 1,878 MT CO_2e emissions over the entire duration of construction. For construction emissions, the County recommends that the emissions be amortized over the life of the Project and added to operational emissions, as appropriate. Amortized over 120 years, construction equipment would contribute 16 MT per year of CO_2e emissions to the Project's total. These emissions are added to the expected annual operational GHG emissions below.

5.3 Operational Emissions – Phase 2, Phase 3, and Phase 4

Operational emissions were calculated for the primary GHGs. Emissions are not constant for the life of the quarry because production rates and emission factors change over time. Production rates start small and ramp up over time to maximum production. Emission factors (emissions per mile traveled, gallon of fuel burned, or tons produced) typically become smaller with time as the result of required enhanced emission controls and regulatory programs.

Stationary permitted industrial sources include the quarry activities, which includes the excavation, blasting and drilling activities, and aggregate processing facility process which includes the rock crushers, screens, conveyor belts, hoppers, hot mix asphalt plant, cement treated base plant, concrete batch plant, and the recycle plant. Area and mobile sources include utility usage from the office building and mobile trips from off-site delivery trucks, employee trips, and on-site heavy-duty equipment activities.

5.3.1 Quarry and Aggregate Processing Facility Process

The quantity of emissions generated would depend on how much aggregate would be mined, the equipment used, the mine layout, and how far vehicles would travel to transport aggregate. This analysis assumes maximum allowable quantities would be removed, and is based on the Applicant's estimated emissions for the equipment to be used.

To determine the worst-case emissions, the year 2021 GHG emission factors were estimated to assume worst-case annual emissions for each year between 2021 and 2042 for Phase 2, and 2043 emission factors were estimated to assume worst-case annual emissions for each year between 2043 and 2110 for Phase 3. The annual emission calculations are based on the maximum annual production rate, GHG emission factors for on-site equipment and off-road engines (which applies to the off-road equipment on site such as dozers and loaders), and EMFAC2017 for on-road vehicle engines. The GHG emissions estimates include emissions from on-road vehicles while on site (i.e., delivery trucks that bring materials to the Project site and delivery trucks that take aggregate and other materials away from the Project site). The analysis was done for CO_2, CH_4, and N_2O emissions.

USEPA AP-42 emission factors for on-site stationary hot mix asphalt plant, which utilize natural gas and heated oil, were assumed constant over time. All other stationary equipment utilize electricity for mechanical power. Diesel portable generator set will used for the screening and conveyor equipment at the recycled material plant and/or quarry pit. EMFAC2017 emission factors for 2021 and 2043 calendar year were assumed to be the worst-case emission rates for on-road vehicle emissions for Phase 2 and Phase 3, respectively. EMFAC2017 accounts for more stringent emission limits required by the CARB over time, newer vehicle engines, and USEPA regulations requiring diesel fuel to have no more than 15 ppm sulfur content (termed ultra-low sulfur diesel) beginning in 2007.

For off-road equipment engines, the CARB in-use off-road emission inventory model was used. For purposes of the emissions analysis, the year 2021 emission factors were estimated to assume worst-case emissions for each year for Phases 2 through 4.

5.3.2 Delivery Trucks and Employee Vehicle Trips

Vehicle emissions during Proposed Project operation would be the result of vehicle emissions from aggregate product delivery, asphalt oil delivery, concrete delivery, fuel delivery, other heavy-duty trucks, and employee vehicle trips. As discussed in Section 1.4.3, *Traffic/Circulation,* based on the maximum production scenario, Phase 1 of the Proposed Project is estimated to generate 30 average daily employee trips and 20 daily truck trips, Phases 2 and 3 (independently) are estimated to generate 35 employee vehicle trips and 519 daily truck trips,

and Phase 4 is estimated to generate 130 average daily truck trips. Vehicle emissions were calculated using the idling, driving, brake wear, and tire wear emission factors from EMFAC2017. For purposes of this analysis the two relevant vehicle classes are light duty truck (gasoline) and T7 single construction heavy (diesel). For Sand Import, Ready-Mix, and Aggregate related activities, all trucks are assumed to be T7 single construction heavy (diesel). Employee trips are assumed to be light duty truck.

5.3.3 Blasting

The Proposed Project is capable of performing 50 blasts/year (i.e., approximately one blast per week). However, the actual annual process rates for blasting would vary from year to year depending on mining needs. The annual quantity of blasts per year anticipated at the Proposed Project is determined by the mine plan of operations. The maximum daily process rate for blasting during any year in the life of the mine is assumed to be one blast per day, the maximum amount of blasts that are possible in one day at the site. The hourly process rate is equal to one blast per hour, the maximum blasts possible in one hour. The annual process rate for the amount of ammonium nitrate/fuel oil (ANFO) used for blasting is calculated by employing the ANFO usage rate, 0.3125 ton of ANFO/drill hole, and multiplying it by the amount of holes drilled/blast. The maximum daily and hourly process rates are calculated similarly based on the maximum daily and hourly drilling rates.

Uncontrolled CO_2, CH_4, and N_2O emissions are calculated using the emission factors from AP-42, Table 13.3-1 (02/80) for the detonation of ANFO, that is, 73.96 kilogram (kg)/million metric British thermal units (MMBTU), $3*10^{-3}$ kg/MMBTU, and $6*10^{-4}$ kg/MMBTU, respectively, from 40 CFR 98, Tables C-1 and C-2 for distillate fuel oil No. 2. A diesel fuel oil to ammonium nitrate ratio of 9 percent and a diesel heating value of 19,300 British thermal units (BTU)/pound (lb) of diesel fuel were used to express the CO_2, CH_4, and N_2O emission factors in terms of lb/ton of ANFO.

The GHG emission factors for blasting are presented in Table 10.

Table 10
GHG EMISSION FACTORS FOR BLASTING

Regulated Pollutant	Emission Factor (lb/tons of ANFO)
CO_2	566
CH_4	0.02
N_2O	0.005

Source: AP-42, Table 13.3-1, USEPA 1980

5.3.4 Hot Mix Asphalt Plant

The HMA plant is comprised of the following pollution sources: the dryer, burner-blower, exhaust fan, dust collection system, asphalt cement heating and storage, mined aggregate materials, and reclaimed asphalt paving (RAP) materials. Asphalt is manufactured by mixing asphalt oil with well-dried, heated rock.

The proposed HMA facility would utilize new technology equipment. The plant would be a 500 tons-per-hour (TPH) counterflow drum mix equipment and would include the following: one recycle bin, two screens, two feed conveyors, one burner, one dryer drum, one slat conveyor, three silos, one control house, one motor control center, two asphalt oil storage tanks, one hot oil heater, and one dust collector. The total height of the facility would be approximately 75 feet. The silos, which look like grain silos on a farm, are the tallest structures at the facility. The tall elevation is needed to allow for a surge of material to be stored, and for gravity to discharge it to the trucks. The next highest structure is the baghouse and its ducting, which would typically stand 45 feet high.

GHGs are emitted from combustion activities related to the HMA plant and include emissions associated with natural gas-fired dryer burner and hot oil heater operations. Emission factors for combustion-related GHG emissions (CO_2, N_2O and CH_4) are provided by the USEPA *AP-42 Compilation of Air Pollutant Emission Factors*. Section 1.4, Table 1.4-2, and Section 11.1, Tables 11.1-5 and 11.1-6, of AP-42 were utilized to calculate GHG emissions associated with natural gas-fired dryer burner and hot oil heater combustion activity.

The asphalt process starts when selected gradations of aggregates are placed onto a conveyer belt. The materials collect on a conveyor and run through a single screen. This screen is in place to ensure that no large and/or foreign objects enter the process. Once through the screen, another conveyor transfers the materials to the drier drum, where they are then heated. Rotating drum technology would be used, which would result in decreased air emissions. With rotating drum technology, aggregates travel in the opposite direction as the heating flame. Older style parallel flow drums operated where the natural gas burner (heat source) and the aggregates were introduced at the same point, and the asphalt oil was injected part way through. The direct heat (flame) had far more contact with the oil and RAP and through this contact would create visible "blue smoke" emissions (a visible and odorous source historically associated with asphalt operations). With the counterflow drums, aggregates are first heated, then moved to an isolated zone where oil and RAP are introduced. This lack of direct heat contact reduces the amount of unwanted emissions.

RAP is introduced through the same process as virgin aggregates, except that it typically enters the drum through a midway point for mixing. Once all these items are adequately heated and mixed, at around 300 °F, they are discharged onto a conveyor that then places them in the heated storage silos. Trucks stage under the silos and are filled via gravity from the silos above. A scale under the truck ensures that the requested load is delivered. The baghouse effectively pulls all the air through the drier drum and filters out the fine particulate matter. This fine particulate matter is then metered back into the system for use in the asphalt product. Other new systems include a blue smoke recovery unit that ducts the gasses back from the silo loading and other transfer points to the burner, where it is then heated up and destroyed or to a cartridge filter. This system uses a fan that creates a vacuum and then injects the flow into the burner's air stream or to a cartridge filter. Also at the truckload out area, a negative draft system (again a fan) is used to capture any vapors that occur during dumping. These vapors are then condensed, and the resulting product is then burnt through the system or to a cartridge filter.

Asphalt oil would be delivered on an as-needed basis. Asphalt oil is typically delivered by tanker trailers to the facility. The unloading of this product happens within the tanks' containment area

through hoses and heated pumps. Unlike other oils, asphalt oil does not have the ability to leach or travel. Once it is at ambient temperature, it would solidify.

Bio-diesel, soy oil, or a similar vegetable-based material would be used as the release agent for asphalt delivery trucks. This chemical allows the asphalt to release from the truck beds without sticking and helps prevent lumping. These materials are sprayed into the truck beds prior to loading and do not require removal or disposal (they work similarly to putting butter on a cookie sheet). It would be received in totes (i.e., barrels) and stored near the application area.

The hot mix asphalt would be loaded out via a silo surge system. This process works by positioning a truck under the load out area and placing the required mix amount into the truck bed via gravity feed. There are no chemicals or loss of material during this procedure. Once full, the truck would drive out of the loading bay and proceeds to the job site.

The process of loading and drying rock prior to mixing with the oil creates GHG emissions. To heat the rock and oil, natural gas is burned. Upon mixing asphaltic oil with the dry, hot rock, some of the oil vaporizes producing "blue smoke." The combustion of the gaseous fuels generates CO_2, CH_4, and N_2O emissions. Emissions from the asphalt plant were calculated using USEPA AP-42 emission factors (Tables 11.1-5 and 11.1-6 from Section 11.1–Hot Mix Asphalt). The annual process rates for the hot mix asphalt plant are based on the HMA processing rates of 600,000 tons per year.

5.3.5 Energy Consumption for Office Use and Asphalt Plant

GHG emissions related to embodied energy due to consumptions of electricity, natural gas (for office space heating and asphalt plant), and water supply are discussed below. As discussed in Section 1.4.4, *Utilities*, SDG&E would supply electricity and natural gas and the Otay Water District would supply the water for the Proposed Project.

5.3.5.1 *Electricity Consumption*

Electric power generation accounted for the second largest sector contributing to both inventoried and projected statewide GHG emissions, comprising 24 percent of the projected total 2020 statewide emissions. The Proposed Project would use electricity to power the machines, lighting, and limited office space heating and cooling. Electricity generation entails the combustion of fossil fuels, including natural gas and coal, which are then stored and transported to end users. The facility's electricity use is thus associated with the off-site or indirect emission of GHGs at the source of electricity generation (power plant). Due to the nature of the electrical grid, it is not possible to say with certainty where energy consumed would be generated. Therefore, GHG emissions resulting from electricity generation were estimated using the SDG&E energy intensity emission factors developed by the Climate Registry. Therefore, GHG emissions resulting from electricity generation associated with the electricity supply to the Proposed Project were estimated using the average annual electricity consumption rates from another Superior Ready Mix facility (Mission Gorge which is a similar size facility and aggregate material processed to the Proposed Project), and GHG emission factors from EPIC's *Estimating Annual Average Greenhouse Gas Emission Factors for the Electric Sector* (EPIC 2016).

Annual electricity use for the Proposed Project was based upon estimated generation rates for land uses in the SDG&E service area. The Proposed Project would consume approximately 3,996,092 kilowatt-hours (kWh) per year (see Appendix A for calculations). The generation of electricity through combustion of fossil fuels typically results in emissions of CO_2 and to a smaller extent CH_4 and N_2O. Annual electricity emissions were estimated using the reported CO_2e emissions per kWh for SDG&E, which would provide electricity for the Project. This would result in 1,131 MT CO_2e per year, with electricity emission calculations provided in Appendix A.

5.3.5.2 *Natural Gas Consumption*

GHG emissions resulting from natural gas combustion were estimated using the annual average natural gas consumption rates from another Superior Ready Mix facility, and emission factors from the Local Government Operations Protocol. The Protocol assumes that natural gas combustion would have emissions of 53.05 kg/MMBTU of CO_2, 0.0059 kg/MMBTU of CH_4, and 0.0001 kg/MMBTU of N_2O. The Proposed Project would consume 14,076 cubic feet (cf) per year. Each cubic foot of natural gas is assumed to contain 1,020 BTU of energy. This would result in 0.76 MT CO_2e per year, with natural gas emission calculations provided in Appendix A.

5.3.5.3 *Water Supply*

Water supplied to the Proposed Project requires the use of electricity. Accordingly, the supply, conveyance, treatment, and distribution of water would indirectly result in GHG emissions through the use of electricity. Estimated amount of water usage were obtained from the Superior Ready Mix for the Proposed Project. The estimated electrical usage associated with supply, conveyance, treatment, and distribution of water was obtained from a CEC report on electricity associated with water supply in California (CEC 2006).

Water use and energy are often closely linked. The provision of potable water to industrial land uses consumes large amounts of energy associated with five stages: source and conveyance, treatment, distribution, end use, and wastewater treatment. Based on the water usage rates from Superior Ready Mix, the potable water demand for the Proposed Project would be approximately 25 million gallons per year (or 76.7 acre-foot[1] per year).

Wash water containing suspended fines from the aggregate plant would be piped to a series of settling ponds or water clarifier system adjacent to the plant. After aggregate washing of aggregate, the water will discharge into a sediment pond. This pond will be designed to allow sediment to fall to the bottom and clean water to overflow and be recycled back through the dewatering process. Periodically, fines will be dredged from the bottom of the pond and utilized as a binder in base rock production or blended with topsoil and/or overburden material.

If a water clarifier system is used, water would be separated from the aggregate fines in a settling tank and belt press system. The fines would be deposited in the overburden fill area or sold as product. The clean water from the clarifier system would be continuously recycled through the wash plant and back to the clarifier. Using either method, it is estimated that 70 to 75 percent of wash water would be recycled.

[1] One acre-foot of water is 325,851 gallons (enough water to cover a one-acre area one foot deep in water).

The CEC estimates that in southern California, water usage would have an embodied energy use of 12,700 kWh per million gallons. CO_2 emissions were calculated on the maximum basis of an additional 25 million gallons annually times 12,700 kWh per million gallons. Thus, the Proposed Project would indirectly produce a net increase of approximately 318 megawatt-hour (MWh) per year of electricity requirements for water supply and distribution. Emissions of greenhouse gases were calculated based on EPIC's *Estimating Annual Average Greenhouse Gas Emission Factors for the Electric Sector*, which assumes that energy use (electricity) would have emissions of 624 lbs/MWh of CO_2e. The resultant GHG emissions would be approximately 90 MT CO_2e emissions per year from water-energy usage associated with the Proposed Project. Water emission calculations are provided in Appendix A.

5.3.6 Solid Waste

The proposed project would not generate any decomposable solid waste on-site, and therefore, result in no CO_2 emission associated with landfill off-gassing.

5.4 Summary of Stationary and Non-Permitted Operational Sources (Phases 2, 3, 4)

The methodology used to calculate vehicle, electricity, and natural gas GHG emissions are shown below. Tables 11 and 12 present the summary of operational GHG emissions for Phases 2 (2021-2042) and 3 (2043-2110) of the Project, respectively. The GHG emissions for both of these phases would involve the same types and amount of activities, so the emissions would be comparable. Including amortized construction emissions, the analysis estimated that the Project would result in 9,354 MT CO_2e per year during Phase 2.

Table 11
ESTIMATED ANNUAL OPERATIONAL EMISSIONS
PHASE 2 (2020 – 2042)

Source	CO_2e (MT/year)
Blasting and Drilling	64
Hot Mix Asphalt	2,384
Water Usage	90
Electricity Usage	1,131
Natural Gas Usage	1
Off-Site Trucks and Employee Trips	4,809
On-Site Trucks and Employee Trips	164
On-Site Heavy Duty Equipment	696
Amortized Construction	16
Total MT CO_2e	**9,354**
SCAQMD Significance Thresholds (MT CO_2e)	10,000
Exceedance?	No

CO_2e = carbon dioxide equivalent; MT = metric tons

For Phase 3, the analysis estimated that the Project would result in 8,211 MT CO_2e per year.

Table 12 ESTIMATED ANNUAL OPERATIONAL EMISSIONS PHASE 3 (2042 – 2110)	
Source	**CO_2e (MT/year)**
Blasting and Drilling	64
Hot Mix Asphalt	2,384
Water Usage	90
Electricity Usage	1,131
Natural Gas Usage	1
Off-Site Trucks and Employee Trips	3,666
On-Site Trucks and Employee Trips	164
On-Site Heavy Duty Equipment	696
Amortized Construction	16
Total MT CO_2e	**8,211**
SCAQMD Significance Thresholds (MT CO_2e)	10,000
Exceedance?	No

CO_2e = carbon dioxide equivalent; MT = metric tons

Phase 4 of the Proposed Project, which involves backfilling the pit (created via below ground surface mining) with inert fill material (fill dirt), would include different activities, and subsequently involve different emissions sources, than the previous phases. Table 13 below presents the summary of GHG emissions for Phase 4 (post year 2110).

Table 13 ESTIMATED ANNUAL OPERATIONAL EMISSIONS PHASE 4 (Post 2110)	
Reclamation Source	**CO_2e (MT/year)**
On-Site Heavy Duty Equipment	696
Trucks and Employee Trips	1,626
Amortized Construction	16
Total MT CO_2e	**2,337**
SCAQMD Significant Thresholds (MT CO_2e)	10,000
Exceedance?	No

CO_2e = carbon dioxide equivalent; MT = metric tons

For Phase 4, the analysis estimated that the Project would generate approximately 2,337 MT CO_2e per year.

Phases 3 and 4 would overlap from years 2046 to 2110. It was assumed the off-road equipment utilized during Phase 3 mining activities would also be used to place fill imported under Phase 4, therefore, only on-road emissions would increase during the overlap of Phases 3 and 4. Summing the additional Phase 4 on-road emissions with the Phase 3 total yields a combined 9,837 MT CO_2e annually, which is less than the 10,000 MT CO_2e threshold.

5.5 Significance of Impacts

GHG impacts would be less than significant.

6.0 IMPACT SUMMARY

Table 14 summarizes the Project GHG emissions for each Phase. As shown, the Proposed Project would generate less than 10,000 MT CO_2e per year for all Phases. As such, the impacts would be less than significant.

Table 14
SUMMARY OF ANNUAL OPERATIONAL GHG EMISSIONS

Phase	Total CO_2e (MT/year)	SCAQMD Significance Threshold	Impact?
2	9,354	10,000	**No**
3	8,211	10,000	**No**
4	2,337	10,000	**No**
3/4 Overlap	9,837	10,000	**No**

CO_2e = carbon dioxide equivalent; MT = metric tons

7.0 PROJECT CONSISTENCY WITH ADOPTED PLANS, POLICIES, AND REGULATIONS

The regulatory plans and policies discussed in Section 3.0 above aim to reduce national, state, and local GHG emissions by primarily targeting the largest emitters of GHGs: the transportation and energy sectors. Plan goals and regulatory standards are thus largely focused on the automobile industry and public utilities. For the transportation sector, the reduction strategy is generally three-pronged: to reduce GHG emissions from vehicles by improving engine design; to reduce the carbon content of transportation fuels through research, funding and incentives to fuel suppliers; and to reduce the miles these vehicles travel through land use change and infrastructure investments.

For the energy sector, the reduction strategies aim to reduce energy demand; impose emission caps on energy providers; establish minimum building energy and green building standards; transition to renewable non-fossil fuels; incentivize homeowners and builders; fully recover landfill gas for energy; expand research and development; and so forth.

7.1 Local Plans

As discussed above in Section 1, the Project would achieve some GHG reductions through implementation of BACT in the Hot Mix Asphalt Plant and Concrete Batch Plant, use of clean burning off-road equipment, and green building design in accordance with the requirements of Title 24.

As a condition of building permit approval, the Proposed Project is required to comply with 2019 Title 24 standards. Verification of increased energy efficiencies will be demonstrated based on a performance approach, using a CEC-approved water and energy compliance software program, in the Title 24 Compliance Reports provided by the Project applicant to the County prior to issuance of the building permit.

The Project would generate no more than 9,837 MT CO_2e per year, which is less than the threshold being applied to this analysis and would therefore be consistent with statewide GHG reduction targets established by AB 32 and EO S-3-05. The Project's consistency with specific General Plan policies is analyzed in Table 15.

Table 15
COUNTY GENERAL PLAN POLICIES

Policy	Project Consistency
LU5.2 Sustainable Planning and Design. Incorporate into new development sustainable planning and design.	*Consistent*. The Project has been designed to incorporate measures to reduce emissions of local GHG emissions, including water conservation design features to reduce water usage and associated GHG emissions.
COS14.10 Low Emission Construction Vehicles and Equipment. Require County contractors and encourage other developers to use low-emission construction vehicles and equipment to improve air quality and reduce GHG emissions.	*Consistent*. All Project-related construction equipment would be required to meet USEPA-Certified Tier 2 emissions standards in Phase 2 and Tier 4 emissions standards in Phases 3 and 4.
COS15.1 Design and Construction of New Buildings. Require that new buildings be designed and constructed in accordance with "green building" programs that incorporate techniques and materials that maximize energy efficiency, incorporate the use of sustainable resources and recycled materials, and reduce emissions of GHGs and toxic air contaminants.	*Consistent*. The Project proposes sustainability and efficiency features consistent with the 2016 CALGreen Building Code.
COS15.4 Title 24 Energy Standards. Require development to minimize energy impacts from new buildings in accordance with or exceeding Title 24 energy standards.	*Consistent*. The Project proposes implementing energy efficiency features that would meet 2016 Title 24 standards, which is 46 percent more efficient than the 2008 Title 24 requirements that were current when the General Plan was adopted.
COS17.2 Construction and Demolition Waste. Require recycling, reduction and reuse of construction and demolition debris.	*Consistent*. The Project would prepare a Construction Debris Management Plan that complies with Section 68.508-68.518 of the County Municipal Code, and would divert at least 90 percent of inerts and 70 percent of construction waste from landfills through reuse and recycling.

7.1.1 Climate Action Plan Consistency

The Project was analyzed for consistency with the CAP Consistency Review Checklist (see Appendix B for the Checklist). Information needed to respond to the questions was provided by the Project applicant.

The Checklist contains two steps to determine consistency with the CAP: (1) Land Use Consistency; and (2) CAP Measures Consistency. If the Project is consistent with the land use and zoning designation, and incorporates applicable CAP measures in the Project design, then the Project would be deemed consistent with the General Plan and CAP.

7.1.1.1 *Step 1: Land Use Consistency*

1. The first step of the Checklist in determining consistency is to assess the project's consistency with the growth projections used in the development of the CAP. This section allows the County to determine a project's consistency with the land use assumptions used in the CAP.

The Checklist considers the following question to determine if a project is consistent with the growth projections and land use assumptions used in development of the CAP:

> *Is the proposed project consistent with the existing General Plan regional category, land use designations, and zoning designations?*

Consistent. The Project impact footprint is currently zoned (under the East Otay Mesa Specific Plan [EOMSP]) as S88, Specific Plan Use Regulations (maximum residential density of 0.05 du per acre and lot size of 30,000 sf for Mixed Industrial). The S88 zoning designation allows extractive uses with approval of a major use permit (MUP) according to Subchapter 3.2 of the EOMSP. Because the Project is consistent with the General Plan, it is assumed to be consistent with the CAP and to have been included in the underlying growth projections and land use assumptions upon which the CAP projections are based.

7.1.1.2 *Step 2: CAP Measures Consistency*

After determining consistency with the General Plan and zoning in Step 1 of the Checklist, Step 2 requires the project to demonstrate consistency with applicable CAP Measures.

2. The second step of the Checklist is to review and evaluate a project's consistency with the applicable measures of the CAP. Each Checklist item is associated with a specific GHG reduction measure(s) in the County CAP.

The Project's conformance with each CAP measure is described in Table 16, CAP Measure Consistency.

Table 16
CAP MEASURE CONSISTENCY

CAP Measure	Consistency	Project Detail
1. REDUCING VEHICLE MILES TRAVELED		
For non-residential projects with anticipated tenant-occupants of 25 or more, will the project achieve a 15 percent reduction in emissions from commute vehicle miles traveled (VMT), and commit to monitoring and reporting results to demonstrate on-going compliance? VMT reduction may be achieved through a combination of Transportation Demand Management and parking strategies, as long as the 15 percent reduction can be substantiated.	**Not Applicable**	The Project would not accommodate more than 25 tenant-occupants.
2. SHARED & REDUCED PARKING		
For non-residential projects with anticipated tenant-occupants of 24 or less, will the project implement shared and reduced parking strategies that achieves a 10 percent reduction in emissions from commute VMT? *Shared and reduced parking strategies may include, but are not limited to:* • *Shared parking facilities* • *Carpool/vanpool-only parking spaces* • *Shuttle facilities* • *Electric Vehicle-only parking spaces*	**Consistent**	The Project would provide carpool- and vanpool-only parking spaces which would encourage commuters to carpool and vanpool to the Project site. Electric vehicle-only parking would be incorporated per CALGreen Standards. Other strategies such as flexible employee schedules or telecommuting would not be applicable to this type of Project, where employees have to be present at the site to perform work. Therefore, the design of the Project would implement applicable available parking strategies and encourage the use of alternate modes of transportation which would reduce emissions from commute VMT, to the extent feasible.
3. WATER HEATING SYSTEMS		
For projects that include residential construction, will the project, as a condition of approval, install the electric or alternatively-fueled water heating system(s)?	**Not Applicable**	The Project is a non-residential Project and therefore, CAP Measure 3 is not applicable.
4. WATER-EFFICIENT APPLIANCES & PLUMBING FIXTURES		
For new residential projects, will the project comply with water efficiency and conservation Best Management Practices?	**Not Applicable**	The Project is a non-residential Project and therefore, CAP Measure 4 is not applicable.
5. RAIN BARREL INSTALLATIONS		
For new residential projects, will the project make use of incentives to install one rain barrel per every 500 square feet of available roof area?	**Not Applicable**	The Project is a non-residential Project and therefore, CAP Measure 5 is not applicable.
6. REDUCE OUTDOOR WATER USE		
Non-Residential: Will the project submit a Landscape Document Package that is complaint with the County's Water Conservation in Landscaping Ordinance and demonstrates a 40 percent reduction in current MAWA for outdoor use?	**Consistent**	The Project would comply with the County's Water Conservation in Landscaping Ordinance requirements and would demonstrate a 40 percent reduction in current MAWA for outdoor water use. In addition, the Project would be designed in accordance with CALGreen and would reduce indoor and outdoor water consumption by at least 20 percent.

Table 16 (cont.) CAP MEASURE CONSISTENCY		
CAP Measure	**Consistency**	**Project Detail**
7. AGRICULTURAL & FARMING OPERATIONS		
Will the project use the San Diego County Air Pollution Control District's (SDAPCD's) farm equipment incentive program to convert gas- and diesel powered farm equipment to electric equipment?	**Not Applicable**	The Project does not contain any agricultural or farming operations and therefore, CAP Measure 7 is not applicable.
8. ELECTRIC IRRIGATION PUMPS		
Will the project use the SDAPCD's farm equipment incentive program to convert gas- and diesel powered irrigation pumps to electric irrigation pumps?	**Not Applicable**	The Project does not contain any agricultural or farming operations and therefore, CAP Measure 8 is not applicable.
9. TREE PLANTING		
For residential projects, will the project plant, at a minimum, two trees per every new residential dwelling unit proposed?	**Not Applicable**	The Project is a non-residential Project and therefore, CAP Measure 9 is not applicable.

7.1.1.3 *Summary*

Per Step 1 of the CAP consistency analysis, the Project would be consistent with the General Plan land use and zoning designation and would thus be consistent with the growth projection and land use assumptions used in the CAP. Regarding Step 2 consistency, the Project would comply with applicable CAP Measure 2, Shared and Reduced Parking, and CAP Measure 6, Reduce Outdoor Water Use; all other measures are not applicable based on the Project's proposed land use or number of tenant-occupants. Therefore, the Project is consistent with Step 2. By demonstrating consistency with the CAP Checklist, the Project would be consistent and not conflict with the goals of the County's CAP. As such, impacts would be less than significant.

7.2 State Plans

EO S-3-05 and EO B-30-15, codified by SB 32, established GHG emission reduction targets for the state, and AB 32 launched the Climate Change Scoping Plan that outlined the reduction measures needed to reach these targets. The Project GHG emissions does not exceed the threshold being applied to this analysis, and thus the Proposed Project would not impede the AB 32 or SB 32 goals of reducing statewide GHG emissions.

8.0 MITIGATION

The Project would not exceed the GHG emissions threshold being applied to this analysis and, therefore, no mitigation measure would be required.

9.0 RESIDUAL IMPACTS AND CONCLUSIONS

As shown in Table 14, implementation of the Project would generate no more than 9,837 MT CO_2e per year, which is less than 10,000 MT CO_2e per year threshold. Therefore, the Proposed Project's GHG emissions would be less than significant.

10.0 REFERENCES

Association of Environmental Professionals (AEP)

2007. Recommendations by the Association of Environmental Professionals (AEP) on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents. June.

American Petroleum Institute (API)

2004. API Compendium of GHG Emissions Estimation Methodologies for the Oil and Gas Industry.

California Air Pollution Control Officers Association (CAPCOA)

2010. Quantifying Greenhouse Gas Mitigation Measures. August. Available at: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf.

California Air Resources Board (CARB)

2019. California Greenhouse Gas Inventory for 2000-2017 – By Sector and Activity. August 12.

2014. Proposed Update to the Climate Change Scoping Plan: Building on the Framework. February 2014. Available at: http://www.arb.ca.gov/cc/scopingplan/2013_update/draft_proposed_first_update.pdf.

2011. Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document. August 19. Available at: http://www.arb.ca.gov/cc/scopingplan/document/final_supplement_to_sp_fed.pdf.

2010a. Climate Car Standards – Pavley, Assembly Bill 1493. Available at: http://www.arb.ca.gov/cc/ccms/ccms.htm.

2010b. Senate Bill 375 – Regional Targets. Available at: http://www.arb.ca.gov/cc/sb375/sb375.htm.

2010c. Draft Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375. June 30.

2010d. Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories, Version 1.1. Developed in partnership by California Air Resources Board, California Climate Action Registry, ICLEI – Local Governments for Sustainability, The Climate Registry. May.

2008a. Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act, October 24. Available at: http://www.arb.ca.gov/cc/localgov/ceqa/ceqa.htm.

California Air Resources Board (CARB) (cont.)

2008b. AB 32 Climate Change Scoping Plan Document. Available at: http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm.

2007a. Staff Report: California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit. November 16.

2007b. Climate Change: Information Regarding CARB's Climate Change Program Pursuant to 2006 Assembly Bill 32. Available at: http://www.arb.ca.gov/cc/cc.htm.

2007c. Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration.

2007d. California Greenhouse Gas Inventory for 1990-2004 – By Sector and Activity. November 19.

2006. Public Workshop to Discuss Establishing the 1990 Emission Level and the California 2020 Limit and Developing Regulations to Require Reporting of Greenhouse Gas Emissions, Sacramento, CA. December 1.

California Building Standards Commission (CBSC)

2010. California Green Building Standards Code (CalGreen). Effective January 1, 2011. Available at: http://www.documents.dgs.ca.gov/bsc/CALGreen/2010_CA_Green_Bldg.pdf.

California Climate Action Registry (CCAR)

2009. General Reporting Protocol.

California Department of Resources Recycling and Recovery (CalRecycle)

2010. Solid Waste Characterization: Guidelines for Preparation of Environmental Assessment for Solid Waste Management.

2009. Estimated Solid Waste Generation Rates for Residential and Commercial Establishments. December 30. Available at: http://www.calrecycle.ca.gov/wastechar/wastegenrates.

2008. Statewide Waste Characterization Study. Contractors Report to the California Integrated Waste Management Board. April.

California Energy Commission (CEC)

2006. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004. December.

2008. New Solar Homes Partnership Guidebook Revised Second Edition. August.

California Environmental Protection Agency (CalEPA), Climate Action Team
2006. Executive Summary, Climate Action Team Report to Governor Schwarzenegger and the California Legislature, Sacramento, CA. March.

California Natural Resources Agency (CNRA)
2009. California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008. Available at: http://resources.ca.gov/climate_adaptation/docs/Statewide_Adaptation_Strategy.pdf.

County of San Diego (County)
2018. Climate Action Plan. February. Available at: https://www.sandiegocounty.gov/content/dam/sdc/pds/advance/cap/publicreviewdocuments/PostBOSDocs/San%20Diego%20County%20Final%20CAP.pdf

2013. Guidelines for Determining Significance: Climate Change. Land Use and Environment Group. November 7.

2011. General Plan. August. Available at: https://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/docs/GP/Cover-TOC-Vision.pdf

Strategic Energy Plan. Available at: http://sustainca.org/sites/default/files/County_of_San_Diego_2009_Strategic_Energy_Plan.pdf.

Darnell & Associates
2017. Traffic Impact Study for the Otay Hills Project. December 4.

EnviroMINE Inc.
2020. San Diego County Construction Aggregate Market Study. May.

Intergovernmental Panel on Climate Change (IPCC)
2014. *Mitigation of Climate Change.* Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom, and New York, NY, USA.

2007. Climate Change 2007: The Physical Science Basis, Summary for Policy Makers (Working Group Fourth Assessment Report). February. Available at: http://www.ipcc.ch/SPM2feb07.pdf.

National Aeronautics and Space Administration, Goddard Institute for Space Studies (NASA). 2011 (January 12). *NASA Research Finds 2010 Tied for Warmest Year on Record.* Available: http://www.giss.nasa.gov/research/news/20110112/.

National Oceanic and Atmospheric Administration (NOAA). 2017. Earth System Research Laboratory. Available at: http://www.esrl.noaa.gov/gmd/ccgg/trends/global.html, accessed February 1, 2017.

Marten Law Group 2008. California Sues EPA Over Vehicle Emissions Standards. Available at: http://www.martenlaw.com/news/?20080109-calif-sues-epa.

San Diego Association of Governments (SANDAG) 2015. San Diego Forward – The Regional Plan. October. Available at: http://www.sdforward.com/pdfs/RP_final/The%20Plan%20-%20combined.pdf.

2011a. San Diego Region Aggregate Supply Study. January.

2011b. 2050 Regional Transportation Plan. October.

2010. Climate Action Strategy. February 1. Available at: http://www.sandag.org/uploads/publicationid/publicationid_1481_10940.pdf.

South Coast Air Quality Management District (SCAQMD) 2011. California Emission Estimator Model (CalEEMod). Prepared by ENVIRON under contract with SCAQMD. Version 2001.1.1. February. Available at: http://www.aqmd.gov/caleemod/default.htm.

2008. Interim CEQA GHG Significance Threshold. December.

United Nations Framework Convention on Climate Change (UNFCCC) 2009. Status of Ratification. Available at: http://unfccc.int/kyoto_protocol/background/status_of_ratification/items/2613.php.

United Nations Environment Program (UNEP) 2007a. Scientific Assessment of Ozone Depletion: 2006. Pursuant to Article 6 of the Montreal Protocol on Substances that Deplete the Ozone Layer. February.

2007b. Achievements in Stratospheric Ozone Protection, The Montreal Protocol on Substances that Deplete the Ozone Layer, Progress Report 1987–2007. Available at: http://ozone.unep.org/Publications/MP_Acheivements-E.pdf.

United Nations Framework Convention on Climate Change (UNFCCC) 2007a. The United Nations Framework Convention on Climate Change. Available at: http://unfccc.int/essential_background/convention/items/2627.php.

United Nations Framework Convention on Climate Change (UNFCCC) (cont.)
2007b. Kyoto Protocol. Available at: http://unfccc.int/kyoto_protocol/items/2830.php.

2006a. Greenhouse Gas Emissions Data, Predefined Queries, Annex I Parties – GHG total without LULUCF (land-use, land-use change and forestry). Available at: http://unfccc.int/ghg_emissions_data/predefined_queries/items/3841.php.

2006b. Kyoto Protocol Third Session of the Conference of the Parties (COP) to the UNFCCC.

United States Environmental Protection Agency (USEPA)
2014. The U.S. Inventory of Greenhouse Gas Inventory Report: 1990 - 2012. Available at: http://www.epa.gov/climatechange/ghgemissions/usinventoryreport/2014.html

2010. Inventory of Greenhouse Gas Emissions and Sinks: 1990 to 2008. U.S. EPA #430-R-10-066. Available at: http://epa.gov/climatechange/emissions/usinventoryreport.html.

2006. The U.S. Inventory of Greenhouse Gas Emissions and Sinks: Fast Facts. Available at: www.epa.gov/climatechange/emissions/downloads06/06FastFacts.pdf.

2004a. Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources, AP-42, Section 11.1, Hot Mix Asphalt Plants. April. Available at: http://www.epa.gov/ttn/chief/ap42/ch11/final/c11s01.pdf.

2004b. Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources, AP-42, Section 11.19.2, Crushed Stone Processing and Pulverized Minerals Processing. August. Available at: http://www.epa.gov/ttn/chief/ap42/ch11/final/c11s1902.pdf.

1980. Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources, AP-42, Section 13.3, Explosives Detonation. February.

University of California Berkeley.
2005. Berck, Peter. Working Paper No. 994 – A Note on the Environmental Costs of Aggregate Department of Agricultural and Resource Economics and Policy, Division of Agricultural and Natural Resources.

University of San Diego School of Law Energy Policy Initiative Center (EPIC)
2017. County of San Diego 2014 Greenhouse Gas Inventory and Projections. December. Available at: https://www.sandiegocounty.gov/content/dam/sdc/pds/advance/cap/publicreviewdocuments/PostBOSDocs/CAP%20Appendix%20A%20%20-%202014%20Inventory%20and%20Projections.pdf

University of San Diego School of Law Energy Policy Initiative Center (EPIC) (cont.)
2016. Anders, S., N. Silva-Send, and Yichao Gu. Estimating Annual Average Greenhouse Gas Emission Factors for the Electric Sector: A Method for Inventories. June. Available at: https://www.sandiego.edu/law/documents/centers/epic/1-Electric%20Emissions%20Factor%20Method_061716.pdf

2008. Anders, S., D. De Han, N. Silva-Send, S. Tanaka, and L. Tyner. San Diego County Greenhouse Gas Inventory: An Inventory of Regional Emissions and Strategies to Achieve AB 32 Targets. September. Available at: http://www.sandiego.edu/epic/ghginventory.

World Resources Institute (WRI)
2017. CAIT Climate Data Explorer. Available: http://cait.wri.org/historical. Accessed February 2, 2017.

11.0 LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED

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APPENDIX A

EMISSION CALCULATIONS

Otay Hills Construction Aggregate and IDEFO Operations Data

Production Data

Activity	High Production		
	Annual (TPY)	Daily (TPD)	Hourly (TPH)
Total Aggregate Throughput			
Primary Processing Production	1,600,000	8,000	800
Secondary Processing Production	1,400,000	7,000	700
Recycled Material Production	420,000	3,000	300
Sand Screen Plant	200,000	2,000	200
Concrete Batch Plant	1,000,000	10,000	1,000
Cement-Treated Base Plant	320,000	4,000	400
Hot Mix Asphalt Batch Plant	600,000	5,000	500
Note: Total aggregate thorughput will be 2,020,000 and may include up to 420,000 TPY of recycle aggregate, asphalt, and concrete materials			

Production Schedule

Activity	Daily Schedule at Maximum Production Rate (hrs/day)	Annual Schedule at Maximum Production Rate (hrs/year)
Aggregate Plant Schedule		
Primary Processing Schedule	10	2,000
Secondary Processing Schedule	10	2,000
Recycled Material Schedule	10	1,400
Sand Screen Plant Schedule	10	1,000
Concrete Batch Plant Schedule	10	1,000
Cement-Treated Base Plant Schedule	10	800
Hot Mix Asphalt Batch Plant Schedule	10	1,200
Note: Typical hours of operation are 6am to 4pm. 2,400 - 2,500 hrs/yr		

Aggregate Material Transfer Rates

Activity	Percent of Products as Aggregate (%)	Aggregate Transferred for Trip Generation		Transfer Method
		Annual Production (TPY)	Daily Max Production (TPD)	
Rock to Primary Plant	100	1,600,000	8,000	Loader to on-site/off-road haul truck to plant
Rock to Secondary Plant	100	1,400,000	7,000	Conveyor
Aggregates to On-Road Product Haul Truck	100	549,000	3,000	Loader to overhead bins
Aggregates to Concrete Batch Plant	80	305,000	1,500	Conveyor
Aggregates to Cement-Treated Base Plant	90	61,000	1,000	Loader operations
Aggregates to Hot Mix Asphalt Batch Plant	80	305,000	2,000	Conveyor

Notes:
1. Aggregate transfer data obtained from Table 4 of the TIS (Darnell and Associates 2017)
2. Aggregate to On-Road Haul Truck represents the loading of product that will be transported off-site. The amount of aggregate product is based on the balance of total aggregate minus the aggregate sent to the concrete and asphalt plants.
3. The concrete, cement treated base, and asphalt plants are fed by the aggregate secondary plant and product stockpiles.

Haul Rates

Activity	Material Transferred			Method
	Annual (TPY)	Daily Max Production (TPD)	Truck Capacity (Tons)	
Aggregate Product	549,000	3,000	27	Truck
Concrete Product	1,000,000	10,000	20	Truck
CTB Product	320,000	4,000	27	Truck
Asphalt Product	600,000	5,000	27	Truck
Cement Delivery	140,000	1,400	27	Truck
Asphalt Oil Delivery	30,000	250	27	Truck

Notes:
1. Cement and Cement Supplement delivery represents the amount of cement and supplements (fly-ash) brought on-site to be used for concrete production and is based on a mixing ratio of approximately 14% cement, as shown in average concrete composition, AP-42, Table 11.12-2
2. The asphalt oil delivery represents the amount of oil brought on-site to be used for asphalt production and is based on a mixing ratio of approximately 5% oil with 95% aggregate.

Off-Road Diesel Engine Emission Factors

PHASE 1 - CONSTRUCTION EQUIPMENT REQUIREMENTS

Off-Road Equipment Type	Horsepower	Load Factors	Output (hp)	Grading			Backbone Infrastructure			Building Construction			Paving		
				Pieces	Hrs/Day	Hrs/Yr	Pieces	Hrs/Day	Hrs/Yr	Pieces	Hrs/Day	Hrs/Yr	Pieces	Hrs/Day	Hrs/Yr
Aerial Lift	63	0.31	19.53	-	-	-	-	-	-	2	8	208	-	-	-
Air Compressors	78	0.48	37.44	-	-	-	-	-	-	2	8	208	-	-	-
Bore/Drill Rigs	221	0.50	110.50	-	-	-	1	8	120	-	-	-	-	-	-
Cement and Mortar Mixers	9	0.56	5.04	-	-	-	-	-	-	2	8	208	1	8	80
Cranes	231	0.29	66.99	-	-	-	-	-	-	2	4	104	-	-	-
Crawler Tractors	212	0.43	91.16	2	8	160	-	-	-	-	-	-	4	8	80
Dumpers/Tenders	16	0.38	6.08	4	4	80	-	-	-	-	-	-	2	4	40
Excavators	158	0.38	60.04	-	-	-	1	8	120	1	4	104	-	-	-
Forklifts	89	0.20	17.80	-	-	-	1	8	120	4	8	208	-	-	-
Generator Sets	84	0.74	62.16	-	-	-	-	-	-	3	8	208	-	-	-
Graders	187	0.41	76.67	2	8	160	-	-	-	-	-	-	1	8	80
Off-Highway Tractors	124	0.44	54.56	1	8	160	1	8	120	1	8	208	1	4	40
Off-Highway Trucks	402	0.38	152.76	4	8	160	2	8	120	-	-	-	1	4	40
Other Construction Equipment	172	0.42	72.24	2	4	80	2	4	60	2	4	104	2	4	40
Other General Industrial Equipment	88	0.34	29.92	1	4	80	1	4	60	4	4	104	-	-	-
Pavers	130	0.42	54.60	-	-	-	-	-	-	-	-	-	1	8	80
Paving Equipment	132	0.36	47.52	-	-	-	-	-	-	-	-	-	2	8	80
Plate Compactors	8	0.43	3.44	-	-	-	-	-	-	2	8	208	1	8	80
Pressure Washers	13	0.30	3.90	-	-	-	-	-	-	2	8	208	-	-	-
Pumps	84	0.74	62.16	-	-	-	-	-	-	1	8	208	-	-	-
Rollers	80	0.38	30.40	2	8	160	-	-	-	-	-	-	1	8	80
Rough Terrain Forklifts	100	0.40	40.00	-	-	-	-	-	-	2	8	208	-	-	-
Rubber Tired Dozers	247	0.40	98.80	4	4	80	-	-	-	-	-	-	1	4	40
Rubber Tired Loaders	203	0.36	73.08	2	8	160	-	-	-	-	-	-	1	8	80
Scrapers	367	0.48	176.16	4	8	160	-	-	-	-	-	-	-	-	-
Skid Steer Loaders	65	0.37	24.05	2	8	160	-	-	-	1	8	208	-	-	-
Sweepers/Scrubbers	64	0.46	29.44	-	-	-	-	-	-	1	4	104	-	-	-
Tractors/Loaders/Backhoes	97	0.37	35.89	2	8	160	2	8	120	2	8	208	-	-	-
Trenchers	78	0.50	39.00	-	-	-	1	8	120	-	-	-	-	-	-
Welders	46	0.45	20.70	-	-	-	-	-	-	8	8	208	-	-	-

Note: List of equipment, horsepower ratings, and emission factors were obtained from the Air Resources Board's 2011 OFFROAD emission factor inventory.

Number of equipment pieces and hours of operations are estimated for Phase 1 of the Otay Hills Project (grading 20 days, backbone infrastructure 15 days, building 26 days, and paving 10 days)

Off-Road Diesel Engine Emission Factors

Off-Road Equipment Type	Emission Factors (g/hp-hr)		
	CO_2	CH_4	N_20
Aerial Lift	472.1142	0.1530	-
Air Compressors	568.2990	0.0440	-
Bore/Drill Rigs	466.8342	0.1510	-
Cement and Mortar Mixers	568.2990	0.0590	-
Cranes	472.9488	0.1530	-
Crawler Tractors	472.9410	0.1530	-
Dumpers/Tenders	568.2990	0.0610	-
Excavators	472.2891	0.1530	-
Forklifts	471.5285	0.1530	-
Generator Sets	568.2990	0.0320	-
Graders	486.3288	0.1540	-
Off-Highway Tractors	472.9169	0.1530	-
Off-Highway Trucks	474.5787	0.1530	-
Other Construction Equipment	469.9837	0.1520	-
Other General Industrial Equipment	469.9998	0.1520	-
Pavers	472.7746	0.1530	-
Paving Equipment	470.7359	0.1520	-
Plate Compactors	568.2990	0.0590	-
Pressure Washers	568.2990	0.0650	-
Pumps	568.2990	0.0340	-
Rollers	473.8594	0.1530	-
Rough Terrain Forklifts	472.9842	0.1530	-
Rubber Tired Dozers	474.7928	0.1540	-
Rubber Tired Loaders	469.5127	0.1520	-
Scrapers	472.1751	0.1530	-
Skid Steer Loaders	471.9075	0.1530	-
Sweepers/Scrubbers	474.1157	0.1530	-
Tractors/Loaders/Backhoes	475.1543	0.1540	-
Trenchers	475.1265	0.1540	-
Welders	568.2990	0.0840	-

Annual Emissions

Off-Road Equipment Type	Emissions (MT/year)			
	CO_2	CH_4	N_20	CO_2e
Grading				
Crawler Tractors	13.7963	0.0045	-	13.89
Dumpers/Tenders	1.1057	0.0001	-	1.11
Graders	11.9318	0.0038	-	12.01
Off-Highway Tractors	4.1284	0.0013	-	4.16
Off-Highway Trucks	46.3979	0.0150	-	46.71
Other Construction Equipment	5.4323	0.0018	-	5.47
Other General Industrial Equipment	1.1250	0.0004	-	1.13
Rollers	4.6097	0.0015	-	4.64
Rubber Tired Dozers	15.0110	0.0049	-	15.11
Rubber Tired Loaders	10.9798	0.0036	-	11.05
Scrapers	53.2342	0.0172	-	53.60
Skid Steer Loaders	3.6318	0.0012	-	3.66
Tractors/Loaders/Backhoes	5.4571	0.0018	-	5.49
Grading Total	**176.8408**	**0.0569**	**-**	**178.0353**
Backbone Infrastructure				
Bore/Drill Rigs	6.1902	0.0020	-	6.23
Excavators	3.4027	0.0011	-	3.43
Forklifts	1.0072	0.0003	-	1.01
Off-Highway Tractors	3.0963	0.0010	-	3.12
Off-Highway Trucks	17.3992	0.0056	-	17.52
Other Construction Equipment	4.0742	0.0013	-	4.10
Other General Industrial Equipment	0.8437	0.0003	-	0.85
Tractors/Loaders/Backhoes	4.0928	0.0013	-	4.12
Trenchers	2.2236	0.0007	-	2.24
Backbone Infrastructure Total	**42.3299**	**0.0137**	**-**	**42.6172**
Building Construction				
Aerial Lift	3.8357	0.0012	-	3.86
Air Compressors	8.8513	0.0007	-	8.87
Cement and Mortar Mixers	1.1915	0.0001	-	1.19
Cranes	6.5900	0.0021	-	6.63
Excavators	2.9490	0.0010	-	2.97
Forklifts	6.9831	0.0023	-	7.03
Generator Sets	22.0431	0.0012	-	22.07
Off-Highway Tractors	5.3669	0.0017	-	5.40
Other Construction Equipment	7.0619	0.0023	-	7.11
Other General Industrial Equipment	5.8500	0.0019	-	5.89
Plate Compactors	0.8133	0.0001	-	0.82
Pressure Washers	0.9220	0.0001	-	0.92
Pumps	7.3477	0.0004	-	7.36
Rough Terrain Forklifts	7.8705	0.0025	-	7.92
Skid Steer Loaders	2.3607	0.0008	-	2.38
Sweepers/Scrubbers	1.4516	0.0005	-	1.46
Tractors/Loaders/Backhoes	7.0942	0.0023	-	7.14
Welders	19.5749	0.0029	-	19.64
Building Construction Total	**118.1574**	**0.0242**	**-**	**118.6648**
Paving				
Cement and Mortar Mixers	0.2291	0.0000	-	0.23
Crawler Tractors	13.7963	0.0045	-	13.89
Dumpers/Tenders	0.2764	0.0000	-	0.28
Graders	2.9829	0.0009	-	3.00
Off-Highway Tractors	1.0321	0.0003	-	1.04
Off-Highway Trucks	2.8999	0.0009	-	2.92
Other Construction Equipment	2.7161	0.0009	-	2.73
Pavers	2.0651	0.0007	-	2.08
Paving Equipment	3.5791	0.0012	-	3.60
Plate Compactors	0.1564	0.0000	-	0.16
Rollers	1.1524	0.0004	-	1.16
Rubber Tired Dozers	1.8764	0.0006	-	1.89
Rubber Tired Loaders	2.7450	0.0009	-	2.76
Paving Total	**35.5072**	**0.0113**	**-**	**35.7449**

Product Delivery Trucks/Employee Vehicle On-Site Emissions

Product Delivery Truck Activity

Haul Truck Type	Average Daily Truck Trips (trucks/day)	Maximum Daily Truck Trips (trucks/day)	Unloaded Truck Weight (tons)	Loaded Truck Weight (tons)	Avg Truck Weight (tons)	Delivery Days (days/year)	Truck Idling Time (min/truck)	Total Travel Distance (miles)
Phase 1								
Equipment/Plant Deliveries	20	20	12	38	25	260	5	2
Phase 2 and Phase 3								
Quarry Production								
Aggregate Rock Sales Product Truck	68	112	12	40	26	305	5	0.73
Asphalt Product Truck	37	74	12	39	25.5	305	5	0.6
Concrete Product Truck	119	179	12	32	22	305	5	0.39
CTB Product Truck	8	37	12	39	25.5	305	5	0.77
Sand Import								
Concrete Product Truck	14	14	12	39	25.5	305	5	0.39
Asphalt Product Truck	4	7	12	40	26	305	5	0.6
Cement Import								
Cement & Supp Delivery Truck	11	11	12	40	26	305	5	0.77
Oil Import								
Asphalt Oil Delivery Truck	2	4	12	40	26	305	5	0.6
Recycle								
Recycle Production	23	37	12	37	24.5	305	5	0.84
Recycle Import	28	45	12	37	24.5	305	5	0.84
Fuel Import								
Fuel Truck	1	2	12	38	25	305	5	2
Phase 4								
Landfill								
Infill Material Truck	78	130	12	37	24.5	305	5	2
Total HHD Trucks	413	672						

Number of trips based on TIS Table 5 (Darnell & Associates, 2017)

Employee Vehicles

Source	Vehicle Trips (trips/day)	Operating Days (days/year)	Vehicle Weight (tons)	Travel Distance (total miles)
Phase 1				
Construction Workers	38	260	2.38	0.5
Vendors	30	260	2.38	0.75
Phase 2, Phase 3, and Phase 4				
Processing Plant	38	305	2.38	0.25
Truck Drivers	40	305	2.38	1.5

Number of trips based on TIS Table 5 (Darnell & Associates, 2017)

Idling Tailpipe Emissions

	Emission Factors (lbs/min)						
Vehicle Type	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
T7 single construction	0.000247779	0.001393233	0.001746435	2.46942E-06	4.43893E-06	4.08382E-06	0.232952856

Idling emission factors from EMFAC2011 for operational year 2020.

Driving Tailpipe Emissions

	Emission Factors (lbs/mile)						
Vehicle Type	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
Light Duty Trucks	4.03531E-05	0.002033677	0.00019656	7.74433E-06	0.000102206	4.23954E-05	0.782586757
T7 single construction	0.000939251	0.002507285	0.014251387	3.87359E-05	0.000469583	0.000321286	4.100122257

Running emission factors from EMFAC2017 for operational year 2020

Annual Emission

Vehicle Type	Emission Source	missions (tons/yea CO2 (MT)
Phase 1		
Equipment/Plant Deliveries	Idling	2.74730986
	Driving	19.34177839
	Re-entrained Dust	
Light Duty Trucks	Driving	3.830188926
	Re-entrained Dust	
Phase 1 Total		25.91927718
Phase 2 and Phase 3		
Quarry Production		
Aggregate Rock Sales Product Truck	Idling	10.95753971
	Driving	28.15753781
	Re-entrained Dust	
Asphalt Product Truck	Idling	5.962190725
	Driving	12.5926136
	Re-entrained Dust	
Concrete Product Truck	Idling	19.17569449
	Driving	26.32536925
	Re-entrained Dust	
CTB Product Truck	Idling	1.289122319
	Driving	3.494166658
	Re-entrained Dust	
Sand Import		
Concrete Product Truck	Idling	2.255964058
	Driving	3.097102265
	Re-entrained Dust	
Asphalt Product Truck	Idling	0.644561159
	Driving	1.361363633
	Re-entrained Dust	
Cement Import		
Cement & Supp Delivery Truck	Idling	1.772543188
	Driving	4.804479154
	Re-entrained Dust	
Oil Import		
Asphalt Oil Delivery Truck	Idling	0.32228058
	Driving	0.680681816
	Re-entrained Dust	
Recycle		
Recycle Production	Idling	3.706226667
	Driving	10.95897724
	Re-entrained Dust	
Recycle Import	Idling	4.511928116
	Driving	13.3413636
	Re-entrained Dust	
Fuel Import		
Fuel Truck	Idling	0.16114029
	Driving	1.134469694
	Re-entrained Dust	
Combined Phase 2 and Phase 3		
Light Duty Trucks	Driving	7.524599606
	Re-entrained Dust	
Phase 2 and Phase 3 Total		164.2319156
Phase 4		
Landfill		
Infill Material Truck	Idling	12.56894261
	Driving	88.48863613
	Re-entrained Dust	
Light Duty Trucks	Driving	7.524599606
	Re-entrained Dust	
Phase 4 Total		108.5821784

Phase 2 Trip Characteristics (2021)			
Trip Purpose	Average Daily Truck Trips	Average Trip Length	Daily Vehicle Miles Traveled
Quarry Production	232	20.00	4,640
Sand Import	18	40.00	720
Cement Import	11	40.00	440
Oil Import	2	40.00	80
Recycle	51	40.00	2,040
TOTAL	314		7,920

Working Days	260
Annual Trips	81,640
Annual VMT	2,059,200

Grams per Trip Emission Factors	Grams per Mile Emission Factors
CO_2e	CO_2e
4,110.24	1,950.82

Total Trip Emissions (MT)	Total VMT Emissions (MT)
CO_2e	CO_2e
335.56	4,017.13

Total Phase 2/3 Delivery Truck-Related Emissions (MT/yr)

CO_2e

4,352.69

Trip Characteristics			
Trip Purpose	Average Daily Truck Trips	Average Trip Length	Daily Vehicle Miles Traveled
Worker Commute	78	40.00	3,120

Working Days	260
Annual Trips	20,280
Annual VMT	811,200

Emissions are calculated using the equations described below:

For running emissions

$$Emissions_{pollutant} = VMT * EF_{pollutant}$$

Where:

$Emissions_{pollutant}$ = emissions for each pollutant

VMT = vehicle miles traveled

$EF_{pollutant}$ = emission factor for each pollutant

Other emission types are calculated from trip rates as follows

$$Emissions_{pollutant} = Trip * EF_{pollutant}$$

Where:

$Emissions_{pollutant}$ = emissions for each pollutant

Trip = number of vehicle trips

$EF_{pollutant}$ = emission factor for each pollutant

Grams per Trip Emission Factors	Grams per Mile Emission Factors
CO_2e	CO_2e
86.45	357.33

Total Trip Emissions (MT)	Total VMT Emissions (MT)
CO_2e	CO_2e
1.75	289.87

Total Worker Commute Emissions (MT/yr)

CO_2e
291.62

	PHASE 2 THROUGH 4 - OFFROAD EQUIPMENT REQUIREMENTS					
Off-road Equipment Type	Horsepower	Load Factors	Output (hp)	Pieces	Hrs/day	Hrs/yr
Bore/Drill Rigs	221	0.50	110.50	1	10	2,000
Generator Sets	84	0.74	62.16	1	10	2,000
Off-Highway Trucks	402	0.38	152.76	2	10	2,000
Other General Industrial Equipment	88	0.34	29.92	1	10	2,000
Rubber Tired Dozers	247	0.40	98.80	1	12	600
Rubber Tired Loaders	203	0.36	73.08	2	10	2,000
Tractors/Loaders/Backhoes	97	0.37	35.89	1	10	2,000

Note: List of equipment, horsepower ratings, and emission factors were obtained from the Air Resources Board's 2011 OFFROAD emission factor inventory.

	PHASE 2 THROUGH 4 EMISSION FACTORS (2021)								
Off-road	Emission Factors (g/hp-hr)								
Equipment Type	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O
Bore/Drill Rigs	0.1320	1.0642	1.5510	0.0050	0.0470	0.0430	#######	0.1510	-
Generator Sets	0.3260	3.3610	2.8880	0.0060	0.1530	0.1530	#######	0.0290	-
Off-Highway Trucks	0.2250	1.3378	1.9536	0.0050	0.0720	0.0660	#######	0.1530	-
Other General Industrial Equipment	0.4040	3.7403	3.7177	0.0050	0.2560	0.2350	#######	0.1520	-
Rubber Tired Dozers	0.6000	2.3172	6.2962	0.0050	0.3060	0.2810	#######	0.1540	-
Rubber Tired Loaders	0.2660	1.2403	2.9977	0.0050	0.1000	0.0920	#######	0.1520	-
Tractors/Loaders/Backhoes	0.2960	3.5707	2.9950	0.0050	0.1770	0.1620	#######	0.1540	-

Note: List of equipment, horsepower ratings, and emission factors were obtained from the Air Resources Board's 2011 OFFROAD emission factor inventory.

	PHASE 2 THROUGH 4 EMISSIONS (2021)									
Off-road	Emissions (lbs/day)									
Equipment Type	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
Bore/Drill Rigs	0.31	2.46	3.59	0.01	0.11	0.10	1,083.08	0.35	-	1,090.41
Generator Sets	0.45	4.61	3.96	0.01	0.21	0.21	778.79	0.04	-	779.63
Off-Highway Trucks	1.44	8.56	12.50	0.03	0.46	0.42	3,036.49	0.98	-	3,057.05
Other General Industrial Equipment	0.25	2.34	2.33	0.00	0.16	0.15	294.52	0.10	-	296.52
Rubber Tired Dozers	1.57	6.06	16.46	0.01	0.80	0.73	1,241.03	0.40	-	1,249.48
Rubber Tired Loaders	0.81	3.80	9.18	0.02	0.31	0.28	1,437.41	0.47	-	1,447.18
Tractors/Loaders/Backhoes	0.22	2.68	2.25	0.00	0.13	0.12	357.32	0.12	-	359.75
Total	**5.05**	**30.51**	**50.26**	**0.09**	**2.18**	**2.02**	**8,228.65**	**2.45**	**-**	**8,280.04**

	PHASE 2 THROUGH 4 EMISSIONS (2021)									
Off-road	Emissions (tons/year)						(metric tons/year)			
Equipment Type	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
Bore/Drill Rigs	0.03	0.26	0.38	0.00	0.01	0.01	103.43	0.03	-	104.13
Generator Sets	0.04	0.46	0.40	0.00	0.02	0.02	70.65	0.00	-	70.73
Off-Highway Trucks	0.15	0.90	1.32	0.00	0.05	0.04	289.96	0.09	-	291.93
Other General Industrial Equipment	0.03	0.25	0.25	0.00	0.02	0.02	28.12	0.01	-	28.32
Rubber Tired Dozers	0.04	0.15	0.41	0.00	0.02	0.02	28.15	0.01	-	28.34
Rubber Tired Loaders	0.09	0.40	0.97	0.00	0.03	0.03	137.26	0.04	-	138.20
Tractors/Loaders/Backhoes	0.02	0.28	0.24	0.00	0.01	0.01	34.12	0.01	-	34.35
Total	**0.40**	**2.70**	**3.95**	**0.01**	**0.16**	**0.15**	**691.70**	**0.2042**	**-**	**695.98**

Drilling and Blasting - Parameters

ID	Source	Area (ft2)	holes/blast	Blast Frequency			Tons ANFO/Blast
				blasts/day	blasts/month	blasts/year	
B-1	Blasting Activity	10,800	90	1	4	50	5

Blasting Dust - Emission Factors

ID	Source	Drilling (lb/hole)[1, 2]		Blasting (lb/blast)[3]	
		PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
B-1	Blasting	-	-	8.171	0.471
D-1	Drilling	0.169	0.031	-	-

Notes:

1. Emissions Factor Source: AP-42 5th Edition, Section 11.9, Table 11.9-4, October 1998. Assumes 75% Control Efficiency based on drill rotoclone or similar dust shroud device (estimated to be between 63% and 88%, midpoint assumed).
PM10 = TSPx0.52x(1-75%) = 1.3 lbs/hole x 0.52 x 0.25 = 0.169 lb/hole.

2. Emissions factor for PM2.5 is calculated based on a similar mechanical process for aggreagte roock crushing. The emission factors for tertiary rock crushing will be used, based on AP-42 11.19.2, Table 11.19.2-2, Final Section, updated August 2004. The tertiary crushing emission factor for PM10 is 0.00054 lb/ton and the emissions factor for PM2.5 us 0.00010 lb/ton. The ratio of PM2.5 to PM10 is 0.00010/0.00054 = 0.185. Since the PM10 emission

3. AP-42 5th Edition, Section 11.9, Table 11.9-1:

PM_{10} EF = $0.000014(A)^{1.5}(0.52)$, where A = horizontal area in ft^2 with a scaling factor for $\leq$10um of 0.52

$PM_{2.5}$ EF = $0.000014(A)^{1.5}(0.03)$, where A = horizontal area in ft^2 with a scaling factor for $\leq$2.5um of 0.03

4. Drill goes 40 feet deep. Total of 3,000 ft drilling (for 90 holes). Assumes up to 1,000 ft/day drilling

Blasting Dust - Emission Rates

ID	Source	PM10 Emissions		PM2.5 Emissions	
		lb/day	TPY	lb/day	TPY
B-1	Blasting	8.1708	0.20427114	0.4714	0.0118
D-1	Drilling	4.2250	0.38025	2.8139	0.0703
	Total	12.3958	0.5845	3.2852	0.0821

Blasting Gases - ANFO Emission Factors

ID	Source	Pounds of Pollutant per Ton ANFO[1]					
		CO	NO_X	SO_X	CO_2	CH_4	N_2O
B-1	Blasting Activity	67	17	2	566	0.02	0.005

Notes:

1. Emission Factor Source: AP-42 5th Edition, Section 13.3, Table 13.3-1, February 1980.

Blasting Gases - ANFO Emission Rates Criteria Pollutants

ID	Emissions	CO Emissions		NO_X Emissions		SO_X Emissions	
		lb/day	TPY	lb/day	TPY	lb/day	TPY
B-1	Blasting Activity	335.00	8.38	85.00	2.125	10	0.25

Blasting Gases - ANFO Emission Rates Greenhouse Gases

ID	Emissions	Metric Tons per Year			
		CO_2	CH_4	N_2O	CO_2e
B-1	Blasting Activity	64.18	0.00227	0.00057	64.41

Hot Mix Asphalt Plant - Utilizing RAP Criteria Pollutant and Toxic Air Contaminants

Hot Mix Drum Burner

1,595	MMBtu/day
26,250	MMBtu/year
275,000	Btu/ton

Maximum Production

500	TPH asphalt (aggregate + RAP + oil)
5,000	TPD asphalt (aggregate + RAP + oil)
600,000	TPY asphalt (aggregate + RAP + oil)
5	% oil in asphalt product
15	% RAP in asphalt product
500	TPH aggregate w/o RAP
5,000	TPD aggregate w/o RAP
600,000	TPY aggregate w/o RAP
10	hrs/day

Production

			Hourly		Daily		Annual	
ID	Equipment Category	Description	TPH	MMBtu/hr	TPD	MMBtu/day	TPY	MMBtu/yr
Cold Side Aggregate								
TC1	Transfer Conveyor	3/4" aggregate stockpile to conveyor	50	-	500	-	600	-
TC2	Transfer Conveyor	1/2" aggregate stockpile to conveyor	50	-	500	-	600	-
TC3	Transfer Conveyor	3/8" aggregate stockpile to conveyor	100	-	1,000	-	1,200	-
TC4	Transfer Conveyor	sand aggregate stockpile to conveyor	200	-	2,000	-	2,400	-
AS1	Aggregate Screen	conveyor to scalping screen 1	400	-	4,000	-	4,800	-
TC5	Transfer Conveyor	scalping screen to conveyor	400	-	4,000	-	4,800	-
Cold Side RAP								
RAP1	RAP Feeder Loading	RAP storage pile to bin	75	-	750	-	900	-
HSI1	Crusher (with Fabric Filter)	HSI crusher emissions	75	-	750	-	900	-
TC6	Transfer Conveyor	Conveyor to scalping screen #2	75	-	750	-	900	-
AS2	Aggregate Screen	Scalping screen #2 to Conveyor	75	-	750	-	900	-
TC7	Transfer Conveyor	Conveyor to conveyor	75	-	750	-	900	-
HMA Plant								
HMA1	Hot Mix Asphalt Plant	Dryer Burner - Baghouse	500	101	5,000	1,007	600,000	120,080
HMA2	HMA Plant Loadout	Screens/bins /pug mill	50	-	500	-	600	-
HMA3	HMA Silo Filing	HMA Storage Silos /bluesmoke device	450	-	4,500	-	5,400	-
HMA4	Hot Oil Heater	Hot Oil Heater	500	5	5,000	48	600,000	6,250

Criteria Pollutant and GHG Emission Factors

ID	Equipment Category	Description	CO2	CH4	N2O	Units
Cold Side Aggregate						
AS1	Aggregate Screen	conveyor to scalping screen 1	-	-	-	lb/ton
TC5	Transfer Conveyor	scalping screen to conveyor	-	-	-	lb/ton
Cold Side RAP						
RAP1	RAP Feeder Loading	RAP storage pile to bin	-	-	-	lb/ton
HSI1	Crusher (with Fabric Filter)	HSI crusher emissions	-	-	-	lb/ton
TC6	Transfer Conveyor	Conveyor to scalping screen #2	-	-	-	lb/ton
AS2	Aggregate Screen	Scalping screen #2 to Conveyor	-	-	-	lb/ton
TC7	Transfer Conveyor	Conveyor to conveyor	-	-	-	lb/ton
HMA Plant						
HMA1	Hot Mix Asphalt Plant	Dryer Burner - Baghouse	3.30E+01	1.20E-02	1.20E-02	lb/MMBtu
HMA2	HMA Plant Loadout	Screens/bins /pug mill	-	-	-	lb/ton
HMA3	HMA Silo Filing	HMA Storage Silos /bluesmoke device	-	-	-	lb/ton
HMA4	Hot Oil Heater	Hot Oil Heater	1.18E+02	2.25E-03	2.16E-03	lb/MMBtu

Criteria Pollutant and GHG Emission Rates - Daily Emission Rates

ID	Equipment Category	Description	CO2 lbs/day	CH4 lbs/day	N2O lbs/day	CO2e lbs/day
Cold Side Aggregate						
AS1	Aggregate Screen	conveyor to scalping screen 1	-	-	-	-
TC5	Transfer Conveyor	scalping screen to conveyor	-	-	-	-
Cold Side RAP						
RAP1	RAP Feeder Loading	RAP storage pile to bin	-	-	-	-
HSI1	Crusher (with Fabric Filter)	HSI crusher emissions	-	-	-	-
TC6	Transfer Conveyor	Conveyor to scalping screen #2	-	-	-	-
AS2	Aggregate Screen	Scalping screen #2 to Conveyor	-	-	-	-
TC7	Transfer Conveyor	Conveyor to conveyor	-	-	-	-
HMA Plant						
HMA1	Hot Mix Asphalt Plant	Dryer Burner - Baghouse	33,231.00	12.08	12.08	37,230.80
HMA2	HMA Plant Loadout	Screens/bins /pug mill	-	-	-	-
HMA3	HMA Silo Filing	HMA Storage Silos /bluesmoke device	-	-	-	-
HMA4	Hot Oil Heater	Hot Oil Heater	5,647.20	0.11	0.10	5,681.61
		Total	38,878.20	12.19	12.19	42,912.41

Criteria Pollutant and GHG Emission Rates - Annual Emission Rates (tons per year)

ID	Equipment Category	Description	CO2 MT/yr	CH4 MT/yr	N2O MT/yr	CO2e MT/yr
Cold Side Aggregate						
AS1	Aggregate Screen	conveyor to scalping screen 1	-	-	-	-
TC5	Transfer Conveyor	scalping screen to conveyor	-	-	-	-
Cold Side RAP						
RAP1	RAP Feeder Loading	RAP storage pile to bin	-	-	-	-
HSI1	Crusher (with Fabric Filter)	HSI crusher emissions	-	-	-	-
TC6	Transfer Conveyor	Conveyor to scalping screen #2	-	-	-	-
AS2	Aggregate Screen	Scalping screen #2 to Conveyor	-	-	-	-
TC7	Transfer Conveyor	Conveyor to conveyor	-	-	-	-
HMA Plant						
HMA1	Hot Mix Asphalt Plant	Dryer Burner - Baghouse	1,797.43	0.65	0.65	2,013.77
HMA2	HMA Plant Loadout	Screens/bins /pug mill	-	-	-	-
HMA3	HMA Silo Filing	HMA Storage Silos /bluesmoke device	-	-	-	-
HMA4	Hot Oil Heater	Hot Oil Heater	367.66	0.01	0.01	369.90
		Total	2,165.08	0.66	0.66	2,383.67

Electricity Usage

Emission Factors (lbs/MWh)
CO_2e
624

Total Electricity Usage	Emissions From Electricity (MT/year)
(KWh\year)	CO_2e
3,996,092	1,131.06

Natural Gas Usage

Emission Factors (kg/MMBTU)			
CO_2	CH_4	N_2O	CO_2e
53.05	*0.0059*	*0.0001*	*53.20*

Total Natural Gas Usage	Emissions From Electricity (MT/year)			
(cu.ft.\year)	CO_2	CH_4	N_2O	CO_2e
14,076	0.76	0.0001	0.0000	0.76

Water Consumption

Total Water Consumption	Embodied Energy	Total Energy Consumed
(Mgal/year)	(kWh/Mgal)	(MWh)
25	12,700	318

Emission Factors (lbs/MWh)
CO_2e
624

Total Embodied Energy	Emissions From Electricity (MT/year)
(MWh/year)	CO_2e
318	89.87

Electricity Emission Factors from Energy Policy Initiatives Center 2016

Natural Gas Emission Factors from General Reporting Protocol, California Climate Action Registry, 2009.

APPENDIX B

CAP CONSISTENCY REVIEW CHECKLIST

Permit Number: _____

COUNTY OF SAN DIEGO

LAND USE AND ENVIRONMENT GROUP

Department of Planning & Development Services

Appendix A: Final Climate Action Plan Consistency Review Checklist

Introduction

The County of San Diego (County) Climate Action Plan (CAP), adopted by the Board of Supervisors on February 14, 2018, outlines actions that the County will undertake to meet its greenhouse gas (GHG) emissions reduction targets. Implementation of the CAP will require that new development projects incorporate more sustainable design standards and implement applicable reduction measures consistent with the CAP. To help plan and design projects consistent with the CAP, and to assist County staff in implementing the CAP and determining the consistency of proposed projects with the CAP during development review, the County has prepared a CAP Consistency Review Checklist (Checklist). This Checklist, in conjunction with the CAP, provides a streamlined review process for proposed discretionary projects that require environmental review pursuant to the California Environmental Quality Act (CEQA). Please refer to the County's Guidelines for Determining Significance for Climate Change (Guidelines) for more information on GHG emissions, climate change impact requirements, thresholds of significance, and compliance with CEQA Guidelines Section 15183.5.

The purpose of this Checklist is to implement GHG reduction measures from the CAP that apply to new development projects. The CAP presents the County's comprehensive strategy to reduce GHG emissions to meet its reduction targets. These reductions will be achieved through a combination of County initiatives and reduction actions for both existing and new development. Reduction actions that apply to existing and new development will be implemented through a combination of mandatory requirements and incentives. This Checklist specifically applies to proposed discretionary projects that require environmental review pursuant to CEQA. Therefore, the Checklist represents one implementation tool in the County's overall strategy to implement the CAP. Implementation of measures that do not apply to new development projects will occur through the implementation mechanisms identified in Chapter 5 of the CAP. Implementation of applicable reduction measures in new development projects will help the County achieve incremental reductions towards its targets, with additional reductions occurring through County initiatives and measures related to existing development that are implemented outside of the Checklist process.

The Checklist follows a two-step process to determine if projects are consistent with the CAP and whether they may have a significant cumulative impact under the County's adopted GHG thresholds of significance. The Checklist first assesses a project's consistency with the growth projections and land use assumptions that formed the basis of CAP emissions projections. If a project is consistent with the projections and land use assumptions in the CAP, its associated growth in terms of GHG emissions would have been accounted for in the CAP's projections and project implementation of the CAP reduction measures will contribute towards reducing the County's emissions and meeting the County's reduction targets. Projects that include a land use plan and/or zoning designation amendment that would result in an equivalent or less GHG-intensive project

when compared to existing designation, would also be within the projections assumed in the CAP. Projects responding in the affirmative to Step 1 questions can move forward to Step 2 of the Checklist. If a land use and/or zoning designation amendment results in a more GHG-intensive project, the project is required to demonstrate consistency with applicable CAP measures and offset the increase in emissions as described in the Guidelines. Step 2 of the Checklist contains the CAP GHG reduction measures that projects are required to implement to ensure compliance with the CAP. Implementation of these measures would ensure that new development is consistent with relevant CAP strategies and measures and will contribute towards achieving the identified GHG reduction targets. Projects that are consistent with the CAP, as determined using this Checklist, may rely on the CAP for the cumulative impacts analysis of GHG emissions under CEQA.

A project's incremental contribution to cumulative GHG emissions may be determined to not be cumulatively considerable if it is determined to be consistent with the CAP. As specified in the CEQA Guidelines, the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the project's incremental effects are "cumulatively considerable" (CCR, Title 14, Division 6, Chapter 3, Section 15064[h][4]). Projects requiring discretionary review that cannot demonstrate consistency with the CAP using this Checklist may have a cumulatively considerable contribution to a significant cumulative impact and would be required to prepare a separate, more detailed project-level GHG analysis as part of the CEQA document prepared for the project.

Checklist Applicability

This Checklist only applies to development projects that require discretionary review and are subject to environmental review (i.e., not statutorily or categorically exempt projects) pursuant to CEQA. Projects that are limited to ministerial review and approval (e.g., only building permits) would not be subject to the Checklist. The CAP contains other measures that, when implemented, would apply broadly to all ministerial and discretionary projects. These measures are included for discretionary projects in this Checklist, but could also apply more broadly once the County takes action to codify specific requirements or standards.

Checklist Procedures

General procedures for Checklist compliance and review are described below. Specific guidance is also provided under each of the questions under Steps 1 and 2 of the Checklist in subsequent pages.

1. The County's Department of Planning & Development Services (PDS) reviews development applications and makes determinations regarding environmental review requirements under CEQA. Procedures for CEQA can be found on the County's Process Guidance & Regulations/Statutes Homepage. The Director of PDS will determine whether environmental review is required, and if so, whether completion of the CAP Checklist is required for a proposed project or whether a separate project-level GHG analysis is required.

2. The specific applicable requirements outlined in the Checklist shall be required as a condition of project approval.

3. The project must provide substantial evidence that demonstrates how the proposed project will implement each applicable Checklist requirement described herein to the satisfaction of the Director of PDS.

4. If a question in the Checklist is deemed not applicable (N/A) to a project, substantial evidence shall be provided to the satisfaction of the Director of PDS demonstrating why the Checklist item is not applicable. Feasibility of reduction measures for new projects was assessed in development of the

CAP and measures determined to be feasible were incorporated into the Checklist. Therefore, it is expected that projects would have the ability to comply with all applicable Checklist measures.

5. Development projects requiring discretionary review that cannot demonstrate consistency with the CAP using this Checklist shall prepare a separate, project-level GHG analysis as part of the CEQA document prepared for the project and may be required to prepare an Environmental Impact Report (EIR). Guidance for project-specific GHG Technical Reports is outlined in the Report Format and Content Requirements for Climate Change document, provided under separate cover. The Report Format and Content Requirements document provides guidance on the outline and content of GHG analyses for discretionary projects processed by PDS that cannot show compliance with the CAP Checklist.

Checklist Updates

The Guidelines and Checklist may be administratively updated by the County from time to time to comply with amendments to State laws or court directives, or to remove measures that may become mandatory through future updates to State or local codes. Administrative revisions to the Guidelines and Checklist will be limited to changes that do not trigger a subsequent EIR or a supplement to the SEIR for the CAP pursuant to CEQA Guidelines Section 15162. Administrative revisions, as described above, will not require approval by the Board of Supervisors (Board). All other changes to the Guidelines and Checklist require Board approval.

Comprehensive updates to the Guidelines and Checklist will be coordinated with each CAP update (i.e., every five years beginning in 2025) and would require Board approval. Future updates of the CAP, Guidelines, and Checklist shall comply with CEQA.

Application Information

Contact Information

Project No. and Name: 3300 04-004 (MUP); 3310 04-001 (RP); 3813 10-002 (SPA) - Otay Hills Aggregate Mining And Inert Debris Landfill Project

Property Address and APN: APNs 648-050-12, 13, 14, 17; 648-080-13, 14, 25; 648-040-39, 40, 55

Applicant Name and Co.: Arnold Veldkamp; Superior Ready Mix

Contact Phone: 760.690.5749 Contact Email: aveldkamp@superiorrm.com

Was a consultant retained to complete this checklist? ■ Yes ☐ No
If Yes, complete the following:

Consultant Name: Victor Ortiz Contact Phone: 619.462.1515

Company Name: HELIX Environmental Planning Inc. Contact Email: victoro@helixepi.com

Project Information

1. What is the size of the project site (acres [gross and net])? 410-acre ownership; 105-acre quarry

2. Identify all applicable proposed land uses (indicate square footage [gross and net]):

   ☐ Residential (indicate # of single-family dwelling units): _____

   ☐ Residential (indicate # of multi-family dwelling units): _____

   ☐ Commercial (indicate total square footage [gross and net]): _____

   ☐ Industrial (indicate total square footage [gross and net]): _____

   ☐ Agricultural (indicate total acreage [gross and net]): _____

   ■ Other (describe): 105-acre quarry

3. Provide a description of the project proposed. This description should match the project description used for the CEQA document. The description may be attached to the Checklist if there are space constraints.

The Proposed Project includes a SPA, MUP, Reclamation Plan, and Boundary Adjustment for the extraction and processing of construction aggregate and an IDEFO within a 105-acre impact footprint on a 410-acre Project site located in the unincorporated community of East Otay Mesa in the southernmost portion of San Diego County. In addition, the Project Applicant intends to purchase property for inclusion into the proposed 305-acre Otay Hills Conservation Area (OHCA). The areas intended for purchase are not comprised of whole legal lots; therefore, the Project Applicant has filed a Boundary Adjustment.

CAP Consistency Checklist Questions

Step 1: Land Use Consistency

For projects that are subject to CAP consistency review, the first step in determining consistency is to assess the project's consistency with the growth projections used in the development of the CAP. This section allows the County to determine a project's consistency with the land use assumptions used in the CAP.

Step 1: Land Use Consistency		
Checklist Item (Check the appropriate box and provide explanation and supporting documentation for your answer)	Yes	No
1. Is the proposed project consistent with the existing General Plan regional category, land use designations, and zoning designations? If **"Yes,"** provide substantiation below and then proceed to Step 2 (CAP Measures Consistency) of the Checklist. If **"No,"** proceed to question 2 below.	☒	☐
Project Detail: Please substantiate how the project satisfies question 1. The Project impact footprint is currently zoned (under the East Otay Mesa Specific Plan [EOMSP]) as S88, Specific Plan Use Regulations. The S88 zoning designation allows extractive uses with approval of a MUP according to Subchapter 3.2 of the EOMSP.		
2. Does the project include a land use element and/or zoning designation amendment that would result in an equivalent or less GHG-intensive project when compared to the existing designations? If **"Yes,"** the project must provide estimated project GHG emissions under both existing and proposed designation(s) for comparison to substantiate the response and proceed to Step 2 (CAP Measures Consistency) of the Checklist. If **"No,"** (i.e., the project proposes an increase in density or intensity above that which is allowed under existing General Plan designations and consequently would not result in an equivalent or less GHG-intensive project when compared to the existing designations), the project must prepare a separate, more detailed project-level GHG analysis. As outlined in the County's Guidelines for Determining Significance for Climate Change and Report Format and Content Requirements for Climate Change, this analysis must demonstrate how the project would offset the increase in GHG emissions over the existing designations or baseline conditions. The project must also incorporate each of the CAP measures identified in Step 2 to mitigate cumulative GHG emissions impacts. Proceed and complete a separate project-specific GHG analysis and Step 2 of the Checklist. Refer to Section 4 of the County's Guidelines for procedures on analyzing General Plan Amendments.	☐	☐
Project Detail: Please substantiate how the project satisfies question 2.		

Step 2: CAP Measures Consistency

The second step of the CAP consistency review is to review and evaluate a project's consistency with the applicable measures of the CAP. Each checklist item is associated with a specific GHG reduction measure(s) in the County CAP.

Step 2: CAP Measures Consistency				
Checklist Item (Check the appropriate box and provide an explanation for your answer)	CAP Measure	Yes	No	N/A
Step 2A: Project Operations (All projects with an operational component must fill out this portion of the Checklist)				
Reducing Vehicle Miles Traveled				
1a. Reducing Vehicle Miles Traveled <u>Non-Residential:</u> For non-residential projects with anticipated tenant-occupants of 25 or more, will the project achieve a 15% reduction in emissions from commute vehicle miles traveled (VMT), and commit to monitoring and reporting results to demonstrate on-going compliance? VMT reduction may be achieved through a combination of Transportation Demand Management (TDM) and parking strategies, as long as the 15% reduction can be substantiated. VMT reduction actions though TDM may include, but are not limited to: ☐ Telecommuting ☐ Car Sharing ☐ Shuttle Service ☐ Carpools ☐ Vanpools ☐ Bicycle Parking Facilities ☐ Transit Subsidies Shared and reduced parking strategies may include, but are not limited to:[1] ☐ Shared parking facilities ☐ Carpool/vanpool-only parking spaces ☐ Shuttle facilities ☐ Electric Vehicle-only parking spaces The project may incorporate the measures listed above, and propose additional trip reduction measures, as long as a 15% reduction in emissions from commute VMT can be demonstrated through substantial evidence. Check "N/A" if the project is a residential project or if the project would not accommodate more than 25 tenant-occupants.	T-2.2 and T-2.4	☐	☐	☒
1b. Project Detail: Please substantiate how the project satisfies question 1a. The Project would not accommodate more than 25 tenant-occupants.				

[1] Reduction actions and strategies under 1a may be used to achieve a 10% reduction in emissions from commute VMT under 2a

Step 2: CAP Measures Consistency				
Checklist Item (Check the appropriate box and provide an explanation for your answer)	CAP Measure	Yes	No	N/A
Shared and Reduced Parking				
2a. Shared and Reduced Parking Non-Residential: For non-residential projects with anticipated tenant-occupants of 24 or less, will the project implement shared and reduced parking strategies that achieves a 10% reduction in emissions from commute VMT? Shared and reduced parking strategies may include, but are not limited to: ☐ Shared parking facilities ■ Carpool/vanpool-only parking spaces ☐ Shuttle facilities ■ Electric Vehicle-only parking spaces Check "N/A" if the project is a residential project or if the project would accommodate 25 or more tenant-occupants.	T-2.4	☒	☐	☐

2b. Project Detail:
Please substantiate how the project satisfies question 2a.

The Project would provide carpool- and vanpool-only parking spaces which would encourage commuters to carpool and vanpool to the Project site. Electric vehicle-only parking would be incorporated per CALGreen Standards. Other strategies such as flexible employee schedules or telecommuting would not be applicable to this type of Project, where employees have to be present at the site to perform work. Therefore, the design of the Project would implement applicable available parking strategies and encourage the use of alternate modes of transportation which would reduce emissions from commute VMT, to the extent feasible.

Water Heating Systems				
3a. Electric or Alternatively-Fueled Water Heating Systems Residential: For projects that include residential construction, will the project, as a condition of approval, install the following types of electric or alternatively-fueled water heating system(s)? Please check which types of system(s) will be installed: ☐ Solar thermal water heater ☐ Tankless electric water heater ☐ Storage electric water heaters ☐ Electric heat pump water heater ☐ Tankless gas water heater ☐ Other Check "N/A" if the project does not contain any residential buildings.	E-1.2	☐	☐	☒

3b. Project Detail:
Please substantiate how the project satisfies question 3a.

The Project is a non-residential Project and therefore, CAP Measure 3 is not applicable.

Step 2: CAP Measures Consistency				
Checklist Item (Check the appropriate box and provide an explanation for your answer)	CAP Measure	Yes	No	N/A
Water-Efficient Appliances and Plumbing Fixtures				
4a. Water Efficient Appliances and Plumbing Fixtures Residential: For new residential projects, will the project comply with all of the following water efficiency and conservation BMPs[2]? ☐ Kitchen Faucets: The maximum flow rate of kitchen faucets shall not exceed 1.5 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.5 gallons per minute at 60 psi[3]. ☐ Energy Efficient Appliances: Install at least one qualified ENERGY STAR dishwasher or clothes washer per unit. Check "N/A" if the project is a non-residential project.	W-1.1	☐	☐	☒
4b. Project Detail: Please substantiate how the project satisfies question 4a. The Project is a non-residential Project and therefore, CAP Measure 4 is not applicable.				
Rain Barrel Installations				
5a. Rain Barrel Installations Residential: For new residential projects, will the project make use of incentives to install one rain barrel per every 500 square feet of available roof area? Check "N/A" if the project is a non-residential project; if State, regional or local incentives/rebates to purchase rain barrels are not available; or if funding for programs/rebates has been exhausted.	W-2.1	☐	☐	☒
5b. Project Detail: Please substantiate how the project satisfies question 5a. The Project is a non-residential Project and therefore, CAP Measure 5 is not applicable.				

[2] CALGreen Tier 1 residential voluntary measure A4.303 of the California Green Building Standards Code.
[3] Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

Step 2: CAP Measures Consistency				
Checklist Item (Check the appropriate box and provide an explanation for your answer)	CAP Measure	Yes	No	N/A
Reduce Outdoor Water Use				
6a. Reduce Outdoor Water Use Residential: Will the project submit a Landscape Document Package that is compliant with the County's Water Conservation in Landscaping Ordinance[4] and demonstrates a 40% reduction in current Maximum Applied Water Allowance (MAWA) for outdoor use? Non-Residential: Will the project submit a Landscape Document Package that is compliant with the County's Water Conservation in Landscaping Ordinance and demonstrates a 40% reduction in current MAWA for outdoor use? Check "N/A" if the project does not propose any landscaping, or if the aggregate landscaped area is between 500 – 2,499 square feet and elects to comply with the Prescriptive Compliance Option within the Water Conservation in Landscaping Ordinance.	W-1.2	☒	☐	☐
6b. Project Detail: Please substantiate how the project satisfies question 6a. The Project would comply with the County's Water Conservation in Landscaping Ordinance requirements and would demonstrate a 40 percent reduction in current MAWA for outdoor water use. In addition, the Project would be designed in accordance with CALGreen and would reduce indoor and outdoor water consumption by at least 20 percent.				
Agricultural and Farming Operations[5]				
7a. Agricultural and Farming Equipment Will the project use the San Diego County Air Pollution Control District's (SDAPCD's) farm equipment incentive program to convert gas- and diesel-powered farm equipment to electric equipment? Check "N/A" if the project does not contain any agricultural or farming operations; if the SDAPCD incentive program is no longer available; or if funding for the incentive program has been exhausted.	A-1.1	☐	☐	☒
7b. Project Detail: Please substantiate how the project satisfies question 7a. The Project does not contain any agricultural or farming operations and therefore, CAP Measure 7 is not applicable.				

[4] http://www.sandiegocounty.gov/content/dam/sdc/cob/ordinances/ord10427.pdf.

[5] Existing agricultural operations would not be subject to questions 7 and 8 of the Checklist, unless a proposed expansion is subject to discretionary review and requires environmental review pursuant to CEQA.

Step 2: CAP Measures Consistency				
Checklist Item (Check the appropriate box and provide an explanation for your answer)	CAP Measure	Yes	No	N/A
8a. Electric Irrigation Pumps Will the project use SDAPCD's farm equipment incentive program to convert diesel- or gas-powered irrigation pumps to electric irrigation pumps? Check "N/A" if the project does not contain any agricultural or farming operations; if the SDAPCD incentive program is no longer available; or if funding for the incentive program has been exhausted.	A-1.2	☐	☐	☒

8b. Project Detail:
Please substantiate how the project satisfies question 8a.
The Project does not contain any agricultural or farming operations and therefore, CAP Measure 8 is not applicable.

Tree Planting				
9a. Tree Planting <u>Residential:</u> For residential projects, will the project plant, at a minimum, two trees per every new residential dwelling unit proposed? Check "N/A" if the project is a non-residential project.	A-2.1	☐	☐	☒

9b. Project Detail:
Please substantiate how the project satisfies question 9a.
The Project does not contain any agricultural or farming operations and therefore, CAP Measure 9 is not applicable.